ISSN 1913-9020

# INTERNATIONAL EDUCATION STUDIES

Vol. 2, No. 1
February 2009

Canadian Center of Science and Education

International Education Studies
www.ccsenet.org/journal.html
Vol. 2, No. 1
February 2009

# Contents

Knowledge Sharing among Academics in Institutions of Higher Learning: A Research Agenda 3
*T. Ramayah, Joshua Ignatius & Jasmine Yeap Ai Leen*

Mathematics Achievement among Malaysian Students: What Can They Learn from Singapore? 8
*Noor Azina Ismail & Halimah Awang*

The Evaluation of Higher Education Expenditure Performance and Investment Mechanism Reform 18
*De Wang & Meiying Fu*

Quality Assurance in Higher Education Institutions: Exist Survey among Universiti Putra Malaysia Graduating Students 25
*Mohd Majid Konting, Norfaryanti Kamaruddin & Nor Azirawani Man*

Learning in the Virtual World: the Pedagogical Potentials of Massively Multiplayer Online Role Playing Games 32
*Tao Wang YU*

An Analysis on the Turnover of College Teachers in China from the Perspective of Institutional Economics 39
*Zhaojun Zhang*

An Analysis of the Distribution of Student Financial Aid and Social Justice in China: a Quantitative Approach 42
*Xiehua Zou*

Continuous-Grouped-Self-Learning: In the Perspective of Lecturers, Tutors and Laboratory Instructors 58
*Mohd Azrin Mohd Azau, Low Ming Yao, Goo Soon Aik, Chin Kock. Yeong, Mohamad. Nizam Nor, Ahmad Yusri Abdullah, Mohd Hafidz Mohamad Jamil, Nasiruddin Yahya, Ahmad Fauzi Abas & M. Iqbal Saripan*

A Survey of Graduates' Employment and New Venture Creation in China in 2008 64
*Hongyi Zhang*

Deschooling or Schooling? 70
*Wenting Wang & Rui Hou*

Globalization and Science Education: The Implications for Indigenous Knowledge Systems 76
*Cassie Quigley*

The Application of Simulated Experimental Teaching in International Trade Course 89
*Tao Ma & Wen Chen*

On the Characteristics of Higher Education in Canada and Its Inspiration 91
*Qingyun Xu*

Perception Differential between Employers and Undergraduates on the Importance of Employability Skills 95
*Chung-Khain Wye & Yet-Mee Lim*

Study on the Microwave Permittivity of Single-walled Carbon Nanotube 106
*Xiaolai Liu & Donglin Zhao*

Analyzing Exertion of Hardy's Tragic Effect in Tess 112
*Wei Yang*

International Education Studies
www.ccsenet.org/journal.html
Vol. 2, No. 1
February 2009

# Contents

The Place of "Culture" in the College English Classroom 121
*Qing Xu*
A Probe into Classroom Teaching and Second Language Acquisition 124
*Zhengdan Li*
Succession Planning in Malaysian Institution of Higher Education 129
*Zaini Abdullah, Siti Akmar Abu Samah, Kamaruzaman Jusoff & Posiah Mohd Isa*
A Study on Multiple Intelligences Theory and English Language Teaching 133
*Yuan Kong*
Improvement of Faculty's Qualities in Medical Colleges and the Construction of a "Five-in-one" Cultivation System under the Pattern of PBL 139
*Qin Chen, Hang Li, Fancai Zeng, Xiaorong Zeng, Lige Zheng & Xiang Li*
The Life Satisfaction of Academic and Non-Academic Staff in a Malaysian Higher Education Institution 143
*Kamaruzaman Jusoff, Zaliha Hj. Hussein, SoonYew, Ju & Mohd Salleh Hj. Din*
Employment Obtaining and Business Starting 151
*Jian Lan*
China's Commitments in Education Services and Their Impact 154
*Jian Xu*
Effective Poster Teaching Strategy towards Risk in Studying Fraud 158
*Rozainun Haji Abdul Aziz & Kamaruzaman Jusoff*
A Contrastive Study of Cultural Diversity of Learning Styles between China and the United States 163
*Hong Jian*
Determinants of Preferred Financial Digital Format by New Zealand Accounting Practitioners 167
*Erlane K. Ghani & Kamaruzaman Jusoff*

International Education Studies
www.ccsenet.org/journal.html
Vol. 2, No. 1
February 2009

# Knowledge Sharing among Academics in Institutions of Higher Learning: A Research Agenda

T. Ramayah
Technology Management Lab
School of Management
Universiti Sains Malaysia, Minden
11800 Penang, Malaysia.
Tel: 60-4-653-3888 Ext: 3889 E-mail: ramayah@usm.my

Joshua Ignatius
School of Mathematical Sciences, Universiti Sains Malaysia
Minden, 11800 Penang, Malaysia.
Tel: 60-13-440-0666 E-mail: joshua@i-insights.com

Jasmine Yeap Ai Leen
School of Management, Universiti Sains Malaysia
Minden, 11800 Penang, Malaysia.
Tel: 60-12-423-6815 E-mail: jazmynyeap@yahoo.com

*This research is funded by Universiti Sains Malaysia under the Research University Grant: PMGT/1001/811036*

**Abstract**

This paper presents a research agenda for a funded research project on knowledge sharing among academics in Malaysia. One of the main objectives is to develop validate and measure of knowledge sharing which is suitable for academicians. Previous studies on knowledge sharing have used standard measurement items which do not cater for the multiple roles held by academics such as teaching, mentoring, supervising, publishing, networking etc. We will present the proposed methodology of achieving the objectives stated and round it up with the expected outcomes.

**Keywords:** Knowledge sharing, Academics, Instrument development, Higher education, Academics

## 1. Research Background

Under Malaysia's 9th economic plan, human capital is noted as the main driver for firm performance, especially in this present knowledge-based economy. Efforts had been undertaken by our government in harnessing intellectual resources for our economic growth as evidenced by grant allocations, technological support and the amount spent on individual growth. However, policies and infrastructures can merely facilitate the process of sharing, but yet reluctance of individuals could still prevail.

Given that the academic community strives on intellectual prowess, accumulation and dissemination, critical mass of knowledge sharing needs to be continuously achieved to justify the existence of higher learning institutions. Hence, attitudes and behaviors that impede intellectual discourse and progress, needs to be identified in conjunction with the reasons behind those actions.

Research has highlighted some of the reasons why individuals are unwilling to share information. For instance, Constant et al. (1994) had highlighted that organizational incentive structures, such as pay for performance compensational schemes, can serve to discourage knowledge sharing if employees believe that knowledge sharing will hinder their personal efforts to distinguish themselves relative to their co-workers. In the academic community,

academicians' promotions are based on their diverse roles: lecturer, researcher, community service provider, etc. There are a myriad of information and knowledge artifacts or types that reside in those roles that can prevent one from hiding one but not another. This might depend on the threat that one faces that they might lose by willingly giving up those information. Hoarding knowledge and looking suspicious upon knowledge from others are natural tendencies of any human (Davenport & Prusak, 1998). However, given that universities play an important role in educating the younger generation and generating greater understanding, a fundamental issue has yet to be uncovered: What knowledge are shared among academicians and what remains closely guarded?

## 2. Research Objectives

Therefore, the objectives of this research are to:

1. Compile the types of knowledge artifacts that reside among the varying roles of academicians.

2. Investigate the extent of knowledge sharing in relation to those artifacts.

3. Understand the motivations, attitudes and barriers to sharing knowledge among academicians.

## 3. Methodology

A population frame of all lecturers would be compiled across public institutions of higher learning in Malaysia. A randomized sampling methodology (**see Figure 1**) will be used to select the samples of lecturers through stratification along courses, grade levels and faculties. Both focus group and survey approaches will be utilized for this study. Measures will be validated through structural equation modeling approaches.

The study will employ the methodology suggested by Bagozzi (1980), and, Bagozzi and Phillips (1982) whereby they used a comprehensive coverage of six components of validity. (see Table 1)

A four stage process (Loiacono et al., 2002) will be employed and they are briefly described below:

### *3.1 Stage 1: Defining the dimensions of knowledge sharing*

To decide what constitutes the pertinent dimensions of knowledge sharing a four pronged effort will be used. First a critical review of research related knowledge sharing will be conducted. Also parallel to this, we will conduct an exploratory research project to ensure comprehensiveness of the constructs. This is done by soliciting criteria from lecturers in public institutions of higher learning (IPTA) in two locations, one in West Malaysia which will be Kuala Lumpur and one in East Malaysia to be done in Kuching. Interviews will be conducted to clarify the criteria's suggested.

### *3.2 Stage 2: Developing the Items*

Scale development can either be inductive or deductive (Hinkin, 1998, Loiacono et al., 2002). We will use both the inductive approach (literature review) and deductive approach (exploratory research).

### *3.3 Stage 3: Refinement*

To prevent from item order bias, 2 random order versions will be created and tested. Item assessment and purification will be done after collecting data from a group of respondents. The goodness of measures will be done to assess the validity and reliability and items not conforming to the minimum criteria suggested in literature will be dropped.

### *3.4 Stage 4: Final Item Selection and Assessment of Measurement*

A second round of data collection will be done in Malaysia, Indonesia and the Middle East to test the refined instrument. A confirmatory factor analysis and also an exploratory factor analysis will be conducted to assess the validity.

To validate the final instrument the following will be assessed:

Confirmatory factor analysis using Structural Equation Modeling

Internal consistency of Items will be assessed using the Cronbach's alpha

Discriminant validity will be tested by using the inter-correlations

Discriminant validity refers to the extent to which measures of 2 different constructs are relatively distinctive, that their correlation values were neither an absolute value of 0 nor 1 (Campbell and Fiske, 1959).

Convergent validity will be done following the development of SERVQUAL (Parasuraman et al., 1988)

Nomological/predictive validity will be assessed by looking at the relationship between the new measure of knowledge sharing and performance

Adequacy of model fit will use four recommended indices which are RMSEA, SRMR, RNI and NNFI.

### *3.5 Flow Chart of Research Activities*

The flowchart for the research activities are depicted in Figure 2.

**4. Expected outcome and benefits**

This research will:

Produce a validated and reliable instrument to measure knowledge sharing.

Indicate the extent of knowledge sharing among the academic community.

Highlight areas that require greater facilitation for knowledge sharing.

Uncover reasons behind the unwillingness to share.

**References**

Bagozzi, R. P. (1980). *Causal Models in Marketing*, New York: John Wiley.

Bagozzi, R. P., and Phillips, L. (1982). Representing and testing organizational theories: A holistic Construal. *Administrative Science Quarterly*, 27(3), 459-490.

Campbell, D. T., and Fiske, D. W. (1959). Convergent and discriminant validation by the multitrait –multimethod matrix. *Psychological Bulletin*, 56(1), 81-105.

Constant, D., Kiesler, S., and Sproull, L. (1994). What's Mine is Ours, or Is it? A Study of Attitudes about Information Sharing. *Information System Research*, 5(4), 400-421.

Davenport, T. H., and Prusak, L. (1998). *Working Knowledge,* Harvard Business School Press, Boston.

Hinkin, T. R. (1998). A brief tutorial on the development of measures for use in survey questionnaires. *Organizational Research Methods*, 1(1), 104-121.

Loiacono, E. T., Watson, R. T., and Goodhue, D. L. (2002). WebQual: A measure of website quality. *American Marketing Association Conference Proceedings*, 432-438.

Parasuraman, A., Zeithaml, V. A., and Berry, L. L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing*, 64(1), 12-40.

Table 1. Validity Assessment

| **Validity Issue** | **Concern** |
|---|---|
| Theoretical meaningfulness of concept | Constructs well defined<br>Making theoretical sense |
| Observational meaningfulness of concept (content validity) | Measures correspond to theoretical constructs |
| Internal consistency | Maximally similar measures of the same construct agree (i.e. reliability) |
| Discriminant validity | Distinct constructs can be distinguished |
| Convergent validity | Maximally dissimilar measures of the same construct correlate (e.g. do a collection of questions on a questionnaire correlate with an overview question, or with some objective measure) |
| Nomological validity | Making sense in the larger theoretical framework |

Based on Bagozzi (1980) and Bagozzi and Phillips (1982).

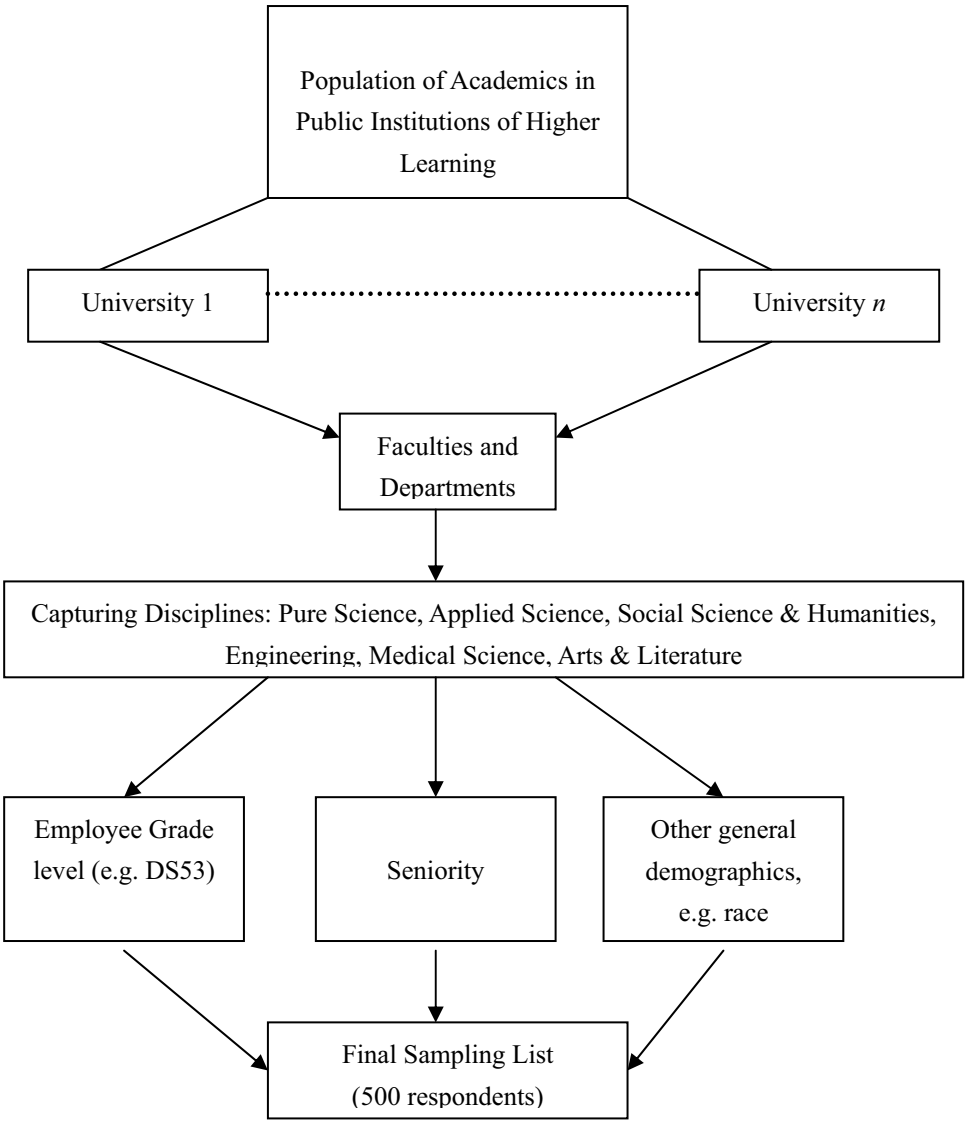


Figure 1. Randomized stratification sampling (proportionate to size of cohorts)

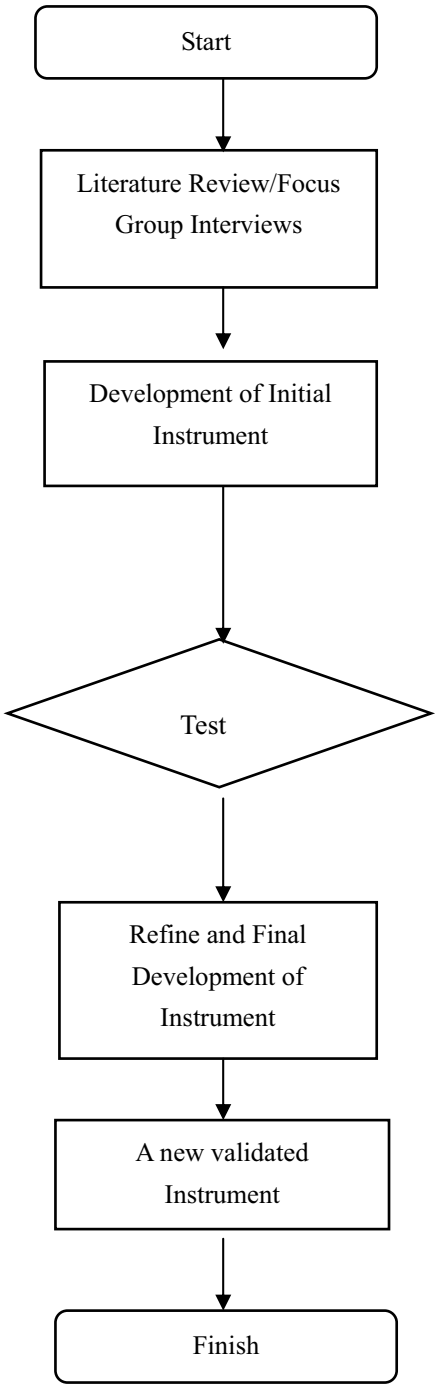


Figure 2. Randomized stratification sampling (proportionate to size of cohorts)

International Education Studies
www.ccsenet.org/journal.html
Vol. 2, No. 1
February 2009

# Mathematics Achievement among Malaysian Students: What Can They Learn from Singapore?

Noor Azina Ismail (Corresponding author)
Faculty of Economics & Administration, University of Malaya
50603 Kuala Lumpur, Malaysia
Tel: 60-3-7967-3638 E-mail: nazina@um.edu.my

Halimah Awang
Faculty of Economics & Administration, University of Malaya
50603 Kuala Lumpur, Malaysia
Tel: 60-3-7967-3601 E-mail: halima@um.edu.my

**Abstract**

Malaysia was ranked 16th and 10th in mathematics based on the Trends in Mathematics and Science Study (TIMSS) in 1999 and 2003, respectively while its neighbor, Singapore, used to be a part of Malaysia until 1965, was ranked first in both years. Hence, it is the aim of this study to investigate what makes Singaporean students better in mathematics performance compared to Malaysian students using TIMSS data. Factors examined in this analysis include characteristics of students, teachers and schools, educational aids and resources as well as students' attitudes towards mathematics learning. It is hoped that the findings from this study will provide useful inputs to improve mathematics learning among Malaysian students.

**Keywords:** Achievement, Secondary analysis, Comparative studies, TIMSS

## 1. Introduction

Numerous research have been undertaken to investigate trends in mathematics achievement and the factors influencing mathematics learning and performance (Ma and Klinger, 2000; Papanastasiou, 2000; Al Khateeb, 2001; Tsao, 2004; Mullis, Martin, Gonzalez and Chrostowski, 2004; House and Telese, 2008). For example, Ma and Klinger (2000) studied the factors of mathematics achievement which include students' gender, age, ethnicity, their family socioeconomic status and school characteristics. In Papanastasiou (2000), the effects of school, students' attitudes and beliefs in mathematics learning on students' performance were investigated. Mathematics beliefs and self-concept were also studied by House and Telese (2008) and Wang (2007) while Al Khateeb (2001) examined gender differences in mathematics achievement among high school students.

Both House and Telese (2008) and Tsao (2004) used data from the Trends in Mathematics and Science Study (TIMSS) in their comparative analyses of mathematics achievement of students in the United States and Japan, and the United States and Taiwan, respectively. TIMSS data also showed that the eighth grade students from Singapore were ranked first in mathematics among participating countries while its neighbor, Malaysia was ranked 16th and 10th in 1999 and 2003 respectively on the same study (Mullis, Martin, Beaton, Gonzalez et al, 2000; Mullis et al, 2004). One begins to wonder as to why Singapore has done exceptionally well compared to Malaysia when the country was once part of Sultanate of Johor, Malaysia between 16th and early 19th centuries until it became an independent republic in 1965. Is it something about its students, teachers and/or school system that lead to Singapore's superiority over Malaysia in as far as mathematics performance is concerned? Thus it is the interest of this paper to examine the similarities and differences in education system, students, teachers, schools and other characteristics between the two countries in the hope to help Malaysia improve its performance in Mathematics globally.

## 2. Similarities and Differences between the Two Countries

Like other Asian countries, education systems in both countries are highly centralized and are managed or under the jurisdiction of Ministry of Education in each respective country. The admission age to the first year of primary

schooling is six and primary education takes six years for normal students in both the countries (Table 1). Students in both countries are required to sit for the national examination before they could proceed to secondary education. In Malaysia, this examination is called Ujian Pencapaian Sekolah Rendah (UPSR) or Primary School Assessment Examination and in Singapore, it is called the Primary School Leaving Examination (PSLE).

With an area of around 330 times bigger and a population of 6 times more than Singapore (Table 2), it is expected that the implementation of educational policies and plans, in Malaysia is not as easy as Singapore. Furthermore, Singapore enjoys lower infant mortality rate, longer life expectancy and higher human development index. With per capita income of almost seven times that of Malaysia, Singapore is the most developed nation in ASEAN.

Exceptionally bright students in Malaysia may have spent one year shorter in primary education because they could move from year 3 to year 5, skipping year 4 if they did well in the First Level Assessment examination or known as *Penilaian Tahap Satu* (PTS). However, this exam was removed in 2001. The promotion from grade 6 to 7 is automatic for students in Malaysia. Students who perform well in this examination have the opportunity of being offered a place in government funded boarding schools but due to limited places, priority has always been given to students from lower income families and those from the rural areas. In Malaysia, secondary education is divided into lower and upper secondary with a period of 3 and 2 years respectively. Upon completion of the lower secondary, students sit for a common examination called the Lower Secondary Assessment (PMR). Based on this examination, students may choose a combination of available subjects in the first year of upper secondary according to their interest. In the last year of upper secondary, students sit for Sijil Pelajaran Malaysia (SPM), Malaysian Certificate of Education, which is equivalent to the British Ordinary or O Levels.

On the other hand, Singapore students are placed in different secondary education tracks depending on their performance in PSLE. Students are divided into two categories: express and normal. Express is a four-year course leading up to a Singapore-Cambridge General certificate of Education Ordinary-level (O-level) examination. Normal is a four-year course leading up to a Normal-level examination with the possibility of a fifth year leading to an O-level.

Unlike Singapore, where English is the medium of instruction, Malaysia uses the national language (Bahasa Malaysia) as the main medium of instruction in all government schools except for international schools. Only in 2002, English language was made the medium of instruction for mathematics and science subjects in secondary schools for students starting grade 1 and grade 7 that year. Hence, the eighth grade students in Malaysia in this study still learning Mathematics in Bahasa Malaysia and therefore, the language of test used in this study is Bahasa Malaysia for Malaysia and English for Singapore.

## 3. Methodology

This paper uses TIMSS 2003 data with the hope that it would reveal important characteristics that could be used to improve mathematics learning and achievement among students in Malaysia. TIMSS is an educational research project conducted by the International Association for the Evaluation of Educational Achievement (IEA). The variables used this analysis include characteristics of students, resources for learning, how they spend their time out of school, their self-confidence in learning mathematics and the value they place on mathematics, teacher and school characteristics in both countries. However, the study will not investigate on effect of the curriculum or content areas and instructional practices on mathematics achievement.

To include the variables mentioned above, we need to use all three questionnaires (students, teachers and schools) and responses used in TIMSS 2003. These questionnaires aim to obtain background information from students, teachers and schools. Since the number of variables involved in this study is tremendous, we just show those variables that have association with Mathematics achievement among Malaysian students.

The data consists of 150 schools and teachers as well as 5314 eighth grade students from Malaysia and 164 schools and teachers together with 6018 eighth grade students from Singapore. The average age of the sampled students of both the countries at the time of testing was 14.33 years. Mathematics achievement in this study is represented by the average of five plausible values. Almost 94 per cent of Singaporean students obtain a score above the international average whereas only 70 per cent of Malaysian students are in this category.

This study will employ the t-test or ANOVA to relate each of these variables with mathematics achievement in these countries. The chi-square tests are used to investigate the differences in distribution of each variable between the two countries.

## 4. Mathematics Achievement

The distribution of mathematics scores shown in Table 3 clearly indicates how well students in Singapore have done in TIMSS 2003. Over 50 percent of them achieved more than the average score of 603 compared to Malaysian students (only 10 %). Expectedly the proportion of students in Singapore with achievements lower than the International average is very small (6%) compared to students in Malaysia (31%) even though the Malaysian average score is much higher

(508).

Comparison of mathematics achievement between the two countries is presented in Table 4 indicating that Singapore's average scores is significantly higher than Malaysia's not only in terms of the overall performance but also in each of the five mathematics content areas. However, students in both countries exhibit the best and worst performance in the same content areas, Fraction and Geometry, respectively.

## 5. Students Characteristics

### *5.1 Background of Students*

Only two variables are considered in this section, gender of the students and parents highest level of education. Both countries register significant gender differences with girls scoring higher than boys and achievement significantly increases with education level of the parents (Table 5). Although Singapore registers a higher proportion of boys (51%) compared to Malaysia (42%) (Table 6), their mean scores are higher than Malaysian girls. It also has higher proportion of parents with at least university education.

### *5.2 Educational Aids and Resources*

Further analyses of the average mathematics achievement with respect to educational aids and resources, both countries register that achievement significantly increases with ownership of books and study desk, computer ownership and usage (Table 7).

From Table 8, there is no doubt that students in Singapore are well ahead of their counterparts in Malaysia especially with regard to computer ownership and usage. More than 94 percent of Singapore students own a computer and 78 percent of them use computer both at home and school compared to only 56 percent and 25 percent, respectively, of the Malaysian students.

### *5.3 Students Attitudes*

The responses for the characteristics in this category are based on students' perception and may be influenced by the culture of modesty or high expectation in the society and therefore are less reliable. With that in mind, it was found that achievement significantly increases with students' aspiration, perception of being safe in school, self-confidence in learning mathematics and time spent on mathematics homework (Table 9).

Students in Malaysia reported a higher proportion of them inspire to finish university, feel being safe in school, value mathematics and confidence in learning mathematics (Table 10). Although the distributions of time spent on mathematics homework are different between the two countries, it is very difficult to draw conclusion about the differences of the distributions of the two countries.

## 6. Teachers Characteristics

Examining mathematics achievement across teacher's characteristics in Table 11 reveals interesting results. In Malaysia, students with female teachers achieve significantly higher scores than those with male teachers. Teacher's participation in the development of mathematics content as well as mathematics curriculum have significant positive impact on students' performance and that average achievement significantly increases with increasing index of teacher's reports on teaching mathematics classes with few or no limitation on instruction due to student factors. In contrast none of the teacher - related factors matter in as far as mathematics achievement is concerned among students in Singapore. Further analysis of the distribution of teacher's characteristics between the two countries using Chi-square tests in Table 12 shows no significant difference in the distribution of gender of teachers, teachers' participation in development of Math content and curriculum between the two countries. The proportion of high index of having classes with few or no limitation on instruction due to student factor is higher among Malaysian students.

## 7. School Characteristics

School related characteristics are found to have significant influence on students' mathematics scores in both countries as shown in Table 13 and that the distribution of students coming from economically disadvantaged homes, index of principal's perception of school climate and index of good school and class attendance differ significantly between Malaysia and Singapore (Table 13). Among Singaporean students mathematics achievement significantly increase with increasing level of socio-economic status, index of principal's perception of school climate and index of good school and class attendance. Similar results are found among students in Malaysia except for the GSCA index where students with low GSCA index register a higher average achievement in mathematics than those with medium GSCA index. Table 14 shows that higher proportion of Malaysian students coming from economically disadvantage homes. However, Singapore has higher proportion of index of good school and class attendance as compared to Malaysia.

## 8. Conclusion and Implications

This study reveals several significant and important findings with respect to mathematics achievement among eighth grade students in Singapore and Malaysia. There are significant differences in the overall average achievement as well

as in all the five mathematics content areas between the two countries with Singaporean students exhibiting superiority over Malaysian students. Although Malaysia has the advantage of having more inspired students to finish university, feel safe in school and value mathematics more, these advantages do not compensate the socioeconomic advantage of Singapore students. Furthermore, student aspiration, feeling safe in school and student valuing mathematics are based on students' perception and may not be reliable.

The data also shows that except for gender of teacher, participation of teacher in the development of mathematics content and curriculum, the distribution of the other variables in consideration differ significantly between the two countries and with the exception of these three teacher related factors, all the other factors contribute significantly to the differences in mathematics achievement among students in Singapore. However, unlike Singapore differences in achievement among Malaysian students are found to be significant across student, teacher and school characteristics. It is clear from this study that mathematics teachers matter in Malaysia while they do not in Singapore and since there are no significant differences between the two countries in as far as teacher related characteristics are concerned, the substantial difference in mathematics achievement could then be due to other factors. Firstly, it is important to note that Singapore sample of students in TIMSS 2003 are more homogeneous in terms of location of schools that are all urban based compared to Malaysian sample. The homogeneity could also be due to the fact that there is some form of screening of students in Grade 6 going to Grade 7 being practiced in Singapore while promotion to secondary schooling in Malaysia is automatic.

Another big difference between students in the two countries is with regard to study aid, especially ownership of books and computers as well as computer usage. There is variation in digital divide between urban and rural schools and between developed and less developed states in Malaysia while this does not exist in Singapore. And lastly, because of its size, the implementation of academic strategies and activities can be carried out easily in Singapore as compared to Malaysia.

One aspect that is not covered in this study that could have significant impact on mathematics achievement is instructional strategies although the indexes of time students spend on mathematics homework and levels of computer usage do reflect some aspect of it. Singapore is of course far well ahead of Malaysia in this respect.

We should also note that this study does not include the differences of curriculum or contents of mathematics taught which may affect mathematics achievement in both countries. Furthermore, this study is using unvaried analysis and just investigates the role of one characteristic without taking into the account the effect of the other characteristics. However, this shortfall does not deny the fact that the findings in this study give an important contribution to understanding mathematics performance in Malaysia.

**References**

Alkhateeb, H. M. (2001). Gender differences in mathematics achievement among high school students in the United Arab Emirates, 1991-2000. *School Science and Mathematics*, 101(1), 5 – 9.

House J. D., & Telese J. A. (2008). Relationships between student and instructional factors and algebra achievement of students in the United States and Japan: an analysis of TIMSS 2003. *Educational Research and Evaluation*, 14(1), 101 – 112.

Ma, X., & Klinger, D. A. (2000). Hierarchical linear modeling of student and school effects on academic achievement. *Canadian Journal of Education*, 25, 41 – 55.

Mullis, I. V. S., Martin, M. O., Beaton, A. E., Gonzalez, E. J., Gregory, K. D., Garden, R. A., O' Connor, K. M., Chrostowski, S. J., & Smith, T. A. (2000). *TIMSS 1999: International mathematics report; Findings from IEA's Third International Mathematics and Science Study at the eighth grade.* Boston College: IEA International Association for the Evaluation of Educational Achievement.

Mullis, I. V. S., Martin M. O., Gonzalez, E. J., & Chrostowski, S. J. (2004). *TIMSS 2003 International Mathematics Report: Findings from IEA's Trends in International Mathematics and Science Study at the fourth and eighth grades*. Boston College: TIMSS & PIRLS International Study Center, Lynch School of Education.

Papanastasiou, C. (2000). School, effects of attitudes and beliefs on mathematics achievement. *Studies in Educational Evaluation*, 26, 27 – 42.

Tsao, Y. L. (2004). A comparison of American and Taiwanese students: Their math perception. *Journal of Instructional Psychology*, 31, 206 – 213.

Wang, J. (2007). A trend study of self-concept and mathematics achievement in a cross-cultural context, *Mathematics Education Research Journal*, 19 (3), 33 – 47.

Table 1. Information about the Grades Tested in TIMSS 2003 for Malaysia and Singapore

| **Information** | **Malaysia** | **Singapore** |
|---|---|---|
| Policy on Age of Entry to Primary School | Children must be 6 years old by January 1 of the academic year | Children must be 6 years old |
| Practice on Age of Entry to Primary School | 6 or older | 6 |
| Policy on Promotion/Retention | Automatic | Automatic in grades 1 – 5, students in grade 6 must satisfy basic requirements on national exam to be promoted to grade 7 |
| Country's name for grade tested | Form 2 | Secondary 2 |
| Years of schooling | 8 | 8 |
| Average age at the time of testing | 14.3 | 14.3 |

Source: TIMSS 2003 International Mathematics Report (2004) by Ina V. S. Mullis, Michael O. Martin, Eugenio J. Gonzalez and Steven J. Chrostowski

Table 2. Selected Characteristics of the Two Countries

| **Characteristics** | **Malaysia** | **Singapore** |
|---|---|---|
| Population Size (in million) | 24.3 | 4.2 |
| Area of Country (1000 square kilometers) | 330 | 1 |
| Life Expectancy at Birth (Years) | 73 | 78 |
| Infant Mortality Rate (per 1000 Live Births) | 8 | 3 |
| Gross National Income per Capita (in US Dollars) | 3540 | 20690 |
| GNI per Capita (Purchasing Power Parity) | 8500 | 23730 |
| Net Enrollment Ratio in Primary Education (% of Relevant Group) | 95 | - |
| Net Enrollment Ratio in Secondary Education (% of Relevant Group) | 69 | - |
| Primary Pupil-Teacher Ratio | 19.6 | 25.4 |
| Human Development Index | 0.790 | 0.884 |

Source: TIMSS 2003 International Mathematics Report (2004) by Ina V. S. Mullis, Michael O. Martin, Eugenio J. Gonzalez and Steven J. Chrostowski

Table 3. Distribution of Overall Mathematics Scores

| Score | Malaysia | Singapore | Total |
|---|---|---|---|
| International Average (467) and below | 30.9 | 6.4 | 17.9 |
| Above International Average to Malaysian Average (508) | 51.8 | 28.4 | 39.3 |
| Above Malaysian Average to Singapore Average (602) | 7.7 | 11.2 | 9.6 |
| Above Singapore Average | 9.7 | 54.0 | 33.2 |

Table 4. Differences in Mathematics Score Among the Two countries

| | Country | | |
|---|---|---|---|
| **Score** | **Malaysia** | **Singapore** | **p-value of t-test** |
| N | 5314 | 6018 | |
| Overall Mathematics Score | 508.60 | 602.20 | < 0.001 |
| Algebra | 495.25 | 586.49 | < 0.001 |
| Data | 505.18 | 576.75 | < 0.001 |
| Fraction | 524.54 | 614.59 | < 0.001 |
| Geometry | 494.47 | 576.43 | < 0.001 |
| Measurement | 504.13 | 607.43 | < 0.001 |

Table 5. Differences in Mean Scores for Each of the Background Variables in the Two Countries

| | | Malaysia | | Singapore | |
|---|---|---|---|---|---|
| **Background of Students** | **Categories** | **Mean Score** | **p-value** | **Mean Score** | **p-value** |
| Gender | Girl | 512.1385 | <0.001 | 608.2070 | <0.001 |
| | Boy | 503.7568 | | 596.4771 | |
| Parents Highest Education Level | Finish university or equivalent or higher | 545.7464 | <0.001 | 644.5178 | <0.001 |
| | Finish at least secondary level but not university | 521.5286 | | 617.2856 | |
| | Finish lower secondary schooling | 496.0411 | | 597.8530 | |
| | No more than primary | 482.9198 | | 569.5420 | |

Table 6. Distribution of Background of Students of the Two Countries

| **Characteristics of Students** | **Category** | **Malaysia** | **Singapore** | **Total** | **p-value of $\chi^2$ test** |
|---|---|---|---|---|---|
| Gender | Girl | 57.8 | 48.8 | 53.0 | <0.001 |
| | Boy | 42.2 | 51.2 | 47.0 | |
| Parents Highest Education Level | Finish university or equivalent or higher | 10.9 | 15.5 | 13.3 | <0.001 |
| | Finish at least secondary level but not university | 47.1 | 25.0 | 35.6 | |
| | Finish lower secondary schooling | 24.5 | 48.1 | 36.7 | |
| | No more than primary | 17.5 | 11.4 | 14.3 | |

Table 7. Differences in Mean Scores for Each of the Educational Aids and Resources Variables in the Two Countries

| Educational Aids and Resources | Categories | Malaysia | | Singapore | |
|---|---|---|---|---|---|
| | | **Mean Score** | **p-value** | **Mean Score** | **p-value** |
| Number of books in your home | None or very few (0-10 Books) | 474.6524 | <0.001 | 553.0663 | <0.001 |
| | One Shelf (11-25 Books) | 497.4163 | | 578.8126 | |
| | One Bookcase (26-100 Books) | 525.5488 | | 613.7643 | |
| | Two Bookcases (101-200 Books) | 540.8780 | | 623.0313 | |
| | Three or more Bookcases (>200 Books) | 556.1203 | | 636.9755 | |
| Home possess study desk | Yes | 511.5622 | <0.001 | 606.1434 | <0.001 |
| | No | 489.5567 | | 566.4155 | |
| Home possess computer | Yes | 526.0765 | <0.001 | 606.1653 | <0.001 |
| | No | 486.2853 | | 540.4483 | |
| Availability Of Computer | Use computer both at home and school | 539.1198 | <0.001 | 611.0053 | <0.001 |
| | Use computer at home but not at school | 528.5997 | | 587.9800 | |
| | Use computer at school but not at home | 490.2774 | | 538.4948 | |
| | Use computer only at places other than home or do not use computer at all | 477.7659 | | 537.4113 | |

Table 8. Distribution of Educational Aids and Resources of the Two Countries

| Educational Aids and Resources | Category | **Malaysia** | **Singapore** | **Total** | **p-value of $\chi^2$ test** |
|---|---|---|---|---|---|
| Number of books in your home | None or very few (0-10 books) | 17.1 | 12.5 | 14.7 | <0.001 |
| | One shelf (11-25 books) | 40.1 | 24.6 | 31.9 | |
| | One bookcase (26-100 books) | 28.2 | 33.4 | 31.0 | |
| | Two bookcases (101-200 books) | 8.9 | 15.8 | 12.5 | |
| | Three or more bookcases (>200 books) | 5.7 | 13.8 | 10.0 | |
| Home possess study desk | Yes | 87.6 | 90.4 | 89.1 | <0.001 |
| | No | 12.4 | 9.6 | 10.9 | |
| Home possess computer | Yes | 56.8 | 94.1 | 76.7 | <0.001 |
| | No | 43.2 | 5.9 | 23.3 | |
| Availability of computer | Use computer both at home and school | 25.1 | 78.1 | 53.5 | <0.001 |
| | Use computer at home but not at school | 26.5 | 14.8 | 20.3 | |
| | Use computer at school but not at home | 24.2 | 5.5 | 14.1 | |
| | Use computer only at places other than home or do not use at all | 24.3 | 1.6 | 12.2 | |

Table 9. Differences in Mean Scores for Each of the Students' Attitudes Variables in the Two Countries

| **Attitude** | | **Malaysia** | | **Singapore** | |
|---|---|---|---|---|---|
| | **Categories** | **Mean Score** | **p-value** | **Mean Score** | **p-value** |
| Students education aspirations relative to parents education level | Finish university and either parent went to university or equivalent | 550.1332 | <0.001 | 648.4953 | <0.001 |
| | Finish university but neither parent went to university or equivalent | 516.4770 | | 623.7637 | |
| | Not finish university regardless of parent education | 485.4389 | | 565.1771 | |
| | Do not know regardless of parent education | 508.4914 | | 599.7761 | |
| Index of student perception of being safe in school (SPBSS) | High | 517.0834 | <0.001 | 614.6541 | <0.001 |
| | Medium | 501.1759 | | 598.2520 | |
| | Low | 492.8745 | | 573.9248 | |
| Index of self-confidence in learning mathematics (SCM) | High | 546.0560 | <0.001 | 635.2171 | <0.001 |
| | Medium | 490.3007 | | 591.5126 | |
| | Low | 471.7448 | | 568.5869 | |
| Index of students valuing mathematics (SVM) | High | 515.1316 | <0.001 | 612.8612 | <0.001 |
| | Medium | 486.8400 | | 588.3184 | |
| | Low | 455.1655 | | 554.6826 | |
| Index of time on mathematics homework (TMH) | High | 515.8836 | <0.001 | 618.0197 | <0.001 |
| | Medium | 509.7004 | | 601.0755 | |
| | Low | 484.5889 | | 562.0714 | |

Table 10. Distribution of Students' Attitudes of the Two Countries

| **Attitude** | **Category** | **Malaysia** | **Singapore** | **Total** | **p-value of $\chi^2$ test** |
|---|---|---|---|---|---|
| Students education aspirations relative to parents education level | Finish university and either parent went to university or equivalent | 9.7 | 13.3 | 11.6 | <0.001 |
| | Finish university but neither parent went to university or equivalent | 54.8 | 43.1 | 48.7 | |
| | Not finish university regardless of parent education | 24.9 | 28.4 | 26.7 | |
| | Do not know regardless of parent education | 10.5 | 15.2 | 13.0 | |
| Index of student perception of being safe in school (SPBSS) | High | 51.7 | 44.2 | 47.7 | <0.001 |
| | Medium | 40.8 | 43.2 | 42.0 | |
| | Low | 7.6 | 12.6 | 10.2 | |
| Index of self-confidence in learning mathematics (SCM) | High | 38.5 | 39.0 | 38.8 | <0.001 |
| | Medium | 45.3 | 33.9 | 39.2 | |
| | Low | 16.2 | 27.1 | 22.0 | |
| Index of students valuing mathematics (SVM) | High | 77.9 | 63.8 | 70.4 | <0.001 |
| | Medium | 21.4 | 31.4 | 26.7 | |
| | Low | 0.7 | 4.8 | 2.9 | |
| Index of time on mathematics homework (TMH) | High | 33.0 | 37.9 | 35.6 | <0.001 |
| | Medium | 55.8 | 51.0 | 53.3 | |
| | Low | 11.2 | 11.1 | 11.2 | |

Table 11. Differences in Mean Score between Teacher's Characteristics between the Two Countries

| | | Malaysia | | Singapore | |
|---|---|---|---|---|---|
| **Variables** | **Categories** | **Mean Score** | **p-value** | **Mean Score** | **p-value** |
| Sex of teachers | Female | 516.8760 | 0.001 | 601.9629 | 0.731 |
| | Male | 484.6620 | | 599.0367 | |
| Teacher's participation in development of Math content | Yes | 515.902 | 0.013 | 601.0832 | 0.987 |
| | No | 491.910 | | 600.9369 | |
| Teacher's participation in development of Math Curriculum | Yes | 517.005 | 0.009 | 599.9705 | 0.735 |
| | No | 491.941 | | 602.7272 | |
| Index of teacher's reports on teaching Mathematics classes with few or no limitation on instruction due to student factors (MCFL) | High | 529.6016 | <0.001 | 611.6863 | 0.121 |
| | Medium | 485.5834 | | 595.6496 | |
| | Low | 466.9453 | | 594.0351 | |

Table 12. Distribution of Characteristics of Teachers of the Two Countries

| **Characteristics of Teachers** | **Category** | **Malaysia** | **Singapore** | **Total** | **p-value of $\chi^2$ test** |
|---|---|---|---|---|---|
| Sex of teachers | Female | 72.5 | 66.6 | 68.4 | 0.197 |
| | Male | 27.5 | 33.4 | 31.6 | |
| Teacher's participation in development of Math content | Yes | 67.1 | 75.3 | 72.7 | 0.063 |
| | No | 32.9 | 24.7 | 27.3 | |
| Teacher's participation in development of Math Curriculum | Yes | 64.9 | 60.1 | 61.6 | 0.325 |
| | No | 35.1 | 39.9 | 38.4 | |
| Index of teacher's reports on teaching Mathematics classes with few or no limitation on instruction due to student factors (MCFL) | High | 54.4 | 34.0 | 40.4 | <0.001 |
| | Medium | 37.1 | 41.1 | 40.0 | |
| | Low | 8.1 | 24.8 | 19.6 | |

Table 13. Differences in Mean Scores between School's Characteristics among the Two Countries

| **Variables** | **Categories** | Malaysia **Mean Score** | **p-value** | Singapore **Mean Score** | **p-value** |
|---|---|---|---|---|---|
| Students coming from economically disadvantaged homes | 0 to 10 | 549.3830 | 0.006 | 614.5903 | <0.001 |
| | 11 to 25 | 526.8228 | | 595.1565 | |
| | 26 to 50 | 513.1465 | | 566.0584 | |
| | >50 | 497.6376 | | 572.5419 | |
| Index of principal's perception of school climate | High | 537.6151 | 0.007 | 645.4136 | <0.001 |
| | Medium | 503.1126 | | 588.4722 | |
| | Low | 490.8208 | | 556.7344 | |
| Index of good school and class attendance (GSCA) | High | 531.0384 | 0.044 | 616.5186 | 0.002 |
| | Medium | 501.4766 | | 593.9968 | |
| | Low | 509.0602 | | 565.9910 | |

Table 14. Distribution of Characteristics of Schools of the Two Countries

| **Characteristics of Schools** | **Category** | **Malaysia** | **Singapore** | **Total** | **p-value of $\chi^2$ test** |
|---|---|---|---|---|---|
| Students coming from economically disadvantaged homes | 0 to 10 | 8.0 | 53.8 | 31.5 | <0.001 |
| | 11 to 25 | 12.7 | 27.8 | 20.5 | |
| | 26 to 50 | 16.0 | 12.0 | 14.0 | |
| | >50 | 63.3 | 6.3 | 34.1 | |
| Index of principal's perception of school climate | High | 17.6 | 26.9 | 22.4 | 0.044 |
| | Medium | 70.9 | 67.5 | 69.2 | |
| | Low | 11.5 | 5.6 | 8.4 | |
| Index of good school and class attendance (GSCA) | High | 18.7 | 40.0 | 29.7 | <0.001 |
| | Medium | 68.7 | 55.0 | 61.6 | |
| | Low | 12.7 | 5.0 | 8.7 | |

International Education Studies
www.ccsenet.org/journal.html
Vol. 2, No. 1
February 2009

# The Evaluation of Higher Education Expenditure Performance and Investment Mechanism Reform

De Wang
Financial Department
Central University of Finance and Economics
Beijing 100081, China
Tel: 86-10-6228-8347 E-mail: wangdecufe@126.com

Meiying Fu
Deputy Director of Financial Department
Central University of Finance and Economics
Beijing 100081, China

*The research is financed by scientific research project of Central University Finance and economics of China*

**Abstract**

Along with the reform of Chinese Government public finance, higher education belongs to the public product, gradually changes from "fund investment management" to the "expenditure performance management". The evaluation of expenditure performance system becomes the key point of higher education investment mechanism reform. This article studies the level, mechanism, target, and method of higher education expenditure performance evaluation to explore the feasibility of establishing a unified and compared evaluation system, and carries it on the overall expenditure by the indicator system and evaluation analysis method to confirm the validity of university expenditure performance evaluation for higher education investment management. The findings show that expenditure performance evaluation is vital significant for establishing the new higher education investment mechanism based on performance by enhancing the fund investment efficiency and promoting the higher education development.

**Keywords:** University, Expenditure evaluation, Higher education, Investment mechanism

The questions of higher education system receive attention in china and abroad day by day. In the countries of world economics cooperation and development organization it is a recent and strong trend as a way to study the potency and efficiency of education system by comparing among countries (the world economics cooperation and development organization, 2006b). Higher education system becomes the focus as important property of knowledge society. To countries, national economical competitive power depends on the operation of these institutions.

Effective operation of higher education system needs sufficient funds and effective assignment. The nature of Quasi-public goods decides that government is an indispensable and important role in the allocation of resources for higher education; its efficiency can only be enhanced by the competitive channel provided together by the government and the market. Therefore, the competition introduced by government to substitute for original mechanism becomes the important topic of the new public administration (NPM), also it is the key for the reform of Chinese higher education investment mechanism. This article discusses two points: First, the establishment of higher education expenditure performance evaluation system is a request for the reform of Chinese higher education investment mechanism. Second, the higher Education expenditure performance evaluation can discover the key point of higher education investment mechanism reform present by quantitative analysis of expenditure performance.

## 1. The problem and corrective measure of Chinese higher education investment mechanism

Chinese higher education has been at the strategic prior development position and obtained great national support since 1978. Number of new entrants of higher education increases from 2,846,700 in 1998 to 5,409,400 in 2005, the range is about 90.02%. Students in university increase from 856 thousand in 1978 to 230 million in 2005. The higher education

investment also increases unceasingly, showed in Table 1, from 1999 to 2005 national financial appropriation for higher education increases at a speed of 16% per year.

Although Chinese higher education has made great progress, it still faced many questions. The main questions are the insufficiency in higher education investment and the low efficiency in funds using. Chinese have much lower public education expenditure: 2-3 percent of GDP compared to average level 6 percent in developed country and 4 percent in developing country. The budget of educational funds and public expenditure per student reduce year by year, respectively are 5375.94 Yuan and 2237.57 Yuan in 2005, meanwhile budget per university student in developed country is 4118.64 Yuan and 6004.58 Yuan in Asian developing countries. Compared with other countries, Chinese universities' scale is smaller and have lower student-teacher ratio, only 16.85:1 in 2005. There is still a great gap between china and overseas. In addition, Chinese higher education has extremely imbalanced development among various areas and low efficiency for university property using.

It needs effective investment mechanism to carry on the resources deployment for the challenge of short resources in higher education. The total national education investment is 8,418,840 million Yuan in 2005, while the budgetary investment is 4,946,040 million Yuan, accounting for 59 percent. The government allocations are still the main investment though Chinese higher education has formed the multiple pattern of investment through nearly ten years of reform. The investment mechanism of Chinese government appropriation for higher education transferred from "base + development" to the way of "synthesis fixed quantity + special subsidy" Since 1986. The reform of investment mechanism enhances the transparency of investment allocation and carries out the concrete basis of allocation in details, taking the advantage in overcoming the capriciousness of "base + development". The special project subsidy helps to accord with the goal of government's higher education policy. But the pattern does not reflect the actual cost of higher education. As the investment allocation based on the number of students, it trends to a large unreasoning scale of recruitment of students. Also the pattern has many inflexible factors, lacking effective promotion to the school behavior, and does not benefit elevation, characteristic formation and innovative production. Thus, the question remains, the higher education investment mechanism needs optimization design to solve these problems.

Compared with the increment allocation pattern and the special project allocation pattern, the performance evaluation pattern relatively has more superiority. It is easier to introduce the competition, making government pay more attention to the university's scientific research allocation and the effect performance of the scientific investment for university. Of course, the performance has included the efficiency, the product and the quality, the contribution and service which the organization provides. For example, with standard performance evaluation system, countries like Sweden, Canada, and Britain who carried out power and responsibility accounting system by reflecting completely budget information and cost with social surveillance, form a set of quite perfect effect management system (Wang Mingxiu and Sun Haibo, 2005). The United State promulgated "Government Performance and Results Act" in 1993 (GPRA), starting the government effect reform. Australia implemented "Financial Management Improvement Program" (FMIP) in 1984 as similar reform for the purpose of improving the Australian Government's management performance and pecuniary condition. Performance evaluation becomes the new tendency of investment mechanism reform because more and more countries finance management changes to guarantee the performance.

Chinese government also started "performance as the guidance" for the reform of expenditure management system in recent years. The Ministry of Finance requested some provinces to carry on the expenditure performance evaluation exercises on small scale successively in the latter half of 2001, like HuBei, HuNan, HeHei, FuJian provinces and so on. The Ministry of Education organized experts to conduct the related university expenditure evaluation research in 1998 and 2000. The undergraduate student teaching evaluation of Ministry of Education includes four items of funds as the target for university evaluation; Level 'A' requests four items of funds above 30 percent of tuition income of university. The higher education investment gradually changes from "fund investment" management to "expenditure performance" management. Thus the higher education expenditure performance evaluation is not only a way for university internal expenditure management, but also a way for the exterior managers or the benefit counterparts to measure the overall higher education investment performance. Chinese higher education investment mechanism should analyze the university expenditure, measured by a group of multi parameter evaluation system to reflect the expenditure performance, to make sure that Chinese higher education's investment mechanism has manifest fair, transparent and efficiency principle and enhances the benefit of resources deployment.

**2. The goal, principle, target and system of Chinese higher education expenditure performance evaluation**

The goal of higher education expenditure performance evaluation is to establish an effective expenditure evaluation system, raise the efficiency of financial funds, and change gradually from investment management to expenditure management (Wang Mingxiu and Sun Haibo, 2005). The higher education expenditure performance evaluation should study the enterprise formulation principle, following the scientific, integral, comparable and feasible principle (luYuan, 2006). The higher education expenditure performance evaluation should show manifest fair and the efficiency, with covering educational expenditure situation, the goal of educational expenditure, the compliance of educational

expenditure, the immediate influence of educational expenditure and the indirect influence of educational expenditure.

Usually the design of higher education expenditure performance includes: comprehensive strength, functional performance and financial potential. Comprehensive strength includes financial indictors and the non-financial indictors, the former including gross income of university, government appropriation for higher education, self-provide income of university, the income of scientific research activity and income of teaching activity and so on; the latter divides into the discipline construction evaluating indicator, the scientific research evaluating indicator, the personnel training evaluating indicator and the troop construction evaluating indicator. The functional performance includes education evaluation indicator, capital construction evaluation indicator and the equipment evaluation indicator. The education evaluation indicator is composed by student-teacher ratio, average expenditure per student and average research spending per teacher; Capital construction evaluating indicator covers the accomplished plan of the year, the rate of capital investment finished, the rate of budgetary allocation; The equipment evaluating indicator is measured by the proportion of equipment expenditure in gross expenditure, the rate of instrumentation equipment. With the loan sum, deposit sum at the end of year and asset-liability ratio, financial indictors reveals the potential development of university based on the risk analysis and synthetic evaluation.

Because the partial target data origin is not easy to obtain, this article designs the major targets of higher education expenditure performance evaluation system based on the statistical data of China Statistical Yearbook and China Educational expenditure Statistical Yearbook .(see Table 2)

## 3. The indicator and data of higher education expenditure performance evaluation

### *3.1 Performance evaluation indicator system*

The higher education expenditure has characteristics of multiplicity, multi-level, macroscopic and externality which decides the expenditure performance evaluation to pay attention not only to its efficiency, but also to its sociality and environment. This paper selects 12 evaluation indicators under the support of available statistic data, (See Table 3) and looks at the data of Chinese over 9 years, 1997-05. (See Table 4) A-L is used to proxy 12 evaluation indicators. The contribution of higher education to the economic growth rate in China is obtained by the estimate method of Cui (2000), other data is obtained on the basis of computation of related yearbooks. The scale of education expenditure indicators may reflect how dept and wide the government involves into the social higher education; The structure of educational expenditure is helpful to show the influence of different expenditure to the education; The effect of education expenditure may indict the contribution of higher education to macro economic, labor force and education condition under certain scale and structure of education expenditure.

### *3.2 Evaluation Method*

It should use objective evaluation method primarily to investigate the summary evaluation of past higher education expenditure condition. The weighting factor evaluated by subjective assessment is decided to a great extent by expert's knowledge, experience and preference. When the relative important of each evaluating indicator is unable to give clearly, it has to make full use or excavate the information provided by whole data to get objective results. This article determines the weight factors by the comprehensive approach of “scatter-degree” (Guo Yajun,2002), where factors can be obtained by overall data between the difference object.

The available primitive observed data of Chinese higher education expenditure condition of nine years of 1997-05 is described by $\{X_{kj}\}$ ($k$=1,2, ....., 9; $j$=1,2, ....., 12) (where $X_{kj}$ represents the proxy for primitive observed value of indicator $j$ in the year of $k$). Furthermore, non-dimension process and unified formulation process of the primary data is used to make the results objective (Guo Yajun, 2002), then the synthetic evaluation value is

$$y_k = \sum_{j=1}^{12} w_j x_{kj}; k = 1,2,\cdots\cdots,9 \quad (1)$$

Where $w_j$ represents the weighting factor of $x_j$. The principle of weighting factor confirmed is to show the greatest difference of the different year overall. This kind of difference can be obtained by the maximum of Sum of squares of $y_k$, it can be proved, $\sum_{k=1}^{9}(y_k - \bar{y})^2 = W^{\mathrm{T}} H W$ .In the formula, $W = (w_1, w_2 \cdots\cdots, w_{12})^{\mathrm{T}}$; $H = X^{\mathrm{T}} X$;

$$X = \begin{bmatrix} x_{11}, x_{12}, \cdots, x_{1,12} \\ x_{21}, x_{22}, \cdots, x_{2,12} \\ \cdots \quad \cdots \quad \cdots \quad \cdots \\ x_{91}, x_{92}, \cdots, x_{9,12} \end{bmatrix} \tag{2}$$

If we do not limit $W$, the formula may get unlimited value. It is defined $W^{\mathrm{T}}W = 1$ (i.e. $W_1^2 + W_2^2 + \cdots + W_{12}^2 = 1$) here for the convenient of computing. By now, the question of $w_j$ is concluded to:

$$\max W^{\mathrm{T}} HW, s.t. \left\| W \right\|_2 = 1, W > 0 \tag{3}$$

*3.3 Results and analysis*

Use MAtLAB6.5 to get the Results: $w_1$=0.0431, $w_2$=0.1348, $w_3$=0.1559, $w_4$=0.1237, $w_5$=0.1736, $w_6$=-0.1092, $w_7$=-0.1032, $w_8$=0.1655, $w_9$=0.1670, $w_{10}$=0.1501, $w_{11}$=-0.0642, $w_{12}$=0.1628 by the formula (3). We substitute $w$ in the formula (1)with the result value, and obtain synthetic evaluation value of Chinese educational condition over 1997-2005. (See Table 5)

Table 5 gives a picture of evaluation value. Figure shows Chinese education expenditure is improved with synthesis condition of expenditure scale, structure and effect. Chinese synthetic evaluation value of 2005 is the1.49 times of 1997. Especially the number of students in university rises year by year, evaluation value of university student in the resident of 2005 is the 2.63 times of 1997, the evaluation value of rate of undergraduates in worker population of 2005 is 3.15 times of 1997, showing Chinese higher education enhanced the quality of labor obviously. China proposed the reform of higher education popularity plan in 1999 and took national higher education into a superior development phase. So the entrants of higher education rise, relative teacher quantity increases, the personnel funds and the public expenditure grow with the teacher treatment enhances. It shown in table 5 that the evaluation value of personal funds proportion of 2005 is the 3.45 times of 1997 and the evaluation value of public expenditure proportion of 2005 is the 1.67 times of 1997.

At the same time, the result of Table 5 suggests Chinese higher education investment mechanism still need improved. Evaluation value of capital construction expenditure of 2005 is only 0.41 times of 1997, indicting it is not optimistic. Though the budgetary part is declining, the overall capital construction is still at ascent stage , the proportion of the budgetary capital construction expenditure accounts for the capital construction expenditure reducing from 42.40% in 2000 to 23.33% in 2005.This implies that massive capital construction sources comes from the bank loan, which increased the university financial risk. The result also shows that increases of research expenditure do not improve achievement obviously. The scientific research still needs strengthen as well as reform of investment mechanism.

**References**

Danfang Yang. (2001).*Expenditure Economic Analysis*. Shanghai: Shanghai San Lian Book Press.

Gerald Gaither, Brain P.Nedwek, John E.Neal.Measuring Up. (1997). The Promises and Pitfalls of Performance Indicators in Higher Education. Washington, DC: *Office of Educational Research and Improvement*.

Jack Diamond. (2000) . Public Expenditure Management. *Conference on Post-Election Strategy*, (4):5-7.

Jianna Wu & Guining Li. (2004). The Performance Evaluation of Education Expenditure: A Construction of Model and General Indicators System. *Journal of Xian Jiaotong University (Social Sciences Edition)*.

Joseph C.Burke, Shahpar Modarresi, Andreea M.Serban.Performance. (1999). Shouldn't it count for something in state budgeting.*Change*.

Mingxiu Wang & Haibo Sun. (2005). The Performance Evaluation of Higher Education Budget and Measures Research. *Science-technology and Management*.

State Statistical Bureau. (2007).*2007 China Statistical Yearbook*. Beijing: Chinese Statistics Press, 2008.

Wanhong Tang. (2007). Performance Evaluation: the Guide of Reform of Higher Education Investment Mechanism Policy. *China Higher Education Research*.

Yajun Guo. ( 2002). *Quality Synthetic Evaluation Theory and Method*. Beijing: Scientific Press.

Yuan Lu. (2006). The the effect evaluation of higher education budgets and the effect indicator system designs. *The technical economy and the management study*, (1).

Yuping Cui. (2000). On the Contribution of China's Higher Education to the Economic Growth Rate. *Beijing Normal University Journal*.

Table 1. Chinese Higher Education Funds Investment and Number of New Entrants

| Year | Government Appropriation for Higher Education (100 million Yuan) | Compared to last year (%) | Number of new entrants of higher education (10 thousand person) | Compared to last year (%) |
|---|---|---|---|---|
| 1999 | 2287.18 | 12.53 | 284.67 | 146.23 |
| 2000 | 2562.61 | 12.04 | 389.61 | 36.86 |
| 2001 | 3057.01 | 19.29 | 480.73 | 23.39 |
| 2002 | 3491.40 | 14.21 | 563.08 | 17.13 |
| 2003 | 3850.62 | 10.29 | 409.06 | -27.35 |
| 2004 | 4465.86 | 15.98 | 479.97 | 17.33 |
| 2005 | 5161.08 | 15.57 | 540.94 | 12.95 |

Source: The Chinese Ministry of Education website, the Ministry of Education, the State Statistical Bureau, 1998-2005 national education expenditure operational practice statistics announcement issued by the Ministry of Finance.

Table 2. The Expenditure Evaluation Indictor System

| Evaluation Content | Evaluation Indicator |
|---|---|
| Funds Structure | The Rate of Budgetary Educational Income in Government Revenue |
| | The Rate of Budgetary Educational Expenditure in Government Expenditure |
| Funds Using Structure | Education Expenditure per Student: Books Expense per Student, Instruments Expense per Student, Network Cost per Student |
| | The Rate of Personnel Expenditure in Budgetary Expenditure |
| | The Rate of Public Expenditure in Budgetary Expenditure |
| | The Rate of Research Expenditure in Budgetary Educational Income |
| | The Rate of Capital Construction Expenditure in Budgetary Expenditure |
| Education Contribution | The Contribution of Higher Education to The Economic Growth Rate |
| Education Achievement | Graduation Ratio |
| | The Number of University Student per Thousand Population |
| | The Rate of Undergraduates in Workers |
| | The Number Every hundred teachers, students attain prize |
| Scientific Research Effect | The Number of Teachers Engaged in Science, No of Papers Published Per Teacher and Student, Income from License Arrangements |
| School Condition | Each student area, each student teaching with the room area, each student hold the books and reference materials and the teaching test installation quantity and so on |
| Professional education ability | Specially appointed teacher quantity and structure: The specially appointed teacher accounts for all teaching and administrative staff proportion, the high-level title to account for the teacher total number of people proportion, the student teacher proportion |
| | Discipline degree points quantity, plan curriculum start rate, school grades finish rate |
| Financial ability | The expansibility expenditure accounts for the gross charge proportion, asset-liability ratio , the quick ratio |

Table 3. Expenditure Evaluation Indicators

| Evaluation Class | Evaluation Indicators |
|---|---|
| The Scale of Expenditure | The rate of Budgetary Educational Income in Government Revenue |
| | The rate of Budgetary Educational Expenditure in Government Expenditure |
| Expenditure structure | The rate of Personnel Expenditure in Budgetary Expenditure |
| | The rate of Public Expenditure in Budgetary Expenditure |
| | The rate of Research Expenditure in Budgetary Educational Income |
| | The rate of Capital Construction Expenditure in Budgetary Expenditure |
| Expenditure Achievements | The Contribution of Higher Education to The Economic Growth Rate |
| | The rate of Undergraduates to Workers |
| | The number Every hundred teachers, the student attain the prize |
| | student-teacher ratio |
| | Pieces of papers issued per teacher |
| | The building area per student |

Table 4. The Data of Expenditure Evaluation Indicators

| Year | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1997 | 3.29 | 2.79 | 44.22 | 34.58 | 18.56 | 9.04 | 0.52 | 4.82 | 2.40 | 10.87 | 0.58 | 0.50 |
| 1998 | 3.23 | 2.49 | 46.23 | 33.91 | 19.86 | 9.98 | 0.59 | 5.19 | 3.10 | 11.62 | 0.60 | 0.55 |
| 1999 | 3.35 | 2.53 | 48.41 | 33.10 | 18.49 | 9.36 | 0.65 | 5.94 | 4.30 | 13.37 | 0.67 | 0.64 |
| 2000 | 3.41 | 3.09 | 51.55 | 33.66 | 14.79 | 8.79 | 0.58 | 7.23 | 5.30 | 16.30 | 0.65 | 0.81 |
| 2001 | 3.42 | 3.12 | 54.47 | 33.36 | 12.17 | 8.13 | 0.63 | 9.31 | 6.00 | 18.22 | 0.65 | 0.94 |
| 2002 | 3.57 | 3.07 | 53.60 | 34.69 | 11.71 | 7.84 | 0.58 | 11.46 | 6.80 | 19.00 | 0.63 | 1.20 |
| 2003 | 3.46 | 3.15 | 52.93 | 35.80 | 11.28 | 8.42 | 0.51 | 12.98 | 7.23 | 17.00 | 0.59 | 1.42 |
| 2004 | 3.31 | 3.07 | 52.87 | 36.59 | 10.54 | 8.28 | 0.46 | 14.20 | 6.78 | 16.22 | 0.56 | 1.58 |
| 2005 | 3.13 | 2.80 | 53.38 | 37.27 | 9.35 | 9.58 | 0.47 | 16.13 | 6.63 | 16.85 | 0.57 | 1.81 |

Source: Network Statistics Database, China Statistical Yearbook, China Educational Expenditure Statistical Yearbook, China Educates Statistical Yearbook.

Table 5. Chinese Higher Education Expenditure Synthetic Evaluation value and Order over 1997-05

| Year | 1997 | | 1998 | | 1999 | | 2000 | | 2001 | | 2002 | | 2003 | | 2004 | | 2005 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Ind | Val | Sort | Val | Sort | Val | Sort | Val | Sort | Val | Sort | Val | Sort | Val | Sort | Val | Sort | Val | Sort |
| A | 2.49 | 7 | 1.97 | 8 | 3.00 | 5 | 3.48 | 4 | 3.54 | 3 | 4.77 | 1 | 3.86 | 2 | 2.65 | 6 | 1.22 | 9 |
| B | 2.54 | 7 | 1.30 | 8 | 1.48 | 7 | 3.78 | 3 | 3.90 | 2 | 3.70 | 4 | 4.01 | 1 | 3.70 | 5 | 2.59 | 6 |
| C | 1.08 | 9 | 1.66 | 8 | 2.29 | 7 | 3.20 | 6 | 4.05 | 1 | 3.80 | 2 | 3.60 | 4 | 3.59 | 5 | 3.73 | 3 |
| D | 2.86 | 5 | 2.38 | 6 | 1.80 | 9 | 2.20 | 7 | 1.99 | 8 | 2.94 | 4 | 3.74 | 3 | 4.31 | 2 | 4.79 | 1 |
| E | 4.20 | 2 | 4.55 | 1 | 4.18 | 3 | 3.19 | 4 | 2.49 | 5 | 2.36 | 6 | 2.25 | 7 | 2.05 | 8 | 1.73 | 9 |
| F | 3.31 | 4 | 4.70 | 1 | 3.79 | 3 | 2.95 | 5 | 1.98 | 8 | 1.55 | 9 | 2.40 | 6 | 2.20 | 7 | 4.11 | 2 |
| G | 2.55 | 6 | 3.59 | 3 | 4.48 | 1 | 3.36 | 4 | 4.21 | 2 | 3.36 | 5 | 2.29 | 7 | 1.51 | 9 | 1.66 | 8 |
| H | 1.76 | 9 | 1.86 | 8 | 2.05 | 7 | 2.37 | 6 | 2.90 | 5 | 3.45 | 4 | 3.83 | 3 | 4.14 | 2 | 4.63 | 1 |
| I | 1.19 | 9 | 1.61 | 8 | 2.34 | 7 | 2.94 | 6 | 3.37 | 5 | 3.85 | 2 | 4.11 | 1 | 3.84 | 3 | 3.75 | 4 |
| J | 1.29 | 9 | 1.57 | 8 | 2.21 | 7 | 3.30 | 5 | 4.01 | 2 | 4.30 | 1 | 3.56 | 3 | 3.27 | 6 | 3.50 | 4 |
| K | 2.27 | 7 | 2.68 | 5 | 4.51 | 1 | 4.12 | 2 | 4.06 | 3 | 3.42 | 4 | 2.48 | 6 | 1.57 | 9 | 1.88 | 8 |
| L | 1.77 | 9 | 1.89 | 8 | 2.08 | 7 | 2.47 | 6 | 2.76 | 5 | 3.33 | 4 | 3.83 | 3 | 4.17 | 2 | 4.70 | 1 |
| M | 39.03 | 8 | 36.68 | 9 | 38.69 | 7 | 48.34 | 6 | 51.69 | 5 | 57.37 | 4 | 59.42 | 3 | 60.60 | 1 | 58.20 | 2 |

International Education Studies
www.ccsenet.org/journal.html
Vol. 2, No. 1
February 2009

# Quality Assurance in Higher Education Institutions: Exist Survey among Universiti Putra Malaysia Graduating Students

Mohd Majid Konting (Corresponding author)
Centre for Academic Development & Faculty of Educational Studies
Universiti Putra Malaysia
43400 UPM Serdang, Malaysia
Tel: 60-3-8946-6136 E-mail: majid@educ.upm.edu.my

Norfaryanti Kamaruddin & Nor Azirawani Man
Centre for Academic Development
Universiti Putra Malaysia
43400 UPM Serdang, Malaysia
Tel: 60-3-8946-6175 E-mail: faryanti@gmail.com, azirawani80@yahoo.com

**Abstract**

This paper presents the exit survey of graduating students at Universiti Putra Malaysia (UPM). The results gathered from 1,823 final year students of the 2006/07 session indicate that overall, the students' satisfaction level is moderately high (3.55 ± 0.79). The students' perception on the attributes of graduates resulting from learning outcomes is also moderately high (3.65 ± 0.66). Although there are no differences in students' satisfaction level according to gender ($t = .582$, $p > 0.05$) and students' residence ($t = .121$, $p > 0.05$), however, it differs according to students' study programs ($F = 35.44$, $p < 0.01$), with Social Science students having a higher satisfaction level (3.80) compared to their counterparts in the Physical Sciences and Engineering (3.48) and Bioscience and Medicine (BSM) programs (3.37). Through this exit survey, together with many other assessment initiatives, the university aspires to provide the highest possible quality in terms of teaching, research and professional services.

**Keywords**: Higher education quality, Exit survey, Student satisfaction, Learning outcomes, Soft skills

## 1. Introduction

Quality is always a critical issue especially in higher education institutions (HEIs). It is expected that a quality higher education program could give a positive impact on human capital development of its graduates in terms of knowledge and generic skills (Fink, 2003; Walker, 2006). This down-to-earth expectation becomes increasingly contentious at a time when many HEIs are getting more scrutiny especially for public funding, resulting in generating various and often contrary spheres of knowledge (Biggs, 2003). The issue of quality becomes pertinent as the higher education sector is moving towards the third age era; a transformation from interpretation to generation, to commercialization of knowledge (Chartrand, 2008). The shift provides not only a wider opportunity for diverse people especially in developing countries to have access to higher education, but also invites eclectic and bewildering expectation of the quality of education programs that HEIs offer.

The term quality has been defined in many but contentious ways. Joseph Juran (2003) opined quality as "fitness for use". For Noriaki Kano (1984), quality relates to a product or service that meets customer expectation, possessing both "must-be quality" and "attractive quality". The American Society for Quality, on the other hand, coined that quality refers to the level of customer perception upon which a product or service fulfills customer expectation. Though quality is an elusive and subjective term that defies simple explanation, especially within the framework of HEI due to the changing nature of the term "quality" itself, quality can be defined in terms of value of a product or service rendered as perceived by the customer. These definitions imply that quality improvement in HEIs is a dynamic ongoing process and, to some extent, rely on the students' perception of the value being offered by the HEIs.

The HEIs, being a college or university ought to continuously improve their services based on the stakeholders' value. Stakeholders' perception of the HEIs is vital to improving teaching and learning as well as facilities and services being offered. While some quarters argued that quality of the HEIs should be determined by the academic experts (Lomas, 2007; Watty, 2006), most of the universities and colleges gathered information from their students as they are the ones who received the services rendered (Schneider, Russell & Niederjohn, 1995). Exit survey, for example, has been widely used to gathered information in many HEIs such as Central Queensland University, George Manson University, San Francisco State University, University of Western Sydney, and University of Wisconsin Madison.

In an effort to continuously improve her service quality, an exit survey is carried out by Universiti Putra Malaysia (UPM), one of the Malaysian leading research universities, every year on their final year students. The aim is to assess the quality of the academic programs and services offered as well as the students' satisfaction. The level of satisfaction is measured through their opinion on teaching and learning, management and facilities offered at faculties or colleges of UPM. Besides, the study also assesses students' attributes towards learning outcomes and soft skills elements instilled through the academic studies program offered by the university (Centre for Academic Development, 2007; Ministry of Higher Education, 2006). Through this exit survey, together with many other assessment initiatives, the university aspires to provide the highest possible quality in terms of teaching, research and professional services.

## 2. Methodology

This exit survey of graduating students is carried out yearly to assess the quality of the UPM academic programs and services. The survey also appraises the students' satisfaction level towards university services throughout the duration of their study at UPM. The instrument used was devised by a group of researchers with the cooperation of Deputy Deans (Academic) from each of the 16 faculties at UPM and administered by the Centre for Academic Development (CADe). It consists of 97 close ended items and three (3) open ended items.

The instrument is divided into five sections. Section A (13 items) focuses on the respondents' profile and Section B (2 items) on their current employability status. Section C consists of 43 items measuring three UPM service domains; teaching and learning experience, administration, and students' facilities. This section used a five point Likert scale, where the respondents need to state their level of agreement on the satisfaction level for each item using "1 = very low", "2 = low", "3 = moderately low", "4 = high" or "5 = very high". Items in Section D (38 items) assess the achievement of graduates' attribute domain in learning outcomes and soft skills. In this section, students need to identify their achievement in their program's learning outcomes based on eight (8) elements that have been identified by the Ministry of Higher Education (Ministry of Higher Education, 2006), namely knowledge; psychomotor, technical and practical skills; lifelong learning and information management; communication skills; thinking and scientific skills approach; management skills and entrepreneurship; social skills and sense of responsibility; and professionalism, values, attitudes and ethics. Section E consists of open ended questions focusing on respondents' perception of their strengths and weaknesses and also their suggestions on improving the study program and university facilities.

The instrument is distributed in the middle of the second semester to all final year students who were still in the UPM campus through the Deputy Deans (Academic) of the 16 faculties. For students who were on practical training outside the campus, for example students from the Faculty of Education who were undergoing the Teacher– Training Program at schools, the instrument was mailed to them together with a stamped envelope direct to the school or institution throughout the country where the students were being placed.

The current study reports the analysis on the responses of 1,823 final year students out of an estimated 2,878 UPM graduating students (63.3%) of the 2006/07 academic session as presented in Table 1. This sample distribution of study program cluster reflects, to some extent, the UPM's final year students' population.

The factor analysis results of the original three UPM service domains employing the 1,823 responses indicate that all 43 items can be fitted into four new categories of students' satisfaction level; human-based, system-based, experience and facilities as illustrated in Table 2. It presents the distribution of the items on four categories of UPM services domain that have been identified using factor analysis.

The overall reliability index of the service domains using Cronbach Alpha is 0.92 with a range of 0.80 to 0.95 for each domain as shown in Table 3. The reliability index for the instrument according to study program cluster shows high alpha values with a range from 0.86 to 0.88 as demonstrated in Table 4. This shows that the instrument of the study is suitable for all UPM graduating students regardless of their study program.

## 3. Results and Discussions

This section presents the results of graduating students' satisfaction on the UPM four service domains, namely the human, system, learning experience and facilities. It also identifies the graduating students' attributes of learning outcomes and soft skills instilled through the UPM academic studies program. Besides, it discusses whether there are any differences in students' satisfaction level based on gender, type of accommodation and study program cluster.

*3.1 Students' Satisfaction Level*

Overall, the satisfaction level among final year students towards services provided by UPM is moderately high with a mean value of 3.55 (on a 5 point scale) and a standard deviation of 0.79 as presented in Table 5. Attention needs to be drawn especially to system based services and facilities in order to ensure the highest quality services are provided and giving the highest satisfaction to the UPM stakeholders.

*3.2 Attributes Achievement of Graduating Students*

The result indicates that final year students' perception of the attributes of graduates resulting from learning outcomes determined by the Ministry of Higher Education was moderately high with a mean value of 3.65 and a range from 3.59 to 3.75 for each learning outcome as indicated in Table 6.

*3.3 Students' Satisfaction Level According to Gender, Study Program Cluster and Residence*

The comparison of satisfaction level of graduating students according to gender, study program cluster and students' residence are presented in Table 7.

## 4. Conclusion

The aim of this study is to assess the graduating students' satisfaction on UPM academic programs and services as well as to identify whether their satisfaction depends on their gender, study program and residence. The study also appraises the students' attributes towards learning outcomes and the soft skills elements. Based on the results, generally the 2006/07 session graduating students are satisfied with the services provided. They also had moderately high perception on the achievement of learning outcomes and soft skills.

Over the years, this kind of stakeholders' assessments together with other appraisal methods have been used widely to inform HEIs of their quality (Miller, 2007). The HEIs could manage resources strategically and effectively by determining the strengths and weaknesses in each domain of their services. In the case of UPM, the exit survey of graduating students can enlighten us on what aspect of improvement should be taken in order for us to develop human capital as this goal is the most critical element in achieving the Malaysian Vision 2020 (Government of Malaysia, 2006, 2007). Here, human capital development encompasses a holistic acquisition of knowledge, skills and attitudes, complemented by soft skills and entrepreneurial capabilities (Ministry of Higher Education, 2007).

Among the current initiatives undertaken by UPM, partly as a result of these appraisals is to review its academic curriculum by inculcating learning outcomes and soft skills elements (Bancino & Zevalkink, 2007; Centre for Academic Development, 2007; De La Harpe, Radloff & Wyber, 2000). In parallel, UPM has also taken bold steps towards promoting student- centered teaching as well as encouraging alternative continuous assessment approaches. Together with continuous improvements in other aspects of human, system, experience and facilities based services, these quality assurance initiatives are consistent with the First Goal of UPM's Strategic Plan 2001-2010 which is to produce quality graduates who are competitive and resilient through lifelong learning.

**Acknowledgement**

The authors would like to express their gratitude and appreciation to many people, specifically to Deputy Deans (Academic) of Universiti Putra Malaysia, Dr. Normee Che Sab, Siti Norziah Abdullah and Azura Adam for the fruitful discussion.

## References

American Society for Quality: [Online] Available: http://www.asq.org/.

Bancino, R. & Zevalkink, C. (2007). Soft skills: the new curriculum for hard-core technical professionals. *Techniques: Connecting Education and Careers,* 82(5), 20-22.

Biggs, J. (2003). *Teaching for Quality Learning at University, 2nd Ed.* Maidenhead, Berkshire: Open University Press.

Central Queensland University (March 2005). *Student Perceptions and Expectations of Flexible Learning & Teaching Approaches.* Queensland: Central Queensland University.

Centre for Academic Development (2007). *Soft Skills Infusion in Curriculum Development Module*. Serdang: Centre for Academic Development (CADe) UPM, 60 pp.

Chartrand, H. M. (2008). The third age of the university: From interpretation to generation to commercialization of knowledge. *Journal of the World Universities Forum*, 1(1), pp. 85-92.

De La Harpe, B., Radloff, A., & Wyber, J. (2000). Quality and generic (professional) skills. *Quality in Higher Education*, 6 (3), 231–243.

Fink, L.D. (2003). *Creating Significant Learning Experiences in College Classrooms.* San Francisco: Jossey-Bass.

George Mason University, *Graduate Student Exit Survey.* [Online] Available: http://assessment.gmu.edu/surveys/2007-2008/letter-grad.cfm.

Government of Malaysia (2006). *The Ninth Malaysian Plan.* Kuala Lumpur: Government of Malaysia.

Government of Malaysia (2007). Vision 2020. Malaysia as A Fully Developed Country**.** Office of the Prime Minister of Malaysia, http://www.pmo.gov.my/. Retrieval on September 2007.

Juran, J. (2003). *Architect of Quality*. NY: McGraw-Hill.

Kano, N. (1984). Attractive quality and must-be quality. *The Journal of the Japanese Society of Quality*. April, pp. 39-48.

Lomas, L. (2007). Are students Customers? Perceptions of Academic Staff. *Quality in Higher Education*, 13(1) April: 31-44.

Miller, B. A. (2007) *Assessing Organizational Performance in Higher Education*. San Francisco, CA: John Wiley & Sons.

Ministry of Higher Education, Malaysia (2006). *Soft Skills Development Module for Higher Learning Institutions*. Kuala Lumpur: Universiti Putra Malaysia Press.

Ministry of Higher Education, Malaysia (2007). *National Higher Education Strategic Plan.* Putrajaya: Ministry of Higher Education.

San Francisco State University. *Graduate Exit Survey.* [Online] Available: http://www.sfsu.edu/~acadplan/gradexitresS99.htm.

Schneider, S.C., Russell, and Niederjohn, J. (1995). *Assessing Student Learning Outcomes Using Graduating Senior Exit Surveys and Alumni Surveys.* [Online] Available: http://fie.engrng.pitt.edu/fie95/2c1/2c11/2c11.htm.

University of Wisconsin Madison. *Assessment Strategies and Instrumentation* [Online] Available: http://www.wisc.edu/provost/assess/SH97/strategy.html .

University of Western Sydney (UWS), *Exit survey* [Online] Available: http://www.uws.edu.au/about/adminorg/corpserv/opq/surveys#1.

Walker, M. (2006). *Higher Education Pedagogies.* Maidenhead, Berkshire: Open University Press.

Watty, K. (2006). Want to know about quality in higher education? Ask an academic. *Quality in Higher Education*, 12(3) November, 291-301.

Table 1. Distribution of Respondents According to Program Cluster

| Study Program Cluster | Frequency | % |
|---|---|---|
| Social Science | 511 | 28.03 |
| Bioscience and Medical | 571 | 31.32 |
| Physical Sciences and Engineering | 741 | 40.65 |

There were 499 male (27.4%) and 1324 female (72.6%) respondents. The majority of them lived on-campus (923 respondents or 51.0%) while the rest lived in off-campus (895 respondents or 49.0%) accommodation. Of all the respondents, 511 respondents come from the Social Science (SS) programs (28.03%), 571 respondents from Bioscience and Medical (BSM) programs (31.32%), and 741 respondents from Physical Sciences and Engineering (PSE) programs (40.65%).

Table 2. Distribution of Items According to UPM Services Domain

| Domain | Sub-Domain | No. of Items |
|---|---|---|
| Human based | Lecturer | 3 |
| | Support staff | 1 |
| | Academic advisor | 1 |
| System based | Administration | 15 |
| | Teaching and Learning | 4 |
| Experience based | Work related | 2 |
| | Teaching and Learning | 3 |
| Facilities | Campus | 8 |
| | Teaching and Learning | 6 |

Table 3. Reliability Index for Exit Survey Instrument

| Domain | No. of Items | α value |
|---|---|---|
| Human based | 5 | 0.80 |
| System based | 19 | 0.95 |
| Experience based | 5 | 0.87 |
| Facilities | 14 | 0.93 |

Table 4. Reliability Index for the Instrument According to Study Program Cluster

| Domain | Study Program Cluster* | | |
|---|---|---|---|
| | BSM | SS | PSE |
| Human based | 0.778 | 0.789 | 0.785 |
| System based | 0.949 | 0.954 | 0.947 |
| Experience based | 0.854 | 0.872 | 0.861 |
| Facilities | 0.928 | 0.861 | 0.861 |
| Overall | 0.877 | 0.869 | 0.864 |

*Note: SS = Social Science

BSM = Bioscience and Medical

PSE = Physical Sciences and Engineering

Table 5. Graduating Students' Satisfaction Level of Services Provided by UPM

| Domain | Mean* | S.D |
|---|---|---|
| Human Based | 3.63 | 0.76 |
| a. Lecturer | 3.61 | 0.70 |
| b. Support staff | 3.52 | 0.73 |
| c. Academic advisor | 3.76 | 0.86 |
| System Based | 3.48 | 0.77 |
| a. Administration | 3.38 | 0.82 |
| b. Teaching and Learning | 3.57 | 0.72 |
| Experience Based | 3.70 | 0.76 |
| a. Job related | 3.73 | 0.77 |
| b. Teaching and Learning | 3.67 | 0.74 |
| Facilities | 3.38 | 0.86 |
| a. Teaching and Learning | 3.55 | 0.80 |
| b. Campus | 3.20 | 0.91 |
| Overall | 3.55 | 0.79 |

*Note: 1=Very Low, 2=Low, 3=Moderately High, 4=High, 5=Very High

Students are generally satisfied with services provided by UPM in the aspect of learning experiences gained during their studies such as in teaching and learning and job related (mean = 3.70), human based services such as lecturers, support staff and academic advisor (mean = 3.63), system based services such as administration of teaching and learning (mean = 3.48), followed by facilities offered (mean = 3.38). Detailed analysis of the items indicates that the campus cafeteria services appear to have the lowest mean value of 3.01 with a standard deviation of 0.97. As a whole, graduating students of the 2006/07 session are satisfied with the services offered by UPM.

Table 6. Mean for Graduates' Attributes Achievement

| Learning Outcomes | Mean* | SD |
|---|---|---|
| Lifelong learning and Information management | 3.61 | 0.68 |
| Communication skills | 3.59 | 0.64 |
| Thinking and scientific skills approach | 3.59 | 0.65 |
| Management and entrepreneurship skills | 3.66 | 0.65 |
| Psychomotor/ Technical / Practical skills | 3.65 | 0.66 |
| Knowledge | 3.62 | 0.64 |
| Social skills and sense of responsibility | 3.71 | 0.67 |
| Professionalism, values, attitudes and ethics | 3.75 | 0.67 |
| Overall | 3.65 | 0.66 |

*Note: 1=Very low, 2=Low, 3=Moderately high, 4=High, 5=Very high

The highest score was for professionalism, values, attitudes and ethics with a mean value of 3.75, followed by social skills and responsibility with a mean value of 3.71. Communication skills and thinking and scientific approach skills appeared to have the lowest mean value of 3.59 compared to the other learning outcomes.

Table 7. Comparison of Graduating Students' Satisfaction Level According To Gender, Program Cluster and Residence

| Gender | Mean | SD | *t* | *P* |
|---|---|---|---|---|
| Male | 3.53 | 0.60 | -0.582 | -0.561 |
| Female | 3.55 | 0.58 | | |
| Study program cluster | Mean | SD | *F* | *P* |
| BSM | 3.37 | 0.57 | 35.44 | .000 |
| SS | 3.80 | 0.55 | | |
| PSE | 3.48 | 0.54 | | |
| Residence | Mean | SD | *t* | *P* |
| In-campus | 3.55 | 0.510 | 0.121 | 0.904 |
| Off-campus | 3.55 | 0.652 | | |

There are no significant differences in the satisfaction level towards program and services offered by UPM between students' gender ($t = .582$, $p > 0.05$) and residence ($t = .121$, $p > 0.05$). However, there is a highly significance difference in the satisfaction level between students of different study programs ($F = 35.44$, $p < 0.01$). The post hoc Bonferroni analysis shows that students in the Social Science (SS) program have a significantly higher satisfaction level (mean = 3.80) than students in the Physical Sciences and Engineering program (PSE) (mean = 3.48) and Bioscience and Medicine (BSM) program (mean = 3.37).

International Education Studies
www.ccsenet.org/journal.html
Vol. 2, No. 1
February 2009

# Learning in the Virtual World: the Pedagogical Potentials of Massively Multiplayer Online Role Playing Games

Tao Wang YU
Centre for Assessment Research and Development
The Hong Kong Institute of Education
Room 09, 2/F, B1, 10 Lo Ping, Tai Po, N.T., Hong Kong
Tel: 852-2948-8061 E-mail: twyu@ied.edu.hk

**Abstract**

A much more attractive way to use the internet was discovered. Users are represented by avatars in the fantasy persistent 3D world, and the avatars apparently come to occupy a special place in the hearts of their creators (Castronova, 2001). At present, millions of people worldwide have accounts to some kind of virtual environments. Virtual world may soon become the primary venue for all online activities (Castronova, 2001) including learning. Imagine that one can gain knowledge and skills by social interactions in virtual worlds. A massively multi-student online learning environment (MMOLE) is a pedagogically designed space where students would spend much time learning online by doing and interacting with others. Furthermore, massively multiplayer online games (MMOGs) or massively multiplayer online role playing games (MMORPGs) allow individuals, through their avatars, to learn in the service of games goals and through problem solving and collaboration. This article aims at exploring the pedagogical potentials of virtual worlds. The strengths and weaknesses will be outlined and some of the issues will be discussed through case studies. Hopefully, lessons can be learned and the future virtual worlds can become a more powerful and effective environment to engage students in learning.

**Keywords:** Virtual world, Online learning, Online games

## 1. Why learn in virtual worlds?

Students are facing the new challenges of the 21st century induced by globalization, information explosion and international competition (Cheng, Chow & Mok, 2004). Higher order skills or so-called 21st century skills are fundamental to the success of knowledge workers (Galarneau & Zibit, 2007). Learning goals including cultivating critical thinking, developing generic skills, life-long learning, seeing things in multi-perspectives, collaborating with others as well as enhancing social awareness become more important. At present, the mode of classroom teaching and learning, and the deployment of learning time are largely content-oriented and teacher-centred (Slator et al, 2002; Galarneau & Zibit, 2007). Teaching-to-the-test and rote-learning are not uncommon. Emphasis is often on factual knowledge which is easier and more objective to assess (Lee, 1991). Much time is allocated on preparing examinations and memorizing facts out of context rather than developing high order thinking skills and life-long learning attitude. As pointed out by Madaus that (as cited in Weeden, Winter & Broadfoot, 2002), when test results are the sole or even a partial arbiter of future educational or life choices, society tends to treat test results as the major goal of schooling rather than a useful but fallible indicator of achievement. But in fact, students should be learning concepts, process, or ideas that lie behind it rather than just test items (English, 2000). Shepard (1997) points out that the teaching-to-the-test literature has repeatedly shown practice with familiar formats reduces the likelihood that students will be able to use their knowledge when they encounter problems posed in even slightly different ways. In contrast, students should learn how to extend their knowledge and apply it in new situations. They should be able to use insights from previous lessons to generate new knowledge rather than just within the narrow perimeters of a given lesson or set of content. Students can only build up knowledge through active participation (Reid, 1994). The conventional teacher-centred approach of teaching puts students in a passive position. Learning is effective only when learners can relate what they already know to what they are going to acquire. As a result, teachers should make reference to the cognitive abilities and knowledge base of their students in deciding the teaching contents. To make learning meaningful, students must be able to relate their knowledge to life experiences and interact with others. Students cannot internalize their knowledge and apply it in other situations if such knowledge is acquired merely by rote-learning (Law, 2005). Moreover, Glasersfeld (1989) suggests that learning as a constructive activity. Knowledge cannot be reduced to a stock of retrievable 'facts' but concerns the ability to compute new results. In Piaget's term, it is operative rather than figurative.

Virtual world provides a suitable platform for putting the above ideas to practice. The focus of learning should be on learning how to learn, think and create. The learning can be a discovering and reflecting process. The traditional site-bounded teacher-centred paradigm should be changed into more student-centred oriented. Pedagogical practices should enable students to develop critical voices and engage in critical analysis and to make choices regarding what is most desirable and morally appropriate for living in a just and democratic society (Jenlink & Jenlink, 2005). In such a paradigm shift, the nature of instruction inevitably has to change (Cheng, Chow & Mok, 2004).

Gee (2007) pointed out that to deliver good learning would indeed be via game-like technologies. Rieber (1996), as cited in Sugumaran (2008), states that, "Research from education, psychology, and anthropology suggests that play is a powerful mediator for learning throughout a person's life" MMORPGs have the capacity to support collaborative learning approaches (De Freitas & Griffiths, 2007) and MMOLE is designed to engage learners and to keep motivation levels high. The virtual environments can also help them learn deep content and higher order skills (Dede et al, 2005). It is evident that high engagement and interactions (Prensky, 2006), and individualized learning are critical for enhancing motivation, communication, a diverse range of skills and intellectual development in the educational process (Moore, 1989; Riding, 1999; Hobbs, 2002; Anderson, 2002, as cited in Wang, 2004). Students with diverse abilities and learning styles can also benefit from the experience. They can learn at their own pace and use their own strategies; and they are more intrinsically than extrinsically motivated (Wang, 2004). Students can enjoy a real sense of agency, ownership, and control (Gee, 2007). Learning becomes more active and fun as students' avatars walk around in the virtual environment to ask questions, solve problems and socialize. Visualizing instead of imagining also helps to engage student and develop deeper understanding. Furthermore, there is no geological limitation and also students are allowed to analyze the lesson later with a different perspective. Also, in virtual worlds, players are encouraged to take risks, explore, and try new things as the consequences of failure is lower (Gee, 2007). Conrad and Donaldson (2004) added that it is helpful to remember that some of the best lessons are learned from failure and subsequent reflection. When there is acceptance of learning from mistakes, students will take meaningful and creative chances.

**2. Case studies**

The study by Galarneau and Zibit (2007): Online Games for 21st Century Skills, pointed out that players of MMOGs develop 21st century skills in a spontaneous and holistic way as a by-product of play, even though learning these skills is not a direct goal of these games. For instance, an MMORPG called *Everquest* is designed in a way that makes grouping essential for achieving success. Hence, players must practice teamwork and collaboration, often with diverse groups of people to solve problems, in order to achieve. To be able to create, share, and master knowledge in MMOG environments is also important. Players must learn the social skills in order to get answers they need when they need them. Some become experts and are more than happy to be consulted. They establish themselves as authoritative (Beavis, 2004). Not only did they contribute to the virtual environment, but also gained invaluable social capital and genuine friendships, which could help them make progress on an emotional level. Moreover, through playing and sharing information, they have the chance to learn how to distinguish what is valid and what is erroneous – an important and difficult 21st century skill to master. MMOGs also provide a platform to develop skills such as self-organize into groups, self-marketing, negotiation, and conflicts mediation. In MMOGs, often leaders come from unexpected corners (Beck & Wade, 2006; Galarneau & Zibit, 2007). In virtual world, players are more equal and are judged by their characters' actions. People are affiliated by their commitment to a common endeavour, not primarily by their race, class, ethnicity, or gender (Gee, 2007). It is a space in which people can establish their presence, identity and meaning in ways that might not be accessible or permissible in their everyday lives. A youngster, who seldom has the chance in real world, could lead a group of adults to a battle or complete a mission. Exploring other facets of individuals which may have gone unexplored, such as leadership, may lead to significant changes in their careers or perspectives. To sum up, Galarneau and Zibit have argued that players will pick up some knowledge that actually has some use in the real world, and learning is done in the service of game goals and through problem solving. The commercial available MMOGs are easy to get and relatively cheap compare to MMOLEs. However, one drawback of using available MMOGs in learning is that the games are not designed for specific learning goals. Therefore, if we do not have the budget to build a MMOLE and deploy a course, educators would need to figure out how to adapt an existing MMOG for pedagogical purposes.

In Foreman and Borkman's (2007) study: Learning Sociology in a Massively Multistudent Online Learning Environment, *The Sims Online* was used to conduct student learning exercises for Sociology 101 and Sociology 310 courses. The successful MMORPG is reformulated as an MMOLE so that appropriate learning goals can be achieved predictably and consistency. Students would develop their understanding of sociological principles through structured interactions within a set of simulated social scenarios. The results suggested that students had several levels of analytical or interpretive ability, and can matched distinct sociological terms with their instantiation in the game. However, major topics in sociology like ethnic diversity or discrimination were rarely dealt with, or simply cannot be dealt with. In fact, *The Sims Online* is a simplified world lacking the diversity and complexity of real life. The inhabitants are all good looking, young, well toned and have no physical distraction. Job variety is limited. This social

system does not have the status and job prestige hierarchies one finds in real world. Therefore, course designers should understand the limitations of the chosen MMOLE and be careful in selecting specific learning goals of the MMOLE.

Foreman and Borkman (2007) also suggested that MMOLE should be organized into a "level progress" so that learners would have to complete a level, requiring a demonstration of learning, before moving on to the next. To reach the highest level would demonstrate a thorough understanding of the subject. The good news for both teachers and students is that no external assessment will be needed. However, we must aware that in current assessment practices, teachers and test items play important roles in measuring student ability. The method has been relatively effective and used for a long time. The validity and reliability of the traditional assessment can be checked, whereas the instrument to measure student achievement in virtual world has yet to be validated. Although some studies have tried to establish how MMOLEs can implement assessment such as using log file data and "Letters to the Mayor" in *River City* (Ketelhut et al, 2006), the development of assessment tools embedded in the system is still in early stages. Slator et al (2002) mentioned that the Worldwide Web Instructional Committee is developing a strategy and interface to a subjective evaluation of student progress that relies on player recall rather than objective recognition. In fact even in the real world, it is not always easy to translate learning outcomes, such as creative problem solving strategies or heightened abilities to collaborate, into quantitative measures that could be entered into grade books (Sandholtz et al, 1997). The important tasks - assessment and diagnosis of student skills in virtual world, have to be accomplished soon. Hence, more research on assessing learning outcomes in MMOLEs will be needed. But until then, we must be careful in interpreting the results and bear in mind that this kind of assessment method is not yet thoroughly investigated.

In the study: Fostering Motivation, Learning, and Transfer in Multi-User Virtual Environments (Dede et al, 2005), an MMOLE called *River City* is designed to teach scientific inquiry skills to middle school students. The main learning goal is to discover why the residents of River City are getting ill. Collaborative teams of students explore, analyze, and report on water-related health problems through scaffolding their inquiry and managing complexity - mimic to real world scientific inquiry process (Bitter & Legacy, 2008). This is similar to playing *Metal Gear Solid* and *The Elder Scrolls II: Morrowind*. The games make players think like scientists and game play is built on a cycle of "hypothesize, probe the world, get a reaction, reflect on the results, reprobe to get better results," a cycle typical of experimental science (Gee, 2007). The MMOLE also provides a pedagogical vehicle for situated learning - learning that takes place in the same context in which it is applied (Lave & Wenger, 1991; Gee, 2007), which is something not easy to create in normal classrooms. Other important design elements in the *River City* MMOLE include optimal level of challenge and autonomy, which help to engage and motivate students. The research use both qualitative and quantitative methods to investigate what features of the design do students find motivating and how do these features support learning. The results showed that students' thoughtfulness of inquiry and self-efficacy in science increased. Furthermore, students enjoyed exploring the unknown. Designing the scenario around a mystery can capture student curiosity, an important feature of designing for motivation (Leeper & Malone, 1987, as cited in Dede et al, 2005). Other features students liked include collaboration with teammates, autonomy, communication with residents of River City, the right challenge, visualization of information, actively walking around and working like a scientist and using tools. One interesting finding is that when implementing the MMOLE in class, absentee rates go down. More importantly, students who tend to be bored by science become engaged and feel better about their abilities in learning science. But one point teachers should aware is that they may need to point out the difference between the learning environment and the real world processes or procedures they present to their students. Reality is more than the learning environment (Maddux et al, 1997). It is more complex and also more dangerous if you want to perform experiments.

Delwiche (2003) wrote in his paper, MMORPG's in the College Classroom, that role-playing games forced gamers to shift perspective and imagine the world through different eyes. Luff (2000), as cited in Delwiche (2003), referred role-playing as "the ultimate empathy exercise." As pointed out by Gee (2007), people really know what words mean only when they can hook them to the sorts of experiences they refer to, that is, to the sorts of actions, images, or dialogues to which the words relate. MMORPG in learning can be used for professional training as well, for example, training social workers, doctors, nurses and soldiers etc. In Delwiche's study, college students tried to learn the fundamental principles of social science research by role-playing the part of ethnographers in the online game *Everquest*. The class was claimed a success and the goals were accomplished. However, one may be suspicious about the trueness of the responses from computer-mediated data collection where gestures and facial expressions, which appear naturally and may contain useful information, cannot be seen by the virtual ethnographers. Even though some avatars may have some kind facial expressions, but they are made consciously and intentionally. After all, either telling the truth or telling a lie in virtual world has little consequence. In fact it is quite common for cyberspace users not to disclose personal information to others and use fade identities. Some may feel safer in answering intimate questions in virtual world, but for those who have reservations, instead of not answering the questions, may give you false answers with less hesitation because they are not physical seen by the ethnographers.

In Steinluehler's study (2004), *Lineage* was the chosen as the MMOG environment for investigation. It suggested that the mechanisms for learning entailed in MMOGs are contingent on the games not only as a designed object but also as a

social practice. The design of learning environments is not just a matter of getting the curricular material right but is crucially also a matter of getting the situated, emergent community structures and practice right. You not only "have to play to learn," (Turkle, 1995, as cited in Steinluehler, 2004), but you also need to play *with others* to develop genuine expertise. Participation in virtual community can assist in building the skill of interdependence in students, which might help them in turn to build creative skills (Blumenthal, Inouye, & Mitchell, 2003, as cited in Kock, 2008). In the MMOG *World of WarCraft*, players play on teams where each player has a different set of skills. Each player must master a specialty and at the same time understand enough of each other's specializations to coordinate with them (Gee, 2007). Gee, as cited in Galarneau and Zibit (2007), also pointed out that a major shift is to understand that people are part of network resources, distributed across the vastness of physical and virtual space. Moreover, Bandura's research (1991) showed that people learn not only from direct experience but also from observing others. Gee (2007) points out that game play actually has its social nature. Therefore, it is not surprising that MMOGs have been found to foster bridging ties rather than decreasing social and civil interactions (Jakobsson & Taylor, 2003; Yee, 2006; Beck & Wade, 2006).

The paper by De Freitas and Griffiths (2007) argues that MMORPGs have the capacity to support intrinsic motivation and so help to engage learners and collaborative processes. Some cases of using MMORPGs, including *Mekong e-Sim, StrikeCOM* and *Full Spectrum Command,* in learning and training were discussed. A wide range of learning areas were covered - geography and engineering education, military training, and developing cognitive skill such as leadership, decision making and ability to keep calm under pressure etc. Although results are encouraging, De Freitas and Griffiths believe that more intense study still needs to be conducted to investigate the benefits of learning in virtual worlds and the pedagogical implications. In particular, as indicates by the cases, the potential for supporting effective collaborative and simulation-based learning approaches does merit further research. Gredler (1996), as cited in Sugumaran (2008), also agrees that the major problems instructional designers encounter are that there are no available comprehensive design paradigms and the lack of well-designed research studies. In fact, only a few guidelines or models in the literature exist to guide instructional designers through the pain-staking process of creating a game-like learning environment for students (Sugumaran, 2008).

The study by Childress and Braswell (2006) gives examples using partner activities and group activities to deliver an online graduate-level Foundation of Instructional Technology course through *Campus: Second Life* – a special version of *Second Life* for educators to use in classes. It illustrates that the highly social attributes of MMORPGs make them rich environment for cooperative learning-based activities. Real-world learning experiences previously available only through face-to-face interaction can now be replicated with the aid of online role-playing scenarios. Students from different locations can share their ideas and findings with the entire class in their virtual classroom after planning, researching and work allocation. The cooperative learning technique would help students to develop higher order skills. It is found that teacher and students spend more unofficial time together outside of the typical class session (Neeson, 2006, as cited in Wikipedia). Unfortunately, for most beginners, to learn how to navigate in MMORPG environments takes time. Some students would have difficulty mastering game mechanics, especially when the game interface is complicated. Some even showed frustration with the steep learning curve (Delwiche, 2003). But as MMORPGs become easier to use, more sophisticated, offering increased interactive and realism, they may one day become the preferred platform for cooperative learning activities (Childress & Braswell, 2006). Furthermore, advance in artificial intelligence will help to create virtual world pedagogical agents that can customize materials for each individual learner.

**3. Some issues to be addressed**

Some people criticize that many games in virtual worlds contain violence and may promote violent behaviour in real world. However, Castronova (2007) argued that people who do all the fighting in virtual worlds, their desire to get into real world fights will be minimal. The bloodlust is satisfied. A study by (Barnett 2008) found that the players were more calm or tired after playing violent games. However, results did vary among the various demographic groups. Although, some literature reviews suggest that not enough evidence has yet been gathered to link video games in general and social online games in particular with violence (Kirsh, 2006, as cited in Murphy, 2007), other reviews indicate such a link (Anderson & Bushman, 2001; Anderson, Gentile, & Buckley, 2007, as cited in Murphy, 2007). Research by Williams and Skoricon (2005) on violent video games does suggest that play leads to aggressive behavior. Beck and Wade (2006) remind us that results are inconclusive. It is still a matter of great debate among academics. Hence, whether violent behaviour and violent gaming is correlated still needs to be investigated further. Sadly, we have already seen incidents of seemingly obsessed online gamers replicate their avatars actions have killed and injured people in real world. In 2003, two young people were shot by two teenagers, who in statements to investigators claimed their actions were inspired by *Grand Theft Auto III.* Also, reports of racist groups using computer games such as *Ethnic Cleansing* to promote violence against ethnics groups (Gee, 2007) do raise concerns.

Addiction can be a serious problem. It may deteriorate family relationships, cause people to neglect more important priorities and lead to psychological disorders (Chan, 2006). MMOG is becoming a popular form of entertainment as well as a major mechanism of socialization (Steinkuehler, 2004), despite its purported addictive quality for those who

plug in (Jewels, 2002, as cited in Steinkuehler, 2004). Would the attractive virtual world suck even more people in and get them addicted when it is introduced in class? In the study by Delwiche (2003), college students were actively immersed in *Everquest* for a whole quarter. Although, a few of them became heavily involved, at the end the whole class was strong enough to cancel their accounts. However, based on the low sample size of 36, one must not extrapolate to the boarder population, especially to those primary and secondary students with more leisure time and less self discipline. In fact, two former *Everquest* addicts contacted Delwiche and discussed the danger of building class around *Everquest*. The nature of the game is especially alluring to people whose lives are lacking meaning and substance. Therefore, students of all ages must be warned the potential risks of addiction and support should be available to them when virtual world is adapted in class.

Another problem in introducing MMOLEs and MMOGs in class is that our classrooms and teaching were not designed for this (Prensky, 2006). It would require teachers' smart thinking and planning to make it work. To do it successfully, it is important to know the games and the technology well. Unfortunately, for most teachers, adopting MMOGs and MMOLEs in class are relatively new to them. They have not been trained for it and many of them have not even played such games before. To fully exploit the power of technology, teachers need adequate training and support (Sandholtz et al, 1997). Even though more time and resources for technology training are given, the current methods of professional development focus on learning computers rather than on learning how to integrate computers into the curriculum (Sandholtz et al, 1997). New forms of teacher development need to be created that show teachers how to use virtual worlds to its fullest potential, and at the same time influenced teachers' attitudes toward teaching, their self-efficacy, and their beliefs about their students. Therefore, if we really want to employ virtual world in education, the nature of teacher education inevitably has to make some changes.

One of the major obstacles to overcome, beside technical problem, is that the general view that computer-based games are only for fun and not educational (Bitter & Legacy, 2008; Prensky 2006). But many literatures have already provided evidence that video and computer game playing, done appropriate, is actually very beneficial to today's "Digital Native" kids, who use them to prepare for life in the 21st century (Prensky, 2006; Galarneau & Zibit, 2007). Also, through good game design we can leverage deeper and deeper learning as a form of pleasure in people's everyday lives, without any hint of school or schooling (Gee, 2007). Therefore, it is important to gain the support and acceptance from school administrators to experiment this new way of teaching and also let all educators and parents understand the educational potential of the increasingly popular technology.

Students spend much time in virtual environments. However, as reminded by Castronva (2007), they have to be lured back to the real world to learn too. To get them back, learning have to apply some of the techniques of applied hedonics. The implication is that education will have to become more fun. In fact, teachers can use the principles behind good, complex games to make teaching more game-like, and therefore more interesting and engaging to students (Prensky, 2006).

Although virtual worlds are good ways of communicating and interacting between students and teachers, this is not a substitute for actual face-to-face meetings. When using virtual worlds, there are the downsides in that you lose the body language and other more personal aspects. As shown in a study ~~in~~ (Chris Evans, Jing Ping Fan, Lifelong learning through the Virtual University, as cited in Wikipedia) that a majority of students have rejected the idea of a completely virtual mode of study. From a sound pedagogical perspective, learners still need teacher guidance and assistance in a variety of areas for their development (Wang, 2004).

## 4. Conclusion

People are enormously capable when given space and motivation (Galarneau & Zibit, 2007). As we can see, the studies showed the effectiveness and potential of virtual world in education, and the results are encouraging. Other research has also told us that computer games can be considered powerful tools for increasing learning (Dempsey, Lucassen, et al., 1998, as cited in Sugumaran, 2008). So, is learning in virtual world the way to go? Delwiche (2003) also reminded us that, in most situations, traditional methods of instruction will work just fine. Hence, to make learning more effective, it is wise to use more complete and wider variety in learning techniques. That is to integrate both traditional paper based and technology based methods. They can be complementing each other and hence a hybrid curriculum might be more desirable. Boud (1999) also pointed out that in designing courses, it is critical to constructively align learner's needs, teaching and assessment methods, taking into account socio-cultural factors: learner's attributes and economics to ensure efficiency and cost effectiveness. Technology can help, but it is not a substitute for, careful curriculum planning, inspired examples and good teaching paradigms (Stewart, Kemp & Batrum, 2001). It is clear that further research is required to explore the psychosocial benefits of learning in the complex but little understood virtual worlds. An evidence base should be built for researchers from different disciplines (De Freitas & Griffiths, 2007) and the implications for learning design should also be more closely studied. It is critical to understanding how effective learning can be achieved through proper integration between pedagogy, organization and technology.

The idea of using virtual worlds in education and training is relative new to most educators. Nevertheless, educators are

the main players in the struggle for positive educational change and must know how to decide on changes and how to implement them effectively. Pedagogical innovations and technical improvements in virtual worlds will lead to new ways of learning and new models of teaching. It is up to the creativity of educators and to extend the limits of using virtual worlds in learning. After all, what is worth fighting is ultimately the needs of learning among and caring for students.

Virtual worlds may soon become one of the most important forums for human interaction, on a level with telephones. In that role, they may induce widespread changes in the organization of Earth society (Castronova, 2001). Impact to learning and teaching practices is inevitable. Perhaps, what we really need most is a vision of what education will be like in the future. As the proverb says, as cited in Galarneau and Zibit (2007), "Vision without action is a dream; action without vision, a nightmare."

**References**

Bandura, A. (1991). Social cognitive theory of self-regulation. *Organizational Behavior and Human Decision Processes*. 50(2), 248-287.

Beavis, C. (2004). Good game: text and community in multiplayer computer games. In I. Snyder, & C. Beavis (Eds.), *Doing literacy online. Teaching, learning, and playing in an electronic world.* Cresskill, New Jersey: Hampton Press, Inc.

Beck, J. C., & Wade, M. (2006). T*he kids are alright. How the gamer generation is changing the workplace.* Harvard Business School Press.

Bitter, G. G., & Legacy, J. M. (2008). *Using technology in the classroom* (7th ed.). Boston, Mass.: Pearson/Allyn and Bacon Publishers.

Castronova, E. (2001). *Virtual Worlds: A First-Hand Account of Market and Society on the Cyberian Frontier* . Indiana University Bloomington - Department of Telecommunications; CESifo (Center for Economic Studies and Ifo Institute for Economic Research). Working Paper Series No. 618. [Online] Available: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=294828 (August 3, 2008).

Castronova, E. (2007). *Exodus to the virtual world: how online fun is changing reality*. Palgrave Macmillan.

Chan, J. (2006). Unhealthy Gaming Habits and Addiction. [Online] Available: http://www.ocf.berkeley.edu/~jenchan/index.html (December 9, 2008).

Cheng, Y. C., Chow, K. W., & Mok, M. M. C. (Eds.).(2004). *Reform of teacher education in Asia-Pacific in the New Millennium. Trends and challenges.* Kluwer Academic Publishers.

Childress, M. D., & Braswell, R. (2006). Using Massively Multiplayer Online Role-Playing Games for Online Learning. *Distance Education, 27*(2), 187-196.

Conrad, R., & Donaldson, J. (2004). *Engaging the online learner.* Jossey-Bass.

De Freitas, S., & Griffiths, M. (2007). Online gaming as an educational tool in learning and training. *British Journal of Educational Technology,* 38(3), 535-537.

Dede, C., Clark, J., Ketelhut, D., Nelson, B., & Bowman, C. (2005). *Fostering Motivation, Learning, and Transfer in Multi-User Virtual Environments.* Harvard Graduate School of Education. [Online] Available: http://muve.gse.harvard.edu/muvees2003/documents/Dede_Games_Symposium_AERA_2005.pdf (July 23, 2008).

Delwiche, A. (2003). MMORPG's in the College Classroom. *The State of Play: Law, Games and Virtual Worlds.* New York Law School. [Online] Available: http://www.nyls.edu/user_files/1/3/4/17/49/Delwiche.pdf (July 23, 2008).

English, F. W. (2000) *Deciding what to teach and test. Developing, aligning and auditing the curriculum.* Corwin Press, Inc.

Foreman, J., & Borkman, T. (2007). Learning Sociology in a Massively Multistudent Online Learning Environment. In D. Gibson, C. Aldrich, & M. Prensky (Eds.), *Games and Simulations in Online Learning: Research and Development Frameworks*. (pp. 49-58). Hershey, PA: Information Science Publishing.

Galarneau, L., & Zibit, M. (2007). Online Games for 21st Century Skills. In D. Gibson, C. Aldrich, & M. Prensky (Eds.), *Games and Simulations in Online Learning: Research and Development Frameworks*. (pp. 59-88). Hershey, PA: Information Science Publishing.

Gee, J. P. (2007). *What video games have to teach us about learning and literacy*. NewYork: Palgrave-McMillan.

Glasersfeld, E. V. (1989). Learning as a constructive activity. In P. Murphy, & B. Moon (Eds.), *Developments in learning and assessment.*The Open University.

Jakobsson, M., & Taylor, T.L. (2003). The Sopranos meets Everquest: Social networking in massively multiplayer

online games. *Proceedings of MelbourneDAC, the 5th International Digital Arts and Culture Conference*.

Jenlink, P. M., & Jenlink, K. M. (2005) *Portraits of teacher preparation: learning to teach in a changing America.* Rowman & Littlefield Education in partnership with the Association of Teacher Educators. Ketelhut, D. J., Dede, C., Clarke, J., Nelson, B., & Bowman, C. (2006). Studying situated learning in a multi-user virtual environment. In E. Baker, J. Dickieson, W. Wulfeck & H. O'Neil (Eds.), *Assessment of problem solving using simulations*. Mahwah, NJ: Lawrence Erlbaum Associates.

Kock, N. (ed)(2008). *Encyclopedia of E-Collaboration*. IGI Publishing. [Online] Available: http://common.books24x7.com.ezproxy.ied.edu.hk/book/id_13882/book.asp (December 9, 2008)

Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. New York: Cambridge University Press.

Law, F. (2005). *School Leaders Gear Up For 334: High Level Professional Input and Collaboration to Sustain the Change.* Speeches and Articles by Permanent Secretary for Education and Manpower Bureau of Hong Kong.

Lee, W.O. (1991). *Social Change and Educational Problems in Japan, Singapore and Hong Kong.* Macmillan.

Maddux, C., Johnson, D., & Willis, J. (1997). *Educational computing. Learning with tomorrow's technologies.* (2nd ed.). Allyn & Bacon.

Murphy, S. M. (2007). A Social Meaning Framework for Research on Participation in Social Online Games. *Journal of Media Psychology*, 12(3).

Prensky, M. (2006). *Don't Bother Me Mom – I'm Learning!: how computer and video games are preparing your kids for twenty-first century success and how you can help!.* Paragon House.

Reid, T.A. (1994). Perspective on computers in education: the promise, the pain, the prospect. *Active Learning*, CIT Support Service, Oxford, UK.

Sandholtz, J., Ringstaff, C. & Dwyer, D. (1997). *Teaching with technology. Creating student centred classrooms.* Teacher College, Columbia University.

Shepard, L. A. (1997). *Measuring achievement: What does it mean to test for robust understanding?* William H. Angoff Memorial Lecture Series. Princeton, NJ: Educational Testing Service.

Slator, B., Clark, J., Daniels, L., Hill, C., McClean, P., Saini-Eidukat, B., & White, A. (2002). Use of Virtual Worlds to Teach the Sciences. In L. Jain, R. Howlett, N. Ichalkaranje, & G. Tonfoni (Eds.), *Virtual Environments for Teaching & Learning*. World Scientific.

Steinkuehler, C.A. (2004). *Learning in Massively Multiplayer Online Games*. Paper presented at the International Conference of the Learning Sciences, Santa Monica, CA.

Stewart, T., Kemp, R., & Batrum, P. (2001). Computerised Problem-Based Scenarios in Practice – A Decade of DIAGNOSIS. In T. Okanoto, R. Hartlet, Kinshuk & J.P. Klus (Eds.) *Proceedings: IEEE International Conference on Advanced Learning Technologies.* 6-8 August 2001. Madison, Wisconsin, USA. IEEE Computer Society.

Sugumaran, V. (ed) (2008). *Intelligent Information Technologies: Concepts, Methodologies, Tools, and Applications*. IGI Publishing. [Online] Available: http://common.books24x7.com.ezproxy.ied.edu.hk/book/id_23490/book.asp ( December 9, 2008)

Wang, D. W. (2004). Enhancing interactivity and individualized learning in online learning environment: a literature approach. In R. Cheung, R. Lau, & Q. Li (Eds.), *New horizon in web-based learning*: proceedings of the third International Conference on Web-Based Learning (ICWL 2004), Beijing, 8-11 August 2004. World Scientific.

Weeden, P., Winter, J., & Bradfoot, P. (2002) *Assessment.* RoutledgeFalmer.

Williams, D., & Skoricon, M. (2005). Internet Fantasy Violence: A Test of Aggression in an Online Game. *Communication Monographs,* 72(2), 217–233.

Wikipedia (2008). Virtual World for education. [Online] Available: http://en.wikipedia.org/wiki/Virtual_world#Education (July 23, 2008).

Yee, N. (2006). The demographics, motivations and derived experiences of users of massively-multiuser online graphical environments. *Presence: Teleoperators and virtual environments,* 15(3), 309-329.

International Education Studies
www.ccsenet.org/journal.html
Vol. 2, No. 1
February 2009

# An Analysis on the Turnover of College Teachers in China from the Perspective of Institutional Economics

Zhaojun Zhang
School of Economics
Wuhan University of Technology 430070, China
School of international business
Inner Mongolia University of Technology 010051, China
E-mail: zzjnmgcn@sohu.com

*Funded project: The research is supported by the Foundation of the Eleventh Five-year Higher Education Plan of Inner Mongolia (NGYG06030)*

**Abstract**

Talents are the most important factor of all in the efforts to establish an innovative country. In universities and colleges, the bases for talent cultivation, the turnover of teachers in an explicit or recessive way calls for our urgent attention. This article aims at analyzing the complex causes of college teachers' turnover from the perspective of institutional economics including Limitation of Incentive Theory, Interests Relative Theory and Principal-Agent Theory. Besides, it puts forward some relevant measures to solve the current problem.

**Keywords:** College teachers, Turnover, Institutional economics

In order to establish a well-off society in an all-round way as well as an innovative country, talents, as the most important resources, have drawn greater attention than ever in China. In this current situation, colleges, rich in talents in different fields, are attracting more attention than others, hence a significant source of talent flow. Meanwhile, it should be realized that the lack of high-quality faculty will fail to cultivate talents with creativity and practical capabilities. Therefore, it is quite serious to put importance to the current turnover of teachers, analyze its basic causes and work out some relevant measures.

## 1. Definition and Classification of the Turnover of College Teachers

Here, the turnover of college teachers, different from the natural and healthy talent flow, refers to the vicious one, that is, a lot of talents qualified for their teaching career flow out of school or the education field while the persons who take the place are not sufficient in terms of quality, education background, capacities and so on, resulting in a general decline in faculty (Li, 2005). The turnover can be divided into explicit one and recessive one according to their different manifestations.

Explicit turnover refers to qualified teachers leave their posts for other places for study or work. According to the survey on the turnover of Chinese college teachers in 2004, as many as 96.6% of the teachers below 45 years old left their posts; so did 71.1% with intermediate and associate senior titles and 59.1% of the teachers with master's degree or above. In addition, 88.9% of the flowing teachers went abroad or to some developed areas, 78.8% went to foreign-funded enterprises and state-owned enterprises offering high wages, and also some opened their own business. (Xu, 2004)

Recessive turnover refers to some teachers, regardless of their current teaching responsibility, are devoted to secondary occupation instead of teaching and research activities because of their intention to leave school. According to the survey on six colleges in Central China, among teachers between 45 and 55 years old, 78% intend to do a part-time job in other schools, 46% have done or are doing part-time jobs, 28.5% are determined to do one if it is possible, 44.3% want to leave but are still worried or have no way to achieve that, only 27.2% of them don't want to leave their current job (Liu, 2007).

## 2. An Analysis on the Turnover of Teachers from the Perspective of Institutional Economics

There are a variety of explanations for teachers' turnover, including laggard regional economy, poor wages and welfare treatment, imperfect school management, unclear prospect for school development, individuals' high psychological

stress and so on. However, the conflict between colleges and individuals, between colleges' public-welfare goal and individuals' interests is the main cause for teachers' turnover.

*2.1 An Analysis Based on Public Product Theory*

From the macro perspective, as education belongs to tertiary industry, the education services provided by colleges are para-public products. On one hand, only some people have access to the currently limited education resources; on the other hand, the whole society will benefit from the increase in educated persons. Therefore, a "cost-shared" pattern has been adopted, in which government and individuals should pay for education expenses, that is, students and government pay for the educational products together.

Two features can be found in the transaction of para-public educational products, including the prices set by government and sale by the bale. First, in the transaction among government, students and colleges, students and colleges have nearly lost their rights to state opinions because government set the prices for colleges' services, control their educational expenses, lay down their standard of fees. In this way, colleges have no way to obtain higher price for their better services, hence restricting their own budgeting plans. Second, the education fees obtained by colleges are composed of government's allocation and students' tuition fees. Therefore, with their tuition fees paid, students have actually purchased all the educational services offered by their colleges.

In fact, the services enjoyed by the students are provided by specific teachers, different teachers' services are quite different in quantity and quality. Therefore, they should be paid according to their different services. However, our present transaction system has hindered transaction based on teachers' individual services. In China, teachers' wages is set according to their education background, length of service and qualification instead of their service quality. Failing to show the relations between ability and income, input and rewards, this allocation system will lead to equalitarianism in allocation as well as teachers' recessive turnover such as laziness and low efficiency.

*2.2 An Analysis Based on Limitation of Incentive Theory*

According to Limitation of Incentive Theory designed by Hurwiez, with individuals' goal not completely in agreement with that of their organizations, their interestss often come into conflict. Consequently, every economic man will act based on their own interests. There can be a system arrangement to put individuals' pursuit for their own interests into agreement with their organizations' efforts for maximized value, which is "Limitation of Incentive". It has been shown in modern economic theories and practice that it will solve the conflict between individual and collective interestss and put individuals' behavioral patterns in agreement with maximized collective value to follow "Limitation of Incentive" principle.

In reality, teachers have to face some basic issues such as survival and development, so they are economic men. Although they pursue security, self-esteem, emotion and social status, even unselfish devotion besides economic benefit, basic needs for survival and development as well as maximized individual economic benefit are still important for them.

However, according to China' Higher Education Law, colleges are intended for the national interestss and public interestss instead of profitss to cultivate advanced professional with creativity and practice. That is to say, colleges are not pursuing maximized economic interests as non-profits organizations, which go against teachers' goal for economic interests in market economy. In this situation, it is a rational choice for every economic man to leave school in order to achieve greater interests, resulting in the current explicit turnover of teachers.

*2.3 An Analysis Based on Interests Relative Theory and Principal-Agent Theory*

According to modern Principle-Agent Theory, agents have more knowledge about the information on the production, profits and cost of organizations, that is, "private information", than their owners. Due to the asymmetrical information structure, moral risks or reversed choices may happen before or after market transaction. While according to Interests Relative Theory, a production organization is just a dynamic agreement between human capital and non-human capital, which is adjusted in accordance with their respective value and risks (Zhou, 1996).

From the principle-agent perspective, the administrative staff and teachers from the basic principle-agent relationship, in which the former is the client appointed by government (as well as its agent) while the latter is the agent entrusted with teaching and research tasks. Because teachers have more "private information" and the administrative staff has little access to whether teachers work hard and to what extent they work hard, there is asymmetrical information structure here. Although they can assess teachers' workload in research and teaching roughly, it is not effective due to the difficulty or the high cost to conduct it. Therefore, as long as they have fulfilled the workload allocated to them, teachers will get their wages, with no risk of being fired. In a word, due to the current imperfect monitoring system in colleges, disagreement between teachers' wages and their contribution, their moral risks are inevitable, hence resulting in their insufficient efforts, poor teaching and research quality and a large number of teachers with a part-time job.

From the perspective of interest relatives, colleges, funded by national capital or other organizations, are educational service institutions offering public products for the whole society. Therefore, they can be viewed as dynamic agreements between government or other organizations as the owner of physical capital and teachers as that of human

capital. If a teacher raises his value by accumulating knowledge and experience, improving his academic and teaching level, he will long for more income as well as better teaching and research conditions provided by the physical capital owner driven by his profits-seeking nature as human capital. On the other hand, the owner of physical capital will ask for more and better services offered by more qualified teachers. In reality, however, college teachers' wages are adjusted in accordance with the national economy and social development instead of teachers' real value although some factors such as title and contribution have been taken into consideration. Consequently, once they can obtain more incremental revenue than current cost, teachers will refuse to sign the contract with their colleges or even violate it to leave school, or stop or cut down the input into teaching and research activities or even take a part-time job.

## 3. Institutional Measures against the Turnover of College Teachers

Trying to fulfill both the public-welfare and the individual goals, colleges' institutional construction should aim at establishing a complete and scientific system to encourage teachers to conduct their teaching and research activities smoothly.

### *3.1 Establishing a System of Governments' Long-term Input into Colleges*

Because education services are para-public products, both the society and students benefit from teachers' teaching activities. According to Cost Sharing Theory, government and students are bound to pay for that. But the total payment should be set in accordance with service providers' input and their demands for self-benefit, which is "Limitation of Incentive".

It has happened all over the world that the occupation as a teacher will be appealing and enjoy favorable reputation when teachers' wages lie in the top one third of all professionals with equal qualification, which can be regarded as an objective standard to set teachers' wages (Ma, 1998).

Although it has been laid down in China's Law of Teacher that the average wages of teachers should be no lower than that of civil servants, teachers' wages still seem too low generally, especially in those underdeveloped areas. Therefore, it is critical to establish a system of government's long-term input into colleges to ensure the dynamic regulation of teachers' wages based on market prices, to raise teachers' income referring to the whole society's average wages and those of other professionals and to improve teachers' overall treatment.

### *3.2 Establishing a Scientific and Effective Assessment System of College Teachers' Performance*

As the client, colleges are expected to obtain objective knowledge about teachers' efforts and performance in order to ensure efficiency and fairness in wage allocation. With the individual development of teachers in knowledge accumulation, teaching and research abilities, the agreement between the college and every teacher should be put into dynamic adjustment to reflect the changes in human capital's value. Teachers are in bad need of a scientific and effective system to base their wages on their performance. In addition, a new allocation method should be established, in which different wages are given according to different posts and workloads, in order to improve the utilization of resources and avoid recessive turnover of teachers.

### *3.3 Reinforcing Students' Dominant Role in Teachers' Performance Assessment*

Currently, the education services monopolized by government as well as a monotonous wage system are still popular in China. In spite of the assessment of teachers conducted in some colleges, the comments given by the administrators have been of dominance, emphasizing government's public-welfare goal while neglecting students' goal for their self-interests.

Actually, the primary target of teachers is students, and carrier of knowledge by teachers is also students. Students have the most direct and objective idea about teachers' performance. Therefore, the establishment of a scientific performance assessment system should intensify leading role of students in performance assessment, and an assessment mechanism with an integration of students, administrators and teachers integrated into a whole should be generated to realize process and result impartiality in income distribution of teachers.

## References

Li, Xingyun. (2005). *An Economic Analysis on the Turnover of College Teachers*. Education and Economy. (4): p36.

Liu, Rongbin. (2007). *On Countermeasures of Local College Teachers' Turnover in Central China.* Journal of East China Institute of Technology(Social Science). (1): p41.

Ma, Dan et al. (1998). *Problems and Countermeasures of Young Teachers' Turnover in Local Colleges*. Higher Education Research in Areas of Communications. (3): p27.

Xu, Shufeng. Chen, Guiying. (2004). *Causes and Countermeasures of the Turnover of Chinese College Teachers*. Dongyue Tribune. 25: p203.

Zhou, Qiren. (1996). *An Enterprise at Market: A Special Contract Between Human Capital and Non-Human Capital.* (6): pp. 71-72.

International Education Studies

www.ccsenet.org/journal.html

Vol. 2, No. 1

February 2009

# An Analysis of the Distribution of Student Financial Aid and Social Justice in China: a Quantitative Approach

Xiehua Zou

Department of Public Administration

China University of Geosciences (Wuhan)

388 Lumo Road, Wuhan, Hubei Province 430074, China

E-mail: xiehua.zou@gmail.com

*The research is conducted during the author's PhD study at King's College London, which was jointly financed by K.C. Wong Education Foundation, China Scholarship Council and British Foreign & Commonwealth Office.*

**Abstract**

The Chinese government's stated objective of student financial aid (SFA) policy is to help students from low-income families to access higher levels of education. This article first explores the possible associations between the distribution of SFA and students' various demographic and academic backgrounds. Then it presents the findings regarding students' experiences of the current SFA policy, according to the questionnaire data. Based on these findings, a path analysis is used to construct a quantitative model to explain what factors shape the distribution of SFA. This model to some extent, if not fully, explains the patterns of SFA distribution evident from the data; it also provides important implications for further investigation.

**Keywords**: Chinese student financial aid policy, Social justice, Quantitative methods

## 1. Introduction

In line with the global trend, China has been reforming its higher education (HE) system in the direction of sharing cost between government (or taxpayers) and individuals, and establishing student financial aid (SFA) schemes to maintain accessibility, especially for low-income and socially disadvantaged students (Johnstone, 1998; Shen and Li, 2003; Finnie, 2004). In the past two decades, most research studies on Chinese SFA policy have focused on changes in the types of SFA provided, increasing governmental investment on SFA schemes, and more beneficiaries of SFA. As a result, little is known about who have actually obtained SFA money and the social process that SFA money has been distributed.

In this article I concentrate on the impact of SFA distribution according to what I observed in research sites and establish how far these are consistent with the Chinese government's declared aim of establishing a just SFA system to help students from low-income families access higher levels of education. In particular I want to focus on the provision of SFA in terms of social factors and academic performance, and students' experience and attitudes toward the current SFA system in China. By shedding new light on these under-researched aspects of Chinese higher education (HE) policy and practice, I hope to make a contribution to thinking about possible future directions for the promotion of more socially just SFA policies and practices.

## 2. Method

China has one of the world's largest higher education systems in terms of both the number of institutions and the size of enrolment (Mohrman, 2003). While it is impossible to include all the institutions in a single study, a practical solution is to focus on a manageable sample based on a certain set of criteria. With this in mind, this article draws substantially on the empirical evidence from questionnaire surveys conducted in one university in central China during a field trip which involved both a questionnaire survey and semi-structured interviews. Where necessary, interview data are used to triangulate with the quantitative data. However, the analysis in this article is primarily quantitative.

180 undergraduates and 60 senior high school students were invited to participate in the questionnaire survey. The participating HE institution is the China University of Resources (CUR) (Note 1). The questionnaires were designed and field-tested at an earlier stage among a small group of students through email. In the light of the field-testing, the

questionnaires were revised to clarify ambiguities and amended to take account of omissions and unanticipated answers in multiple choice and ranking questions. The questions in the questionnaires reflected a number of key areas of enquiry: personal information including gender, socio-economic background, place of residence, and academic performance; personal experience of, and knowledge about SFA; perceptions of the role of SFA and attitudes towards the current SFA policies and practices. Finally the questionnaire also sought to find out possible reasons why students qualified to attend university did not pursue a university education.

Of the 180 first-year undergraduates from CUR who were sent questionnaires, 168 (93%) returned their completed questionnaires. No further efforts were made to contact those who did not return their questionnaires, due to time constraints.

I first used a Chi-square significance test to investigate whether there is any association between independent variables (socio-economic background, academic performances, etc.) and the distribution of SFA in CUR. The Chi square analysis indicates some possible trends in the data. Since these variables are interwoven, I took a further step in the analysis by using path analysis. Hypothesized causal connections between sets of variables were drawn from the previous Chi-square tests and relevant literature, and tested within the sample of CUR. The analysis was conducted by a computer statistical package (SPSS) and the result is represented by a path diagram. The analysis process is summarized in Figure 1.

## 3. The Distribution of SFA at CUR

### *3.1 Gender*

All Chinese universities are co-educational. At CUR, female respondents account for 34.5% of the students (see Table 1).

In looking at the distribution by gender, this survey indicates that SFA slightly favors female students, as Table 2 shows that 72% of male students obtained at least one form of SFA whereas a larger proportion, 88%, of females were funded by SFA. There is a significant association between the provision of SFA and gender with Chi square = 5.02, df = 1, p = 0.025 (Note 2). Thus it is a preliminary hypothesis that gender might affect the SFA distribution in CUR.

Hypothesis 1: Female students are more likely to obtain SFA.

Table 3 is based on the distribution of all the five types of SFA in terms of gender. Chi square tests show that gender is a significant factor in the distribution of scholarships (p=0.002).

Hypothesis 2: Female students are more likely to obtain scholarships.

### *3.2 Ethnicity*

China is a multi-ethnic country comprising 56 recognized ethnic groups. According to the latest Population Census in 2002, Han people form 91.6% of the total Chinese population whereas non-Han (minorities) comprise 8.4%. It is a coincidence that the sample in this study comprises 91.6% (152) Han and 8.4% (14) non-Han respectively (3 respondents refused to list their ethnicity). Of the minority respondents, 71.4% (10) were funded by SFA which is relatively lower than the Han group at 78% (see Table 7). More specifically, of minority students, none received a grant, 5 (35%) were awarded scholarships, 2 (14%) worked for study and 3 (21.4%) received student loans. However, a Chi square test shows no significant association between ethnicity and SFA distribution. Meanwhile, a significant relationship was found between the provision of scholarship and ethnicity (Chi square = 8.03, df = 1, p =.005). No significant associations were found between the provision of the other forms of SFA and ethnicity. Therefore, we may construct a preliminary hypothesis that:

Hypothesis 3: Minority students are less likely to obtain scholarship.

Given that most minority people live in the economically less developed west and southwest of China, and higher education is in general a heavier burden to them, the finding in the practice of SFA in CUR suggest that why less minority students get SFA and how they can survive their university without any financial supports still remain a matter of concern.

### *3.3 Place of Origin*

In this study the respondents' home residences are classified as rural and urban based on the Registered Resident policy (Hukou), by which Chinese people are officially divided into rural and urban residents by the government. According to the official statistics, more than 64% of the Chinese population is rural (National Bureau of Statistics, 2005).

The bulk of the respondents in this survey (114, 67.9%) were from rural areas, 53 (31.5%) were from urban locations and one respondent did not to answer. Of the rural students, 92 (80%) received at least one type of SFA. Meanwhile 36 (69%) urban students received SFA. Chi square tests show no significant relationship between place of origin and provision of SFA. The survey also shows that 13 (11.4%) of rural and 1 of urban (1%) students received grants; 73

(64%) rural and 33 (62%) urban students were awarded scholarships; 24 (39%) rural students worked for study whereas only 3 (5%) of the urban students worked; 26 (22.8%) rural and 4 (7%) urban students received a student loan. A Chi square test shows that place of origin is a significant factor in the distribution of work-study opportunities (p=0.038). Therefore, a preliminary hypothesis is

Hypothesis 4: Rural students are more likely to obtain work-study opportunities.

*3.4 Parental Occupation*

Parental occupation is another factor which may influence the SFA distribution (Callender and Willkinson, 2005; Lau, 2001). Based on some previous studies (e.g. Lu,2002), in this study I classify the common careers in current China into: public administrator, e.g. high-rank officials in government and armed forces; capitalist, e.g. those owning businesses which employ more than 8 persons; manager and professional, e.g. managers, doctors, lawyers, teachers, technicians, engineers, journalists; the petit bourgeois, e.g. those self-employed or owning small businesses which employ less than 8 persons, shopkeepers, grocers, garage owners, etc; routine white collar workers e.g. clerical workers, shop assistants, low-rank officials in government and armed forces; farmers; manual workers, e.g. workers in manufacturing, plumbers, bus and taxi drivers,; and those who are unemployed.

Table 5 provides an account of the SFA distribution by parental occupation. Of the 168 students from CUR, 161 provided their parent's occupations. No significant association was found by a Chi square test between parental occupation status and the distribution of SFA in CUR, but there are significant associations between parental occupation and the distribution of grant (p=0.044) and student loans (p=0.08). Thus I hypothesize accordingly:

Hypothesis 5: Students with lower parental occupational status are more likely to receive grants and student loans.

Over 65% of them came from farmers' and manual workers' families and some of their parents were unemployed. The survey shows that 83% of these students were funded by SFA schemes. Since these groups of people are usually at the bottom of Chinese society in terms of income, how they afford the more and more expensive HE without any SFA triggered my interest. Therefore, I invited some of these students to participate in my interviews. Another figure in Table 5, which might be a reason to identify and examine the SFA selection criteria that are used in practice, is the high percentage of students from public administrator's families who were funded by SFA schemes (83%). Obviously, in most cases, these students are not needy. So why can so many of them get SFA? Is it because their parents are influential people or because of some other reason? So far the answers are still largely unknown. And I will be investigating these questions using interviews.

*3.5 Income*

The current study classifies the income groups into the lowest (under 2,400 Chinese Yuan per year), low (between 2,400 Yuan and 12,000 Yuan per year), medium (12,001 Yuan to 60,000 Yuan per year) and high (higher than 60,000 Yuan), which is based on previous researches on social stratification in China (e.g. Lu, 2002), and the official statistics on incomes of Chinese people (National Bureau of Statistics, 2003).

Table 6 shows the detailed income groups in the student sample. Of the respondents, 6 did not answer and 29 answered that they did not know their family incomes. More than half of those who said they knew their family incomes (53%) came from low-income families (13.7% and 39.3% come from lowest and low-income families respectively), whereas 41 (24.4%) were from middle income families and 3 (1.8%) were from high-income families. Table 6 also shows that 17 (74%) of students from the lowest income families were funded by SFA, whereas 50 (74%), 34(83%) and 2 (66.7%) of the low, medium and high income students respectively received SFA. A Chi square test shows no significant relationship between income and the provision of SFA. However, when all the different kinds of SFA were aggregated, the distributions of grant (p=0.019), work-study (p=0.014) and student loan (p=0.005) relate significantly to the student's household income, which are revealed by Chi square tests. A preliminary hypothesis here is that

Hypothesis 6: Students from lower income group are more likely to obtain grant, work-study and student loan.

As the data indicates, despite the fact that more than half of respondents were funded by SFA schemes, a considerable proportion of low-income students still did not get any SFA in CUR, which suggests that the main objective of SFA which according to the government is to aid needy students is not being fully achieved (MoE, 2002). More specifically, although 53% of the SFA was received by those who are from low-income families (Table 6), there were still 26% from very low income families, including 50% of those without any income, who did not receive any SFA. Interview data with these low-income but unfunded students reveals two possible causes: the first is that the student failed in one of the examinations the previous term and therefore was deprived of the opportunities of applying for SFA; the second is that students could not obtain a "low-income certificate" from their local governments, which is a condition of eligibility for applicants for work-study, tuition waiving, student loans and grants. In addition, students may not have been awarded scholarships if they did not get a good enough result in tests. One reason for not obtaining a "low-income certificate", mentioned by one respondent, is the bad relationship between his family and the chief official of local government

(Interview with Li, an undergraduate from CUR, 2005).

*3.6 Academic Performance*

The entrance of undergraduates to HEIs in China is based on their scores in the National Matriculation Examination (NME) and also on a quota system. Generally, Chinese universities carry out a policy of "entering with difficulty but graduating easily". The vast majority of students will pass the examinations for graduation relatively easily. Due to this fact, we find only one student in the research who thinks he himself cannot pass most of the examinations (see Table 7).

A Chi square test shows a significant association between academic performance and the distribution of SFA (Chi-square=17.140, df=3, p=.001). Given that one student can get more than one type of SFA, all the 7 "excellent" students who often got 91-100 marks in the exams obtained financial supports. 6 (86%) of them were awarded scholarships, whereas 2 (29%) worked for study, 2 (29%) received student loans and 1 (14%) got grants. Of the 49 students who got 81-90 marks, 42 (86%) were funded by SFA schemes, 4 (8%) got grant, 32(65%) obtained scholarships 8(16%) worked for study and 9 (18%) received loans. The largest proportion of respondents got between 71-80 marks (74, 44.6%). Of these students, 60 (81%) obtained one kind of SFA, 5 (7%) got grants, 53 (71%) were awarded scholarships, 13 (17%) got positions of work-study and 13 (17%) were funded by student loans. Among 33 students who often got 61-70, 17 (51%) were funded by SFA, 3 (9%) got grants, 13 (39%) obtained scholarships, 4 (12%) worked for study and 4 (12%) received loans (See Table 11). Chi square tests show that academic performance is a significant factor in the distributions of grant (p=0.015) and scholarship (p=0.011) A preliminary hypothesis, therefore, is:

Hypothesis 7: Students who obtain better academic performance are more likely to obtain grants and scholarships.

From the data analysis here, it appears that the students' academic performance has an effect on the distribution of SFA in CUR to some degree. More specifically, the information elicited from the data suggests that those who perform better in academic examinations seem to get more chances to obtain SFA in CUR (Mathematically, 100%>86%>81%>51%, see Table 8). All the students getting the highest scores in examinations claim that they were funded by SFA schemes. The possibilities of those who often get 81-90 and 71-80 are not significantly different. Meanwhile, those who often get 60-70 look much less likely to obtain SFA, since the distribution of SFA in this group of respondents is lower than the average level at 78%. A preliminary hypothesis here could be:

Hypothesis 8 Good academic performance helps to obtain SFA.

With regard to the correlation between social factors and students' academic performance, both Chinese and western research communities suggest there is a connection, to some extent, between them (Shen and Li, 2003; Lau, 2001). However, based on the data collected in CUR in this study, Chi square tests show that there are no significant correlations between the students' socio-economic backgrounds and their academic performance in the sample of CUR.

*3.7 Applied or not*

In this questionnaire survey, I also included a question of whether the respondent applied for SFA or not. By asking this question, I was attempting to provide a general picture of the students' demands for SFA and who demand for it. Furthermore, the responses to this question may indicate whether there is a gap between the students' demand and the current provision of SFA. In addition, whether the respondents applied for SFA may to some extent indicate the intentions of students, which obviously affects the distribution of SFA.

Of all the respondents, 123 (73%) claimed that they applied for at least one type of SFA, whereas 45 (26%) claimed they did not apply for any SFA. Table 9 provides a summary of who applied for SFA and who did not. Chi square tests show that no significant differences were found in the responses of different groups of students to the item "I applied for SFA schemes."

With respect to those who did not apply for any SFA, I left an open question in the questionnaire to investigate the reasons for not applying. In this group of respondents, 33% (15 of 45) did not answer the question "why didn't you apply for SFA?", whereas the rest of them gave various answers. More specifically, 37% (16 of 45) thought their families could afford their university education, and thus it was not necessary to apply for SFA. 18% (8) thought there were many other students who might be needier than themselves and they should not compete with these students. 7% (3) claimed that they did not apply for SFA because they did not know the application procedure. 4% (2) said they did not apply for SFA just because they would rather "rely on themselves" than "the country". Another 4% (2) stated the number of SFA awardees was so limited that they were not confident to compete with others. The other reasons why the students did not apply for SFA mentioned by the respondents include the following:

The application costs too much time and energy;

The student could not get a "certificate of low-income", which was necessary for applying for SFA, because of their family's bad relationship with the local government;

The burden of repayment was too heavy to apply for a student loan;

The student failed once in an academic test;

None of SFA schemes provided enough money.

Table 10 reveals that of those who applied for SFA, 111 (90%) received at least one financial aid. A Chi square test also shows there is a strong association between whether a student applies for SFA and whether s/he can get it (p= .000).

However, it is noteworthy, reflecting on the responses from CUR, that 14% of students who received SFA (18 of 129) did not claim that they applied for it. A Chi square test shows that, among the forms of SFA, the distribution of grant is not significantly associated with application. On the face of it, this looks surprising because all the SFA schemes require applications (MoE, 2002; Shen and Li, 2003). The collected quantitative data cannot explain this phenomenon significantly, and therefore it raises a question: "why did some people get assistance without applying for it?" This was explored in interviews which will be analyzed in my following writings.

*3.8 Effects of SFA Policy: Students' Perspective*

One of the purposes of the questionnaire survey was to find out whether the SFA schemes provide enough money for the students to survive. In their responses, 36 (21.4%) respondents agreed that the SFA covers their tuition costs, whereas 61 (36.3%) students insisted SFA could only cover their living expenses. Besides, some individual respondents said that SFA could cover both tuition and living expenses; however, this group was not statistically significant. A large proportion of respondents who were funded by student loan (28 of 30, 93.3%) thought student loans could cover their tuition fees successfully. However, the other kinds of SFA were relatively small. Respectively, the highest amounts of grant, scholarship, and work-study received by the respondents were 700, 6,000 and 1,200 Chinese Yuan annually, and each of these highest amounts was obtained by only one respondent. Meanwhile the average tuition and the average total university cost in CUR are 5,400 and 11,300 Yuan annually respectively.

There is no uniformity in the 124 respondents' opinions about whether they could survive well on the money provided by SFA schemes. 49 (39.5%) think the money is enough, whereas 40 (32%) argued that they did not get sufficient money. Among these satisfied students, a significant proportion (15, 30%) was funded by student loan, which implies the student loan might be an effective form of financial aid in terms of the amount of money it provides.

More specifically, among those from low-income families, 39% of them claimed to be satisfied with what SFA provides, whereas 29% did not. 40% of rural students agreed that they could survive their university lives on SFA. Meanwhile, those from middle-income families (30%) and urban students (36%) were less satisfied with the amount that SFA provides. One possible reason for this may be that those from urban and middle income families spend more money on their university lives, demonstrated by investigating the cost of university in this study. In other words, rural and urban students may have different expectations of the amount of money they will get from SFA.

Given that more than 77% of respondents in CUR received financial support from SFA schemes, about 38% of them worried about their financial status constantly, according to the survey (Table 11). More specially, all the 7 grantees (100%), 40 of 107 scholarship awardees (37%), 6 of 27 working for study (22%) and 13 of 30 loan receivers (43%) still worried about their financial status. In addition, it needs to be noted that 79% (49) of those in trouble with money were from rural areas, which also supports the previous finding that rural students need more help.

Also it is noteworthy that, among those who did not get any financial aids, 32.4% (12 of 37) of them claimed that they were in financial trouble, whereas 17 (46%) of them felt they could afford university and the other 8 (21.6%) were neutral on this question. However, most students (74.4%) insisted on continuing their study in spite of facing the stress of insufficient financing (See Table 12).

While one can argue that the students' academic performances are not necessarily due to their socio- economic backgrounds, the students' low-income statuses to some extent have negative effects on their academic performances. In the current study, 102 of the total 166 respondents agree that they may get better academic results in study if they do not need to worry about their financial status, of which 78 (76%) are from rural areas. The distinction between rural and urban students' reflections can be understood if it is borne in mind that generally rural students are less well off than urban students.

It emerged that the authorities (the government and university) have operated some measures to promote the SFA schemes to undergraduates. This is indicated in Table 14 which shows that about 45.2% of respondents understand the provision of SFA. Chi square tests indicate that in CUR, there are significant associations between the students' knowledge of SFA provision, their ethnic backgrounds (p=.032) and their household incomes (p=.008). Meanwhile, no significant associations were found between knowledge of SFA provision and other independent variables such as academic performance, gender and place of origin. When trying to identify the connections between knowledge of SFA provision and whether the respondents can get SFA, no significant association was reported by a Chi square test. Accordingly, a hypothesis here is:

Hypothesis 9: Han students and students from lower income families better understand what SFA schemes provide.

Table 14 also shows that more than fifty percent of respondents from CUR do not understand the procedure of applying for SFA. There are significant associations between knowledge of application procedures and students' gender (p=.020) and places of origin (p=.024), whereas no significant associations were reported by Chi square tests between other independent variables (academic performance, income, parents' occupation, etc.) and the students' knowledge of application procedures. A Chi square test also indicates there is a strong association between the knowledge of provision and receiving SFA (p=.016). Among the five forms of SFA, the distribution of student loan significantly associates with the knowledge of procedure (p=.000). Accordingly, preliminary hypotheses are:

Hypothesis 10: Female and rural students understand the SFA application procedure better than other students.

Hypothesis 11: Those who understand the application procedure are more likely to get SFA

Hypothesis 12: Those who understand the application procedure are more likely to get a student loan.

The data reveals that, within the sample of CUR, there is a strong correlation between the students' knowledge of SFA provision and the application procedure (p=.000). We may assume that students who know what SFA provides are more likely to try to understand the application procedure.

Hypothesis 13: Students who know what SFA provides are more likely to try to understand the application procedure.

The information collected about whether students feel shame about receiving SFA indicates another traditional Chinese viewpoint that intellectuals can be poor in material living but should be rich in spirit. Only 7.2% of the respondents felt shameful if they had survived on SFA, whereas most students received SFA without any psychological barriers. The cross tabulation analysis also reveals that feeling shame on living on SFA is not a reason for not receiving SFA, since only 2 of those without any SFA feel shame on surviving on SFA (Table 15).

*3.9 Path Analysis*

To provide estimates of the magnitude and significance of cause and effect relationships among variables, I applied a path analysis in this study (Webley and Lea, 1997). A series of assumptions are necessary for using path analysis technique with the appropriate rigor. The first of these assumptions is that all variables are measured in an interval scale (Blalock, 1979; Muijs, 2004; Bento and Bento, 2004; Webley and Lea, 1997). However, most of the variables in this study are measured in either ordinal or nominal. One of approaches to this problem that researchers often use is to "adapt or modify the technique by obtaining interval-like (dummy) variables, e.g. converting nominal variables to yes-no, 0-1; and computing interval correlations" (Blalock, 1979; Bento and Bento, 2004). Therefore, in this study, I recoded all the nominal and ordinal variables as dummy variables and assumed that treating them as if they were interval had not introduced distortions to the computations of the correlation coefficients (Blalock, 1979; Muijs, 2004; Bento and Bento, 2004). The order of variables in the path analysis is based on the hypotheses which were obtained previously.

Based on Hypothesis 1, 8, 9, 10, 11, 13, I firstly constructed an input path diagram to indicate possible connections between student's receiving SFA and the other variables (Figure 2). The arrows in the model indicate expected causal connections between variables and each p donates a casual path. For example, the model proposes that gender has a direct effect on whether a student can obtain SFA. Meanwhile, an indirect effect of gender on receiving SFA is also proposed: gender affects the students' knowledge of application procedure, which in turn affects the student's receiving SFA. The arrow from e1 donates the amount of variance in receiving SFA that is unexplained by all the considered variables in this model. This error term points to the fact that there are other variables that have an impact on the distribution of SFA, but which are not included in the path diagram (Bryman and Cramer, 2001).

In order to provide estimates of each of the postulated paths, path coefficients are needed to be computed by setting up several equations, which stipulate the structure of hypothesized relationships in a model (Bryman and Cramer, 2001). In this study, four equations can be drawn:

Knowledge of Provision (K1) =x1Ethnicity + x2Income+ e2

Knowledge of Procedure (K2) = x3 K1 + x4Gender+ x5Place + e3

Income=x6 Occupation

Receiving SFA =x4Gender+x3K2+x7Academic + x8Application+e1

The above equations also can be treated as regression equations and all the path coefficients and errors can be computed by conducting regression analysis. The following Figure 3 reports the result of path analysis. In order to compare the overall impact of one variable with the others on whether a student could get SFA, I added the direct effects of a variable to its indirect effects as following:

Total effect of Gender =p1 + (p2) (p8) = -0.1

Total effect of Ethnicity = (p3) (p7) (p8) = 0.002

Total effect of Parental Occupation = (p10) (p4) (p7) (p8) =- 0.001

Total effect of Income = (p4) (p7) (p8) = 0.005

Total effect of Place of Origin= (p5) (p8) = 0.003

Total effect of Academic Performance=p13 = 0.178

Total effect of Application= p6 = 0.5

Total effect of Knowledge of Provision= (p7) (p8) = 0.0172

Total effect of Procedure = p8 = 0.04The results of path analysis corroborate the previous hypothesis 1, 8, 13. Within the sample of CUR, the student's gender and academic performance are correlated with the distribution of SFA significantly, and the student's knowledge of SFA provision is correlated with the knowledge of application procedure. The total effect of gender, which is negative, means the female students are more likely to obtain SFA schemes in CUR. Compared to social economic factors, academic performance is more influential in the distribution of SFA in CUR. The path analysis also partly corroborates the hypothesis 9, that the students who come from lower income groups are more likely to understand what SFA schemes provide. In the meantime, the value of p2 is positive, suggesting that the situation in CUR is contrary to what is suggested hypothesis 10. More specifically, male students in CUR are more likely to understand the SFA application procedure. It is also noteworthy that the effect of application on the distribution of SFA is 0.5 (p6). This corroborates a previous result of cross tabulation analysis that some students in CUR obtain SFA without applying for it. Obviously, it is not in line with what the government declared: "Every eligible student should apply for financial aids via their universities" (MoE, 2002).

The path analysis, to some extent, helps to understand the SFA distribution in the data set. The picture presented here suggests that among the analyzed variables, academic performance plays a more significant role than the others in the SFA distribution in CUR (p=0.178). In other words, with appropriate caution in exaggerating the significance of each variable, it is a possible argument that SFA selection in CUR seem to be performance-oriented rather than socio-economic-oriented. It is also reinforced by the data from interviews. Many interviewees told me that one of the main reasons they cannot get financial support is their scores in exams, no matter whether they are needy or not. As mentioned above, in CUR, if a student failed in one course during the past year, s/he cannot obtain any SFA except for the student loan.

On the one hand, if students' academic performance is more significant than social factors in the SFA selection, as the analysis which I have made in this chapter suggests, I would argue that this is not because of Chinese government policy, according to the literature review and empirical data collected in CUR. According to the MoE, although scholarships are established to reward those who perform well in academic fields, the other kinds of SFA are to ease the financial burden of poor students (MoE, 2002). On the other hand, I would argue that the reasons why SFA selection in practice is academic performance oriented are plural. One possible reason implied by the interview with SFA administrator in CUR is that the university has not enough money to fund every needy student, although CUR endeavors to establish a large fund for SFA schemes. "There are too many poor students in CUR," said the administrator, "and it is impossible for the university to get enough money to fund every one of them" (Interview with SFA administrator of CUR, 2005). And thus CUR has to make the SFA selection competitive. In addition, a student interviewee mentioned that it was hard to identify the exact financial status of SFA applicants, since nobody went to the applicants' hometown to investigate. According to this informant, another reason why the university selects SFA recipients according to academic performance is just because it is much easier to do so (Shen and Li, 2003; Interview with Li, an undergraduate from CUR, 2005).

However, the results of path analysis do not corroborate the hypothesis 11 and only partly corroborate hypothesis 9 and 10. That is, the student's knowledge of SFA application procedure is not correlated with the distribution of SFA (p8=0.04). It is an interesting puzzle that the students obtained SFA but did not even quite understand the application procedure! Besides, ethnicity does not affect the student's knowledge of SFA provision significantly (p3=0.092). Place of origin does not affect the student's knowledge of SFA application procedure, according to the path analysis (p5=0.083). It is also noteworthy that the model in the path analysis leaves a relatively big proportion of variation unexplained (p9=0.664).

That some possible connections between variables are not corroborated by the path analysis may be in part because the sample size is not big enough to enable me to infer significant relationships among some of the variables (Muijs, 2004). In part the unconfirmed relationships might result from the respondents' misunderstanding of the questions in the questionnaire. For example, they might understand the "application procedure" as the "selection procedure". Besides, to restate the obvious, while it has much to offer, path analysis has its own limitations (Bryman and Cramer, 2001). In this study, I am forced to rely on the theoretical ideas and "commonsense notions for hypothesizing about the likely

sequence of the variables" in the SFA distribution in China. It is possible that the conceptions of time ordering were "faulty" and the ensuring path diagram was misleading (Bryman and Cramer, 2001). Therefore, it is quite possible that some relationships do exist among variables, but have not been corroborated or revealed by this analysis. For example, some previous studies suggest that student's receiving SFA and their academic performance are deemed to be correlated (Lau, 2001, Shen and Li, 2003). That is, in Figure 2 and 3, the link between "Academic performance" and "Receiving SFA" is supposed to be indicated by an arrow with two heads. However, since respondents are the first year students, an effect of students' receiving SFA on their academic performances, which may occur in subsequent years, was not revealed by this study.

Another possible reason for the large variance left by the path model is that the model does not include all relevant factors, given that the distribution of SFA in China is very complicated. To identify such factors I have also included some relevant questions in the semi-structured interviews, which are going to be analyzed in my future work.

**4. Some Preliminary Conclusions on the Questionnaire Data**

In this article, I have been attempting to provide a descriptive account of SFA distribution in CUR and students' experience and attitudes towards SFA. In doing so, I examined the aspects of distributional and procedural justice in SFA distribution. The responses of 168 undergraduates from CUR were analyzed. Several findings have emerged from the data.

In terms of distributive justice, despite SFA schemes in CUR benefiting more than 77% of the respondents, a considerable proportion of needy students still have not been funded. According to the data from CUR, 26% of the lowest income respondents did not receive any SFA. Responses to the question about the reasons for those who were qualified but did not enter university also imply that the students' low financial status is still an important factor in their decision to withdraw from higher education. One possible reason for this situation, which is suggested by the data, is that SFA selection is academic performance oriented. Yet little is known as to whether there are any factors affecting SFA allocation more significantly than the students' academic performance. We do know it plays a more important role than the socio-economic factors in SFA selection, based on the data analyzed so far. I am not arguing that the criteria of SFA selection should be needs based or performance based. I am saying that the practice in CUR by no means conforms to the "just principle" of the SFA policy which is claimed by the Chinese government as:

"(the government's) aim is to guarantee that every qualified but needy student enter the university and no students quit from university for financial reason… Targeting the needy students, the government endeavors to establish a system of financial aids…" (MoE, 2002)

Considering that the university education is expensive, how students from low-income families survive their university in CUR without any aids remains a matter of concern.

With respect to procedural justice, authorities (the government and HEIs) declared SFA to be open to every student (MoE, 2002). However, it seems difficult to conclude that the implementation of SFA is open and transparent in the light of the lack of knowledge about the SFA procedure claimed by the vast majority of respondents. Furthermore, if the "explicit rule" of SFA selection in CUR is based on economic need, the data analysis in this chapter implies that there might be some "implicit rules" affecting the SFA distribution. One of them may be academic performance, since it accounts for about 16% of variance in CUR.

In summary, the questionnaire data analysis, on the one hand, generated an overall picture of SFA in CUR, which suggests that SFA schemes have benefited a large portion of students of CUR, whereas there are many students with lower socio-economic status, who are supposed to be funded by SFA, but have not obtained any aids. Furthermore, both Chi square tests and the path analysis imply that the student's academic performance plays a more significant role than social economic factors in the selection of SFA schemes in CUR, which is not in line with the selection principle of SFA declared by the government.

On the other hand, the quantitative analysis in this chapter has encouraged me to try to make the picture clearer through following up with qualitative work. The earlier cross tabulations indicated some possible trends in the SFA distribution in CUR, e.g. Children of public administrators may be disproportionately benefiting from financial aid, as well as that 14% of students who did not apply for financial aid received it. It is also a puzzle that a relatively large proportion of students did not even know quite what SFA schemes provide and how to apply for them but nevertheless received them. Moreover, in this survey, some respondents mentioned problems getting certificates of low-income, which prevent them from applying for SFA. These trends were not confirmed by the later path analysis, which may be in part because the sample size was not big enough, in part because some of the respondents might have misunderstood the questions in English. Nevertheless, just because I cannot draw firm conclusions about these trends, it does not mean they do not exist.

Moreover, the path analysis left a relatively large proportion of variance unexplained, which implies that some factors are affecting the distribution of SFA but are not covered in the questionnaire. In some cases, the student's subject of

learning may affect the probability of receiving SFA. It is also possible that, as highlighted in many other relevant researches, some wealthy students "buy" university places, and some influential parents use their social connections to gain places for their children (e.g. Mohrman, 2003). This so called "back door entry" may also exist in the distribution of SFA.

It was with these issues in mind that in-depth semi-structured interviews were conducted afterwards. In my future writings, I will look at the interview data to seek answers to the questions thrown up by the questionnaire data analyzed in this article.

**References**

Bento, A. and Bento, R. (2004). The Use of Causal analysis techniques in information systems research: a methodological note, in *Journal of Information Management*. Vol. XV, No. 3-4, 2004, 45-51.

Blalock, H.M, Jr. (1979). *Social Statistics* (2nd ed.), New York: McGraw-Hill book Company.

Bryman, A and Cramer, D (2001). *Quantitative data analysis with SPSS release 10 for Windows*. London: Routledge.

Callender, C. and Wilkinson, D (2005). *2002/03 student income and expenditure survey*. Research Report No.487, London: London South Bank University.

Finnie, R. (2004). *Student financial aid: the roles of loans and grants*. Working paper No.37, Queen's University of Queens.

Johnstone, D. B. (1998). *The financing and management of higher education: a status report on worldwide reforms*. Washington: The World Bank.

Lau, H. (2001). *Financing of higher education in Malaysia : an equity and efficiency analysis of student loans and scholarships*. Ph.D. Thesis, Institute of Education, London.

Lu, X. (2002). *Report on the Stratification in Current Chinese Society*. Beijing: Social Science Literature Press.

Ministry of Education (2002). *Answers to frequently asked questions about student financial aid policy.* Beijing: Higher Education Press.

Mohrman, K. (2003). Higher Education Reform in Mainland Chinese Universities Available: http://www.jyb.com.cn/gb/23/zy/jryw/8.html.

Muijs, D (2004). *Doing quantitative research in education with SPSS*. London: SAGE.

National Bureau of Statistics, PRC (2003). *China Statistical Yearbook 2002*. Available: http://www.stats.gov.cn/yearbook2002.html.

National Bureau of Statistics, PRC (2005). *China Statistical Yearbook 2004*. Available: http://www.stats.gov.cn/yearbook2004.html.

Shen, H and Li, W (2003). *A Review of the Student Loans Scheme in China.* Bangkok: UNESO.

Webley, P. and Lea, S. (1997). *Advanced Statistics: Multivariate Analysis*, Available: http:// www.exeter.ac.uk/~SEGLea/multvar2/pathanal.html.

**Notes**

Note 1. A pseudonym.

Note 2. The cut-off point for the significance level in this study is 0.05.

Table 1. Gender distribution of those who returned questionnaires

| Gender | Numbers | Percent |
|---|---|---|
| male | 110 | 65.5 |
| female | 58 | 34.5 |
| Total | 168 | 100.0 |

Table 2. Gendered Provision of SFA (1)

| | | gender | | |
|---|---|---|---|---|
| | | male | female | Total |
| aid | yes | 78 | 51 | 129 |
| | no | 30 | 7 | 37 |
| Total | | 108 | 58 | 166 |

Table 3. Gendered Provision of SFA (2)

| aids / gender | grant | scholarship | work-study | Student loan |
|---|---|---|---|---|
| female | 2 (3%) | 46 (79%) | 12 (20%) | 8 (13%) |
| male | 12 (11%) | 61 (56%) | 15 (13%) | 22 (20%) |

Table 4. Aid- ethnicity Cross Tabulation

| | | ethnicity | | Total |
|---|---|---|---|---|
| | | han | non-han | |
| Receiving aid | yes | 118 | 10 | 128 |
| | no | 33 | 4 | 37 |
| Total | | 151 | 14 | 165 |

Table 5. Parental Occupation and SFA Distribution

| Parental occupation | Receiving aid | | Total |
|---|---|---|---|
| | yes | no | |
| Public administrator | 5 (83%) | 1 | 6 |
| Capitalist | 1 (33%) | 2 | 3 |
| Manager and professional | 16 (76%) | 5 | 21 |
| The petite bourgeois | 9 (64%) | 5 | 14 |
| Routine white collar | 7(64%) | 4 | 11 |
| Manual worker | 18 (78%) | 5 | 23 |
| Farmer | 65 (84%) | 12 | 77 |
| Unemployment | 4 (80%) | 1 | 5 |
| Others | 1 | 0 | 1 |
| Total | 126 | 35 | 161 |

Table 6. Income Groups and SFA Distribution

| Income group/ Annual Income | | Numbers | Percent | SFA received |
|---|---|---|---|---|
| missing | | 6 | 3.6 | 4(3%) |
| Lowest income | no income | 4 | 2.4 | 2(1.5%) |
| | less than 2400 | 19 | 11.3 | 15(11.6%) |
| Low income | 2401-7200 | 35 | 20.8 | 30(23.3%) |
| | 7201-12000 | 31 | 18.5 | 20(15.5%) |
| Medium income | 12001-24000 | 27 | 16.1 | 25(19.4%) |
| | 24001-60000 | 14 | 8.3 | 9(7%) |
| High Income | 60001-120000 | 3 | 1.8 | 2(1.5%) |
| don't know | | 29 | 17.3 | 12(9.3%) |
| Total | | 168 | 100.0 | 129(100%) |

Table 7. Marks that the respondents often got in examinations

| Performance | | Numbers | Percent (%) |
|---|---|---|---|
| | 91-100 | 7 | 4.2 |
| | 81-90 | 49 | 29.2 |
| | 71-80 | 75 | 44.6 |
| | 60-70 | 33 | 19.6 |
| | less than 60 | 1 | .6 |
| | Total | 165 | 98.2 |
| | Missing | 3 | 1.8 |
| Total | | 168 | 100.0 |

Table 8. Academic Performance and SFA Distribution

| Academic Performance | Receiving SFA | | | | Total |
|---|---|---|---|---|---|
| | Grant | Scholarship | Work-study | Student loan | |
| 91- 100 | 1 (14%) | 6(86%) | 2 (29%) | 2(29%) | 100% |
| 81-90 | 4(8%) | 32(65%) | 8(16%) | 9(18%) | 86% |
| 71-80 | 5(7%) | 53(71%) | 13(17%) | 13 (17%) | 81% |
| 60-70 | 3(9%) | 13(39%) | 4(12%) | 4(12%) | 51% |
| Less than 60 | 0 | 0 | 0 | 0 | 0 |

Table 9. Who did apply for SFA?

| Demographic and academic backgrounds | | Applied for SFA | | Total |
|---|---|---|---|---|
| | | yes | no | |
| Gender | Male | 76(69%) | 34(31%) | 110 |
| | Female | 47(81%) | 11(19%) | 58 |
| Ethnicity | Han | 114(74.5%) | 39(25.5%) | 153 |
| | Non-han | 8(57%) | 6(43%) | 14 |
| | Missing | 1 | 0 | 1 |
| Location of origin | Missing | 1 | 0 | 1 |
| | Rural | 88(77%) | 26(23%) | 114 |
| | Urban | 34(64%) | 19(36%) | 53 |
| Parent's occupation | Public administrator | 4(66.7%) | 2(33.3%) | 6 |
| | Capitalist | 2(66.7%) | 1(33.3%) | 3 |
| | Manager and professional | 13(62%) | 8(38%) | 21 |
| | The petite bourgeois | 9(64%) | 5(36%) | 14 |
| | Routine white collar | 7(64%) | 4(36%) | 11 |
| | Manual worker | 15(65%) | 8(35%) | 23 |
| | Farmer | 64(81%) | 15(19%) | 79 |
| | Unemployment | 4(80%) | 1(20%) | 5 |
| | Others | 1(100%) | 0 | 1 |
| | Missing | 4 | 1 | 5 |
| Income | Missing | 5 | 1 | 6 |
| | No income | 2(50%) | 2(50%) | 4 |
| | Less than 2400 | 16(84%) | 3(16%) | 19 |
| | 2401-7200 | 29(83%) | 6(17%) | 35 |
| | 7201-12000 | 20(64.5%) | 11(35.5%) | 31 |
| | 12001-24000 | 19(70%) | 8(30%) | 27 |
| | 24001-60000 | 11(79%) | 3(21%) | 14 |
| | 60001-120000 | 2(67%) | 1(33%) | 3 |
| | Don't know | 19(65.5%) | 10(34.5%) | 29 |
| Scores in academic test | 91-100 | 6(85.7%) | 1(14.3%) | 7 |
| | 81-90 | 41(83.7%) | 8(16.3%) | 49 |
| | 71-80 | 55(73%) | 20(27%) | 75 |
| | 60-70 | 20(61%) | 13(39%) | 33 |
| | Less than 60 | 0 | 1(100%) | 1 |
| | Missing | 1 | 2 | 3 |
| Total | | 123 | 45 | 168 |

Table 10. Apply - Aid Cross Tabulation

| | | Received SFA | | |
|---|---|---|---|---|
| | | yes | no | Total |
| applied | yes | 111 | 11 | 122 |
| | no | 18 | 26 | 44 |
| Total | | 129 | 37 | 166 |

Table 11. I worry constantly about my finances.

| Students' attitudes | | aid | | |
|---|---|---|---|---|
| | | yes | no | Total |
| worry | strongly agree | 7 | 2 | 9 |
| | agree | 42 | 10 | 52 |
| | neutral | 32 | 8 | 40 |
| | disagree | 41 | 12 | 53 |
| | strongly disagree | 7 | 5 | 12 |
| Total | | 129 | 37 | 166 |

Table 12. Considering leaving university because of financing

| | | Numbers | Percent |
|---|---|---|---|
| | Missing | 2 | 1.2 |
| | strongly agree | 2 | 1.2 |
| | agree | 17 | 10.1 |
| | neutral | 17 | 10.1 |
| | disagree | 72 | 42.9 |
| | strongly disagree | 58 | 34.5 |
| | Total | 168 | 100.0 |

Table 13. I will perform better if I did not worry much about finances.

| | aid | | |
|---|---|---|---|
| | yes | no | Total |
| strongly agree | 14 | 7 | 21 |
| agree | 64 | 17 | 81 |
| neutral | 24 | 7 | 31 |
| disagree | 21 | 5 | 26 |
| strongly agree | 5 | 1 | 6 |
| Total | 129 | 37 | 166 |

Table 14. I know exactly the provision and application procedure of SFA

| | Understanding Provision | | | Understanding Procedure | | |
|---|---|---|---|---|---|---|
| | Numbers | Rural | Urban | Numbers | Rural | Urban |
| strongly agree | 2(1.2%) | 1(1%) | 1(1.8%) | 5(3%) | 4(3.7%) | 1(1.9%) |
| agree | 74(44.0%) | 58(51%) | 16(30.2%) | 37(22%) | 35(30.7%) | 2(3.8%) |
| neutral | 47(28.0%) | 32(28%) | 14(26.4%) | 37(22%) | 22(19.3%) | 15(28.3%) |
| disagree | 36(21.4%) | 18(15.7%) | 18(34%) | 77(45.8%) | 45(39.6%) | 31(58.5%) |
| strongly disagree | 9(5. 4%) | 5(4.3%) | 4(7.6%) | 12(7.1%) | 8(7%) | 4(7.5%) |
| Total | 168(100%) | 114(100%) | 53(100%) | 168(100%) | 114(100%) | 53(100%) |

Table 15. I feel shame if I survive on SFA.

| aid / shame | yes | no | Total |
|---|---|---|---|
| strongly agree | 1 | 2 | 3 |
| agree | 9 | 0 | 9 |
| neutral | 20 | 6 | 26 |
| disagree | 53 | 16 | 69 |
| strongly disagree | 46 | 13 | 59 |
| Total | 129 | 37 | 166 |

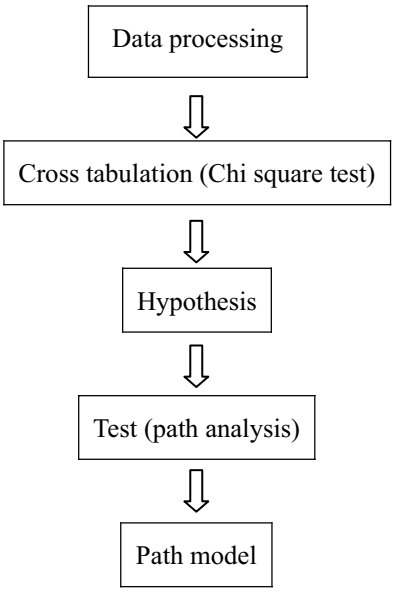


Figure 1. Analysis process

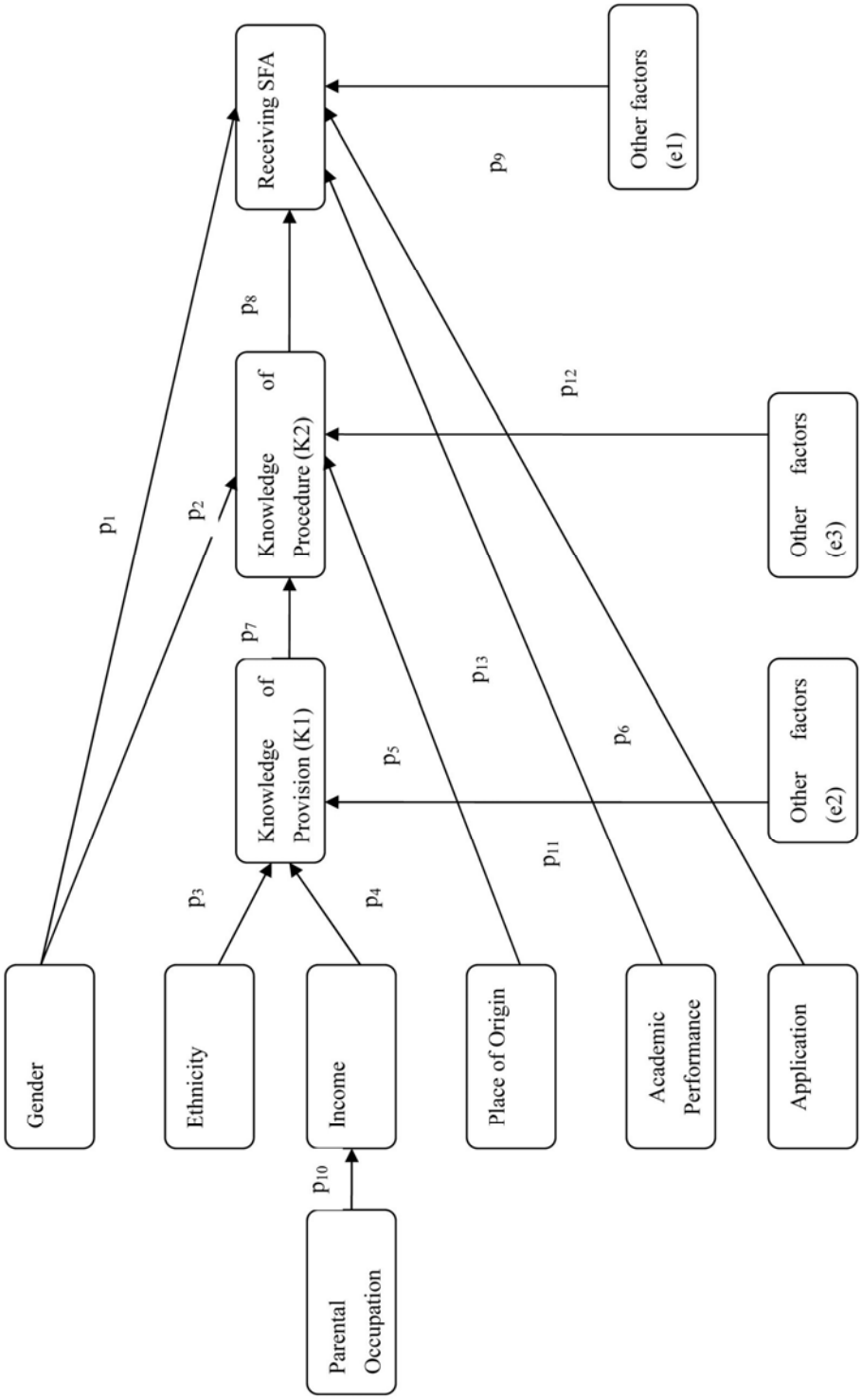


Figure 2 Input path diagram

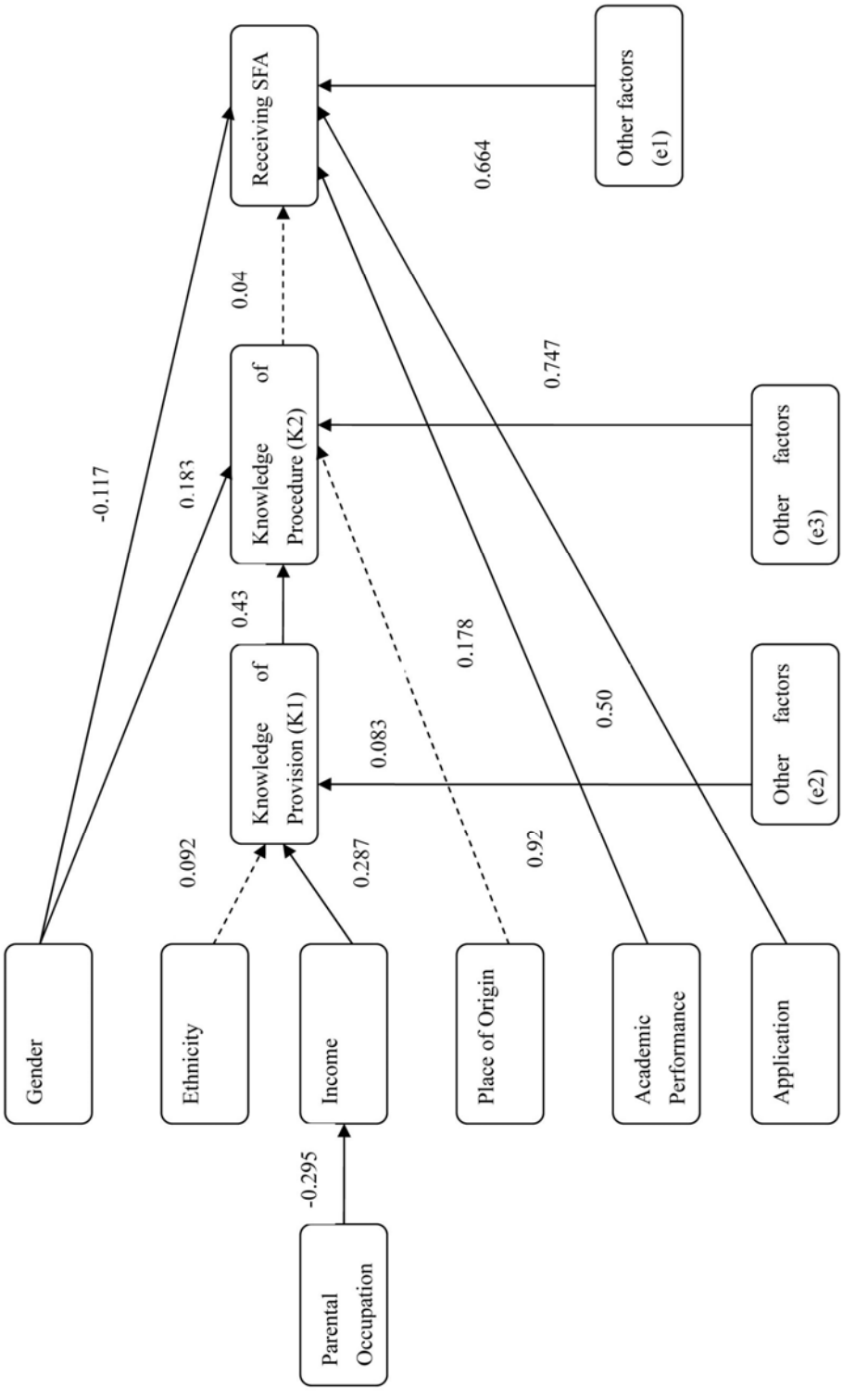


Figure 3 Path diagram for Receiving SFA with path coefficients

International Education Studies
www.ccsenet.org/journal.html
Vol. 2, No. 1
February 2009

# Continuous-Grouped-Self-Learning: In the Perspective of Lecturers, Tutors and Laboratory Instructors

Mohd Azrin Mohd Azau (Corresponding author)
Department of Computer and Communication System Engineering
Faculty of Engineering, Universiti Putra Malaysia
43400, UPM Serdang Selangor Malaysia
Tel: 60-3-8946-4357 E-mail: mdazrin@eng.upm.edu.my

Low Ming Yao, Goo Soon Aik, Chin Kock. Yeong, Mohamad. Nizam Nor, Ahmad Yusri Abdullah, Mohd Hafidz Mohamad Jamil, Nasiruddin Yahya, Ahmad Fauzi Abas & M. Iqbal Saripan
Department of Computer and Communication System Engineering
Faculty of Engineering, Universiti Putra Malaysia
43400, UPM Serdang Selangor Malaysia
Tel: 60-3-8946-6445 E-mail: fauzi@eng.upm.edu.my, iqbal@eng.upm.edu.my

**Abstract**

This paper presents the perception of lecturers, tutors and lab instructors towards the implemented Continuous-Group-Self-Learning (CGSL) in the Department of Computer and Communication System Engineering (CCSE), Universiti Putra Malaysia. This innovative system introduces mock teaching and student-lecturer role as a technique of delivery. The system ensures a continuous group work and the students are learning with class-oriented problem-based learning (CO-PBL) instead of seasonal project oriented problem-based learning (PO-PBL). The radical change in the assessment by adopting mock teaching oriented assessment (MTOA) has given a new definition to assess the student thoroughly. 49 respondents have taken part in this study, in which 30 of them are lecturers, 8 are tutors and 11 are laboratory instructors who currently active serving in the department. In general, 56% of the respondent do not agree this learning system shifted the teaching job to the students and 56.55% of them disagree this approach is a burdensome to the students who are undergoing this learning style. This system in fact a catalyst that urges the lecturers, tutors and lab instructors to enhance themselves in order to cope up with the 'knowledge demand' from the student when 82.1% of the respondents agree to be more knowledgeable as compared to conventional teaching method.

**Keywords**: Continuous-grouped-self-learning, Innovative learning, Class oriented PBL, Mock teaching oriented assessment

## 1. Introduction

Continuous-grouped-self-learning (CGSL) (Azau 2008a, 2008b) is part of outcome-based education (OBE) system (Sage 2000, Smith 2005, Azer 2001, Savery 2001, Pendse 1996). In this system the students have more involvements and the academicians only provide minimal supervisions and guidance to the students in terms of mining the information in correct approaches and sources. More often than not, the students are working in-group to solve the problem-oriented assignment, laboratory works or even the tests. CGSL is a contemporary approach to education system focusing not only on the needs of the students, but also those who involved directly and indirectly in the educational process, such as the lecturers, the tutors and the laboratory instructors. These types of learning system have many implications in the curriculum design, course content arrangement, and interactivity between the students and the lecturers (Fowler 2003 , Hesson 2007, Kashani 2006, Bender 2003) . CGSL is paying the attention on the development of the students' abilities, interests, and learning styles with the lecturers acting as facilitators. Lecturer centered learning in contrast, places the lecturers at the delivering end while the students at the passive and receptive end (Bender 2003, Pavelich 2004). Communication is almost one way in many occasions.

CGSL requires the students to be actively and responsibly participating in a guided environment, though the lecturers

liberally allow the students to make decision. Since much liberty in favor to the students, lecturers must realize that they are collectively part of the groups formed. A successful CGSL environment should be dynamic, trustworthy and the conducive enough to drive the natural desire and curiosity of the students to learn. The readiness of the lecturers to implement CGSL is the de facto element in making CGSL a success. Due to the shifting of teaching role to the students, several issues on CGSL need to be clarified. For example does this method really shift the teaching responsibility to the students, or the instructors need to play more important roles than the students? In addition to that, the workload issues need to be properly addressed. In term of preparation and knowledge of the instructor, does CGSL allow them to be less prepared and knowledgeable? This paper reports the survey results related to those issues, which are very important to assure the success of CGSL implementation.

**2. System Overview**

There are three core components in this system to name are the knowledge delivering entities, the method of delivery, and the assessment of the delivered knowledge. CGSL requires the students to mine the information and finding solutions from vast resources such as the Internet, books, magazines, journals and scientific articles. However the drawback of this approach is the presence of incorrect information is the threat to the reliability of the system. Many of the academicians have the skepticism that this approach is an escapism route for the lecturers, tutors and lab instructors from carrying out their duties (Hayes 2000). Figure 1 summarizes the components and the requirements to enhance the CGSL system.

The expansion of knowledge made the lecturers/tutors/laboratory instructors unable to convey the knowledge single-handedly (Kolb 1984, Barry 1988, Fujio 2006, Otung 2001). If the academicians refuse to allow an innovative learning method to take place in their teaching, the students are guaranteed with a limited knowledge gain. CGSL permits the students to take the role of the academicians and this does not lessen their functions, in fact the responsibility of the academicians becomes more apparent. In conventional education system, the lecturers/tutors/laboratory instructors are ethically obliged to be experts in order to deliver the knowledge to the students. To contrast, the lecturers/tutors/laboratory instructors who adopt CGSL system, should not be only delivering the knowledge but must also well versed and knowledgeable in multi disciplinary in such that they can guide the students on where to find the information and how to mine the information effectively (Carroll 2002, McLauchlan 2007, Berry 2003, Susan 2001).

Since this is a dynamic and innovative learning system, the methods of delivering the knowledge are radically different than the conventional education system. This system no longer sticks to the textbook materials not to mention the textbooks have become a part of the reference books (Jong 2006, Kumar 2006, Li, 2006, Kamsah, 1990). The lecturers/tutors/laboratory instructors provide the concept and guide on how to find solutions and information while the students will find the advanced material on their own on a group work basis. For instance, in Engineering Mathematics course (ECC 3002), the students may not appreciate the use of Laplace transform in solving problem. As a matter of fact, the students just memorize the time domain to frequency domain transformation table without knowing the application of the Laplace transform. CGSL has been implemented in this subject and the examples given to the students are taken from the applications in control system rather than learning the mathematical theorems alone. By giving the real application examples, the students are exposed to the importance of the Laplace transform and only then the theory will be taught. This strategy successfully increases the understanding of why they need to learn and why are they learning that topic.

Time to time the students will take turn to share their knowledge and findings with their peers through series of presentations during the lecture or the tutorial periods. Two-way communications are certainly established when the peers have the privilege to ask questions at the end of every presentations and incentive in terms of bonus marks are granted for good questions asked. The lecturers/tutors/lab instructors and the peers evaluate the presentations with emphasize given to the content and style of knowledge transfers. The whole process is termed as mock teaching oriented assessment [6, 7, 26] and the scope of assessment are as the following,

1. The relevancy of the lecture contents
2. The accuracy of the answers and technique in getting the answers
3. Concise and understandable and not merely presenting/lecturing
4. Ability to answer questions projected at the end of the presentations/lectures

This approach is at disadvantage since the preparations of the lecture or presentation is time consuming. If the lecturers/tutors/laboratory instructors appropriately maneuver the teaching plan, the benefits to the students and lecturers outweighed the disadvantages.

**3. Results and Discussions**

In the survey, the respondents are classified into three groups,

1. Lecturer – academician who possesses a qualification of PhD

2. Tutor – academician who possesses a qualification of Master Degree or Bachelor Degree

3. Laboratory Instructor – technicians or final year undergraduate students or research assistant or postgraduate students.

This paper discloses the views from the respondents towards the transition of the lecturing responsibility from the lecturers to the students, the presence of extraneous workload to the students and the necessity of the lecturers/tutors/laboratory instructors to furnish themselves with the up-to-date knowledge and teaching style.

Figure 2 shows that 50% of the lectures, 25% of the tutors and 54.5% of the laboratory instructors believe that CGSL shifted the responsibility of lecturing to the students. However, the other 50% of the lecturers, 75% of the tutors and 45.5% of the laboratory instructors disagree with the motion. There are still doubts that the students could lecture their peers in the lecturers' perceptions and some of them think the job to lecture should be borne by the lecturers not the students. The tutors on the other hand feel CGSL does not shift the responsibility of teaching instead it provides an alternative mean in developing the students information acquisition. The laboratory instructors in majority agree with the argument that CGSL is perceived as a shift of lecturing/teaching to the students. In average, 43.2% of the respondents feel CGSL shifts the lecturing responsibility to the students while the remaining 56.8% consider CGSL as a challenging method of learning and not to be perceived as transfer of duty.

CGSL suggested the students should be assessed according to their method of presentation in knowledge delivery, ability to provide answers during Question and Answer (Q&A) session, group work cohesiveness and competency in solving problem-based question in specific time frame. These elements are believed to be time consuming and thus students are burden with the extra soft skills that they have to develop on their own. From Figure 3, the lecturers and the laboratory instructor both agree the system will burden the students with the percentage of 63.3% and 54.6% respectively. To contradict, only 12.5% of the tutors are having the opinion that this approach will encumber the students' learning. The remaining 36.7% of the lecturers, 87.5% of the tutors and 45.5% of the laboratory instructors suppose that the extra soft skills, for example information acquisition/delivery, communication skills and working in group are daily routines that the students undergone in learning process but CGSL properly assessed these skills. Taking the overall response, the percentage of respondent who are disagree outweighed those who agree with the percentage of 43.5% and 57.5% respectively.

Since the lecturers and tutors are equivalently having the same working-nature, they are grouped in the class of academician while the laboratory instructors are considered as non-academicians. In Figure 4, it shows that more than 70% and of the academicians expect to equip themselves to become more knowledgeable when implementing the CGSL system. The non-academicians show no difference when more than 90% agree to be more knowledgeable when serving in CGSL system. The students are required to find the information from various resources and they need to solve the problem-based questions, which have non-unique solutions. Therefore, both academicians and the non-academicians (laboratory instructors) must have wide range of knowledge to validate, verify and clarify the subjects, topics or answers. The common accord shows that 82.1% of the respondents concur the need to expand their knowledge in order to cater the CGSL system.

## 4. Conclusions

The perceptions towards the implementation of CGSL differ between the lecturers, tutors and laboratory instructors. Half of the lecturers perceived this learning method shifts the responsibility of teaching to the students and slightly more than half of the laboratory instructors concur with the same view. The tutors, to contradict, disagree to a great extent to this motion.

The lecturers the laboratory instructors have the opinion that this style of teaching will add up the burden to the existing study and workload. On the other hand, the tutors do not share the same view when a large number of them disagree on the statement of this teaching style overloading the students.

However the all parties agree to a common consensus that they have to be more knowledgeable when teaching in this approach compared when teaching in the conventional manner.

## References

Azau M. A. M., *et. al*. (2008a.). Implementation of Continuous-Grouped-Self-Learning (CGSL) System in Engineering *Education, International Education Studies,* Vol. 1(4).

---. (2008b). Innovative Continuous-Grouped-Self-Learning (CGSL) System in Engineering Education, Evolution in Engineering Teaching Methodology And Assessment Methods, *ICEE 2008 Hungary,* Topic 32 pp:31-34, 27-31 July 2008, ISBN: 978-963-7298-20-2, Published on CD ROM issue 500.

Azer S. A. (2001). *Problem-based learning, Challenges, barriers and outcome issues.* Saudi Med J, Vol 22, pp. 389-397.

Barry W. B. (1988). A spiral model of software development and enhancement", IEEE Computer, pp. 61-72.

Bender B. (2003). Student-centered learning; EDUCASE; Volume 2003, Issue 11; May 27. pp: 1-12.

Berry F. C., Di Piazza P. S & Sauer S. L (2003). The Future of Electrical and Computer Engineering Education", IEEE Transactions on Education, Vol. 46, No. 4, pp. 467-476.

Carroll D. & Hirtz P. (2002). Teaching Multi-Disciplinary Design: Solar Car Design," Journal of Engineering Education, pp. 245-248.

Fowler J. & Gudmundsso A. (2003). Group facilitation: a case study of student-centered autonomous learning. HERDSA. pp: 1 – 9.

Fujio Y. (2006). Practical IT Education. Deepening of Technology, Expansions of Work, and Development into Headwaters: A systematic Effort to Achieve Higher Levels. Issues in Informing Science and Information Technology, Vol. 3, pp. 244-252.

Hayes B. (2000). An Experiment Using Teacher Centered Instruction versus Student Centered Instruction as a Means of Teaching American Government to High School Seniors. Armuchee High School – American Government classes. January 24-March 24.

Hesson M., Shad K. F.( 2007). A Student-Centered Learning Model. American Journal of Applied Sciences. pp: 628-636.

Jong B-S., Chan T-Y., Chen C-M. & Wu Y-L. (2006). Adaptive Group Learning Strategy Based on Conceptual Graph and Thinking Styles for E-learning. 36th ASEE/IEEE Frontiers in Education Conference; October 28 – 31. pp: S4J- 6 – 11.

Kamsah M. Z. & Talib R. (1990). Assessing Groupwork Activities in Engineering Education; New Jersey: Prentice Hall,; ww.ctl.utm.my/research/pdf/rtl05.pdf.

Kashani A. S., Soheili S. & Hatmi Z. N. (2006). Teaching English to Students of Medicine: A Student-Centered Approach. The Asian ESP Journal; Volume 2; Article 5; November; Page(s): 1.

Kolb D. A. ( 1984). Experiential learning. Englewood Cliffs. NJ: Prentice Hall.

Kumar A. (2006). Strategies to Enhance Student Learning in a Capstone MIS Course; Issues in Informing Science and Information Technology Volume 3,; Central Michigan University, Mt. Pleasant, MI, USA.

Li J-B. & Chen A-P. (2006). Refined Group Learning Based on XCS and Neural Network in Intelligent Financial Decision Support System. Sixth International Conference on Intelligent Systems Design and Application (ISDA' 06) pp: 925-930.

McLauchlan L. (2007). Design Oriented Course in Microprocessor-Based Controls. American Society for Engineering Education. Paper ID. 2675.

Otung I. E. (2001). Reassessing the mathematics content of engineering education", Engineering Science and Education Journal, Vol. 10, Issue 4, pp. 130 – 138.

Pavelich M. J. & Streveler R. A. (2004). An Active Learning, Student-Centered Approach to Training Graduate Teaching Assistants; 34th ASEE/IEEE Frontiers in Education Conference; October 20 – 23. pp: FIE-1 –5.

Pendse R. & Johnson E. (1996). Teaching an undergraduate class vs. graduate class: is there a difference?. Frontiers in Education Conference, 1996, Volume 1, pp. 59 - 62.

Sage A. P. (2000). Systems Engineering Education. IEEE Transactions on Systems, Man, and Cybernetics—Part C: Applications and Reviews, Vol. 30, No. 2, pp. 164-174.

Savery J. R. & Duffy T. M. (2001).Problem Based Learning: An instructional model and its constructivist framework. CRLT Technical Report No. 16-01, Indiana University, Indiana.

Smith K. A. (2005). Pedagogies of Engagement: Classroom-Based Practices. Journal of Engineering Education, pp. 87-101.

Susan M. L. (2001). Optoelectronics Experiments for First Year Engineering Students. IEEE Transaction on Education, Vol 44, pp. 16-23.

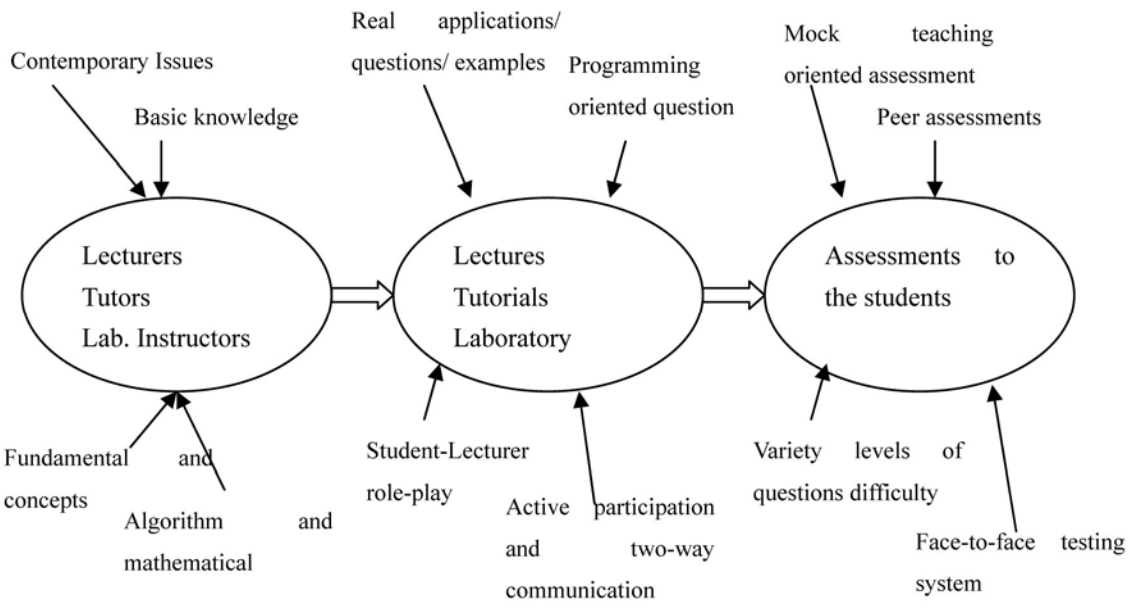


Figure 1. The CGSL components and the requirements to enhance the learning approach

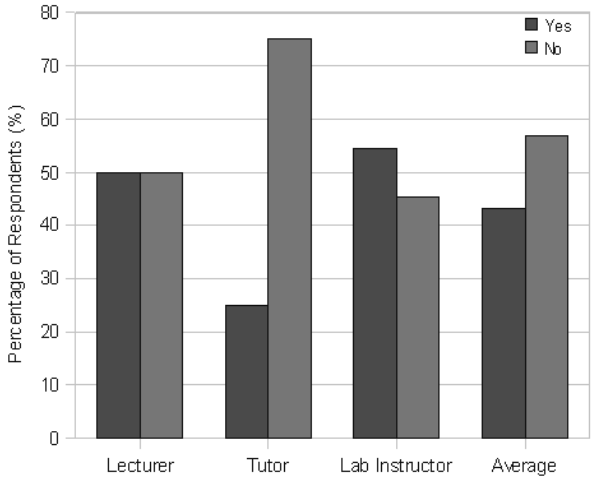


Figure 2. The response towards the shifting of teaching/lecturing responsibility to the students

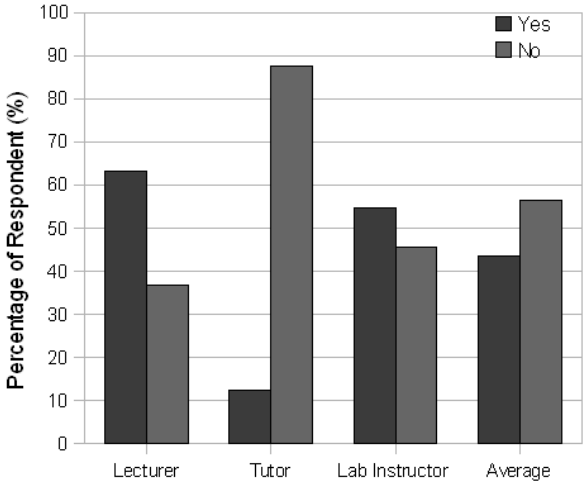


Figure 3. The response towards the workload will be burdensome to the students

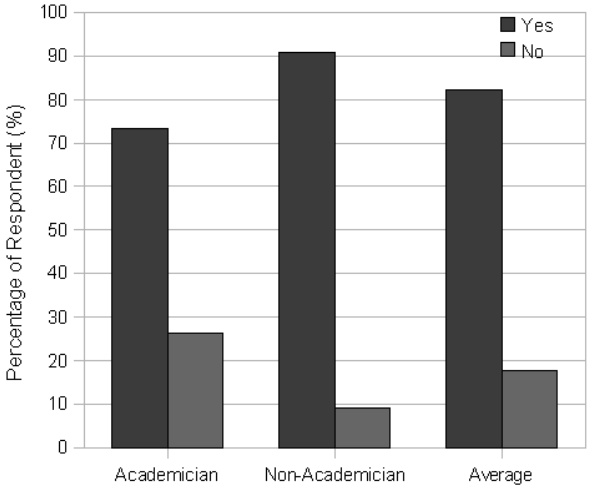


Figure 4. The response towards the necessity of the academician and non-academician staff to be more knowledgeable

International Education Studies
www.ccsenet.org/journal.html
Vol. 2, No. 1
February 2009

# A Survey of Graduates' Employment and New Venture Creation in China in 2008

Hongyi Zhang
School of Business Managemen
Shandong University of Finance
Jinan 250014, China
E-mail: zhanghy@sdfi.edu.cn

**Abstract**

"Graduates employment" is always the focus of society in China. At present, the hardness of graduates employment is an important issue for the development of China's higher education, which has already aroused more attentions from the Communist Party of China and the government. Graduates' views on career- choosing, family backgrounds, specialties, curriculum, recognitions to new venture creation, and many other factors impact their employment and new venture creation. Therefore, in order to solve the graduates employment issue, colleges and universities should build up innovative education ideas, offer courses of employment, especially courses of career planning and new venture creation, help college students form complete employment and new venture creation knowledge structures, expand their thoughts on employment, cultivate their consciousness of independent new venture creation and self-care ability, contributing to the social harmony and development.

**Keywords:** 2008 graduate, Chinese college student, Employment and new venture creation, Investigation and research

## 1. Introduction to the investigation

### *1.1 Background of investigation*

Jintao Hu, the President of Communist Party of China, and Jiabao Wen, the Premier of China, have emphasized the importance of graduates employment for many times and required that all party committees and governments at different levels must work hard for graduates employment. Premier Jiabao Wen has already mentioned the graduates employment issue repeatedly: "Every day I devote my attention to graduates employment ratio."

According to the *Report on Graduates Employment and Development in 2006* done by Chinaren net, in 2006 only 20.08% of investigated graduates "believe they can find appropriate jobs" (2006). After the 2006 graduates claim for "none-wage employment", the employment of 2007 and 2008 graduates makes different parties worry. According to data from the Ministry of Labor and Social Security, PRC, and the Ministry of Education, PRC, in 2007, the number of graduates reaches 4.95 million, and 1.48 million graduates fail to find jobs. In 2008, the number of graduates reaches 5.59 million, increasing 0.64 million than last year. The employment situation is more serious. No jobs, where do graduates go? For this question, Chinese government, colleges and universities, students, and the society must give the answer.

Professor Jiasu Lei, from the School of Economics and Management, Tsinghua University, says, innovation is a kind of social responsibility and life style (Jiasu Lei, 2007). How are college students' consciousnesses of creating new ventures today? Whether can they shoulder the responsibility endowed by the history (Jiasu Lei, 2007)?

With this background, we plan and organize this investigation "A Survey of Graduates' Employment and new venture creation in China in 2008", associated with 6 colleges. By objectively collecting information about 2008 graduates' recognitions to employment situations, their understandings to new venture creation, views on career-choosing, family backgrounds, curricula, and employment, we try to supply the real conditions and opinions of 2008 graduates for Chinese governments and educational institutions, serving the future college education and graduates employment.

### *1.2 Investigation method*

Collect data by off-line questionnaire.

*1.3 Investigation time period*

June 15th, 2008 ------ July 5th, 2008.

*1.4 Investigation objects*

2008 graduates in Shandong province, including undergraduates and vocational students. This investigation covers 6 colleges, including 2 "211" colleges, 2 common colleges, and 2 vocational colleges.

*1.5 Sample number*

2008 graduates: 3000, and 500 from each college. Take back 2527 valid questionnaire.

**2. Present employment situations in China and graduates' understandings to the situations**

In 2001, the number of graduates is 1.14 million. In June in 2001, the initial employment ratio of graduates is 90%. In 2002, the number of graduates is 1.45 million, and ratio reaches 80%. In 2003, the number of graduates is 2.12 million, and the ratio is 70%. In 2004, the number of graduates is 2.8 million, and the ratio is 73%. In 2005, the number of graduates is 3.38 million, and the ratio is 72.6%. In 2006, the number of graduates is 4.13 million. A survey shows the initial employment ratio of 46%. In 2007, the number of graduates reaches 4.95 million, increasing 0.82 million than that in 2006. According to a survey of MyCOS, the initial employment ratio is 55.8%, and the unemployment ratio at the end of the year is 87.5%. In 2008, the number of graduates is 5.59 million, and the ratio in this research is 42%. See table 1.

In this investigation, 33% of graduates think it is hard to look for jobs before graduation. 65% of graduates think it is hard to look for satisfying jobs. 42% of graduates can find jobs, and 10% satisfying jobs. Most graduates think they face greater difficulties in finding jobs. See figure 1.

**3. The relationship between the initial employment ratio and the social resources possessed by families and main relatives**

In this investigation, according to the administrative levels and positions and the quantity of social resources, we classify the social resources possessed by families and main relatives into four levels: excessive senior managers in government and state-owned enterprises (directors or higher), and bosses of private enterprises; more middle-level managers in government and state-owned enterprises (vice directors or monitors), and senior managers in private enterprises; some operational managers in governments or state-owned enterprises, and middle-level managers in private enterprises; less owners of small businesses (include farmers). See table 2.

According to the table 2, the graduates whose families and main relatives possess excessive and senior social resources can realize a higher employment ratio, and the graduates whose families and main relatives possess some general social resources can only reach a lower employment ratio. It indicates that the graduates' family social resources can impact their employment. And the higher and the more the social resources possessed by the graduates' families and main relatives, the earlier they can find right or satisfying jobs. Along with the decrease of the level of social resources possessed by graduates' families and main relatives, the employment ratio is rising. The employment ratio of graduates who live an ordinary life is highest. It indicates that the graduates whose families and main relatives possess less social resources prefer to work as soon as possible. Their family conditions make it impossible for them carefully and slowly seeking for jobs. They must help their families in economy. From data in the table 3, we can notice that most graduates acknowledge the positive effects of family backgrounds on job-hunting.

According to data in the table 4, most graduates agree that the most important factor of job-hunting is personal making instead of helps from families and relatives. Only 22% of graduates think that the helps from families and relatives are most important. This result does not conflict with data in table 2 and 3. On one hand, graduates acknowledge the important effects of families and relatives on their job- hunting. On the other hand, most graduates are practical and independent. They can find jobs by themselves as soon as possible even without sound family backgrounds.

**4. The relationship between the initial employment ratio and the work regions and the local economic development**

In this investigation, we sort the graduates into three kinds according to the location of their homes. The south of Yangtze River and the Pearl River Delta are the developed economic region of south Yangtze River. The north of Yangtze River and the middle-eastern region are the relatively developed economic region of north Yangtze River. The west of Guangxi, Guizhou, Shaanxi, and Neimenggu is the western undeveloped region.

According to data in the table 5, the more developed the local economy where graduates' homes are, the higher the initial employment ratio of graduates. There is a positive correlation between the employment ratio and the local economic development. Most graduates who are from north Yangtze River and the west choose to work in south Yangtze River instead of coming back to hometown. Especially for graduates from the west, 80% of them will not work in their hometown.

**5. The effect of employment directives and career-planning course on job-hunting**

Colleges play important roles in graduates' job-hunting, such as curricula arrangement, job-hunting assistances (how to prepare and send resume, interview techniques, job-hunting tactics, etc.), and hosting job application fair. Here, to develop and set up employment-related curricula needs to be further enhanced and strengthened.

In today's severe employment situations, the career guidance course is very important for graduates in job-hunting. According to data in the table 6, 89% of graduates have taken the career guidance course, but 40% of graduates have not paid attention to this course. It indicates a fact that both contents and forms of the course deserve to be modified further.

The career planning course can help college students to design and choose appropriate ways after entering the society for a long period. It is to solve some fundamental problems: who I am, where I am from, and where I will go, what are always bothering college students. Therefore, to take this course is extremely important. However, according to data from the table 7, 50% of graduates have not taken this course, and 35% of graduates have questioned the importance of this course. It means colleges must invest more energy in course development, popularization, and teaching crafts.

**6. The prevalence of graduates' consciousness of creating new ventures**

Since it is hard to find a job, not mention a satisfying job, what are today graduates views toward new venture creation? According to data in table 8, 64% of graduates want to create new ventures what illustrates the prevalence of graduates' consciousness of creating new ventures. But only 13% of graduates with consciousness of creating new ventures prefer to creating new ventures immediately, accounting for merely 9% of all samples. Comparing with the percentage 20% in America, the gap is large. In America, the education of new venture creation has already developed into a complete and perfect system. More than 1100 colleges arrange courses of new venture creation and realize excellent effects, what has already turned into a "secret weapon" for the sustainable growth of economy in America. The education certificate of new venture creation becomes the "third education passport" after the diploma and vocational technology certificate (Hongyi Zhang, 2007).

Only 19% of graduates, who do not sign work contracts, accounting for 58% of all graduates, want to create new ventures, and 70% prefer to work. Obviously, although 64% of graduates have expectations for new venture creation and the consciousness prevails, it is difficult to take action. Even under the condition of no jobs, they are not reluctant to carry out their expectations for new venture creation.

**7. Conclusion**

According to this investigation, the initial employment ratio is 42% this year, being the lowest in history. Therefore, the job-hunting situation is very serious. Graduates' family backgrounds exert positive effects on job-hunting, which can help graduates find more proper and satisfying jobs. For graduates who have most terrible family backgrounds, the initial employment ratio is highest. They pay more attention to personal making in job-hunting. It indicates that modern graduates possess strong consciousness of independence and self-caring. There is a positive correlation between graduates' employment ratio and consciousness of new venture creation, and the local economic development where they come from.

Colleges, as cradles of cultivating graduates, have important effects on graduates' employment. Colleges should arrange relevant courses, such as career-planning course, and career guidance course, to improve college students' consciousness of independence and self-caring, helping them to look for jobs by themselves, develop by themselves, and serve the society.

It is hard to find jobs right after the graduation. But it does not mean unemployment. Later, even during a long period, more opportunities will come. As long as graduates can start from zero and work hard, they will have a bright future. Besides, the 9% of graduates who want to create new ventures should take the first step with bravely, not only fulfilling themselves but also being examples for other graduates. The government, colleges, and the society, should encourage the youth who have the consciousness of new venture creation to try and create new ventures, contributing to the society (Jiasu Lei, 2007).

**References**

Anqing Teachers College employment directive net. (2008). http://jy.aqtc.edu.cn /. Mar. 19th.

Chen, Wanying. (2008). The author of a blue paper by Chinese Academy of Social Sciences claims that the college employment ratio has been wrongly calculated. http://www.chinahrd.net/. Jan. 11th.

Jing, Ke. (2008). Ministry of Education, PRC, publicizes the top 60 vocational colleges and universities in initial employment rate. http://news.xinhuanet.com/edu/. July, 20th.

Lei, Jiasu. (2007). Innovation is a social spirit and life style. *China Youth Science and Technology*. No.4.

Lei, Jiasu. (2007). National spirits and youth resonbility. http://www.youth.cn/. Nov. 9th.

MyCOS. http://www.mycos.com.cn/.

Zhang, Hongyi. (2007). Investigation and research on graduates' awareness of and development in creating new ventures. *China Youth Science and Technology*. No.11.

(2006). Investigation on graduates' employment rate and viewpoints of career-choosing in 2006. http://career.eol.cn/. June, 21st.

(2006). Report on graduates' employment and development in 2006. http://biz.163.com/. Apr. 3rd.

(2006). Research on graduates' employment in 2006: half of graduates are still in unemployment. http://www.ce.cn/. July, 16th.

Table 1. The number of graduates and the employment ratio from 2001 to 2007. (Unit: 10,000 graduates, %)

| Year | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|
| Number of graduates | 115 | 145 | 212 | 280 | 338 | 413 | 495 | 559 |
| Number of initial unemployment | 12 | 29 | 64 | 76 | 93 | 223 | 219 | 257 |
| Initial employment ratio | 90 | 80 | 70 | 73 | 72.6 | 46 | 55.8 | 42 |
| Unemployment ratio at the end of the year | | | | | | | 87.5 | |

Data resource:

http://career.eol.cn /2 006-06-21; http://www.ce.cn/ 2006-07-16; http://www.china.com.cn / 2008-07-27

http://jy.aqtc.edu.cn /2008-3-19; http://www.mycos.com.cn/; http://www.chinahrd.net/ 2008-01-11

Notice: from 2001 to 2005, the employment ratios are from official data; from 2006 to 2007, the initial employment ratios are the third party statistic data; in 2008, the ratio is from this research. The calculation of unemployment ratio at the end of the year includes the graduates who find jobs or continue their studies as postgraduates.

Table 2. The relationship between graduates employment ratio and the social resources possessed by their families and main relatives

| Social resources possessed by families and main relatives | Excessive | More | Some | Less |
|---|---|---|---|---|
| Initial employment ratio (%) | 54 | 33 | 40 | 57 |

Data resource: this investigation.

Table 3. Importance of families and main social acquaintances to employment.

| Degree of importance | Very important | Important | Ordinary | Unimportant |
|---|---|---|---|---|
| Percentage (%) | 33 | 45 | 21 | 1 |

Data resource: this investigation.

Table 4. The most important factors that affect graduates' job-hunting

| Factors | Better personal making | Excellent studies | Helps from families and relatives |
|---|---|---|---|
| Percentage (%) | 52 | 26 | 22 |

Data resource: this investigation.

Table 5. The relationship between the initial employment ratio and the work regions and the local economic development

| Region | South Yangtze River | North Yangtze River | The west |
|---|---|---|---|
| Initial employment ratio of graduates whose homes are in this region (%) | 47 | 44 | 30 |
| Percentage of graduates whose homes are in this region (%) | 12 | 73 | 15 |
| Percentage of graduates who work in this region (%) | 29 | 68 | 3 |

Data resource: this investigation.

Table 6. The importance of career guidance curricula

| Elective or not | Yes | No | |
|---|---|---|---|
| Result of investigation (%) | 89 | 11 | |
| Importance of career guidance curricula | Very important | Ordinary | Unimportant |
| Result of investigation (%) | 60 | 25 | 15 |

Data resource: this investigation.

Table 7. The importance of arranging career planning course for college students

| Elective or not | Yes | No | |
|---|---|---|---|
| Result of investigation (%) | 50 | 50 | |
| Importance of career guidance curricula | Very important | Ordinary | Unimportant |
| Result of investigation (%) | 65 | 33 | 2 |

Data resource: this investigation.

Table 8. Graduates' consciousness of new venture creation

| Expectation for new venture creation | Yes | | | | No |
|---|---|---|---|---|---|
| Percentage (%) | 64 | | | | 36 |
| Planned execution time | Immediately creating new ventures | In two years | Three to five years | It depends | |
| Percentage (%) | 13 | 4 | 44 | 39 | |

Data resource: this investigation.

Table 9. The job-hunting inclination of graduates without signing work contracts.

| Sign work contract or not | No | | | Yes |
|---|---|---|---|---|
| Percentage (%) | 58 | | | 42 |
| The job-hunting inclination of graduates without signing work contracts | Create new ventures | Continue the job-hunting | Do not know how to mange it. | |
| Percentage (%) | 19 | 70 | 11 | |

Data resource: this investigation.

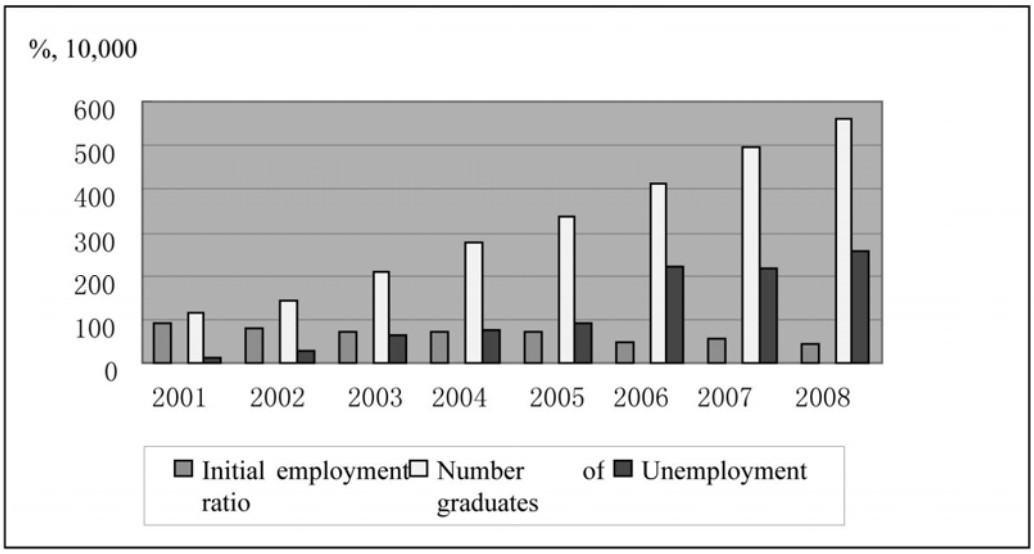


Figure 1. Trends of Graduates Employment and Employment Ratio in China during Recent Years.

Data resource: same with Table 1.

International Education Studies
www.ccsenet.org/journal.html
Vol. 2, No. 1
February 2009

# Globalization and Science Education:

# The Implications for Indigenous Knowledge Systems

Cassie Quigley
Curriculum and Instruction, Indiana University
201 North Rose Avenue
Bloomington, Indiana 47405 United States of American
Tel: 317-652-5197 E-mail: cquigs@indiana.edu

**Abstract**

Much of the current diversity literature in science education does not address the complexity of the issues of indigenous learners in their postcolonial environments and calls for a "one size fits all" instructional approach (Lee, 2001). Indigenous knowledge needs to be promoted and supported. There is currently a global initiative of maintaining worldviews, languages, and environments of which science education can be a part (McKinley, 2007). This paper is organized around five main topics that further guide the theoretical framework for this important area: a) describing postcolonialism and indigeneity related to science education, b) defining the terms indigenous knowledge, traditional ecological knowledge, c) western modern science and the effects of globalization on these terms d) examining the research on learning implications of IK and/or TEK in classrooms with a focus on the research into student learning in indigenous language, e) connecting place-based education to curricular implications for indigenous knowledge systems.

**Keywords**: Indigenous knowledge, Postcolonialism, Science education, Globalization, Indigenous language

## 1. Introduction

Science education research has become increasingly concerned with the diversity of students in the classroom as demonstrated by the increase in articles on issues of equity in the last 10 years. However, much of this diversity literature does not address the complexity of the issues of indigenous learners in their postcolonial environments and calls for a "one size fits all" instructional approach (Lee, 2001). Now more than ever, indigenous knowledge needs to be promoted and supported. As globalization continues to increase, it allows for contact between once geographically isolated groups, and traditional knowledge systems are being assimilated and in some cases disappearing all together. For many indigenous peoples, this type of culture is one of colonizing, although due to increased globalization, the means of colonizing is changing. In a time of globalization in terms of technology and increased worldwide travel where populations migrate, indigenous knowledge is often dismissed as irrelevant and the Internet makes location an intangible concept. However, increasing local achievement in science and science education is advocated by a number of researchers in order to provide opportunities for people globally (McKinley, 2005). This issue of making local knowledge part of the global brings with it the challenges of politics, history, language, economics and ethics. Throughout this paper, I will address these challenges and discuss ways to overcome these difficulties by focusing on place based science education that supports indigenous knowledge.

As educators become more immersed in exploring traditional belief systems and finding a place for them in the Western world, the youth of many indigenous groups are becoming disinterested in their own native culture. Among the youth, a negative view of their culture has been championed by the lack of value the Western world has traditionally placed on these knowledge systems. However, in the last few decades, voices of educators and indigenous peoples themselves have led an awareness of the importance of IK. Encouragingly, some indigenous societies are keeping their cultural autonomy intact and demand for local curricula despite the modern domination of the Western world. An acknowledgement of this domination has been spreading, even in industrialized societies. Educators are beginning to recognize that Western-based formal knowledge remains just one knowledge system of many. Though traditional knowledge has long been, and often continues to be, assigned a lower status in both development and scientific circles than Western-based science and technology, the value of IK in science has been receiving increasing attention. Previously, the literature treated all minorities and indigenous peoples as requiring similar solutions to under achievement and this created exclusions for many people as individual voices and struggles were ignored. The research

on culturally and linguistically diverse students in science education challenges traditional notions of WMS content, learning, teaching, and assessment (Lee, 1999). No longer is it acceptable to treat diverse groups as a homogenous whole with the same needs and experiences. Instead, indigenous study is requiring the world to take note of its rightful and unique place in multicultural research. David Clark (2004) argued that indigenous studies are about, "restoring well-being to our nations" (p. 230). Well-being for indigenous students comes from an approach that involves social, economic, and cultural development and a "strong sense of identity as indigenous" (McKinley, 2007, p. 221). However, in order to for indigenous knowledge systems to continue, we need people with the ability to embrace indigenous ways and science. To accomplish this we need to not only create the space where that can happen but learn through their experiences how this can be done. The reality of the current situation is that most indigenous students are in cross-cultural classrooms where the teacher is from a different cultural group and often does not speak the same language, and has different knowledge systems than the students (McKinley, 2007). Little research has been done with respect to student learning in indigenous language however, there are some programs that are attempting to use indigenous language instruction with indigenous teachers using placed-based instruction that position themselves to control their own academic destiny by promoting indigenous peoples as the norm. The purpose of these programs is to empower students and communities (Bishop & Glyn, 1999). This goal is ideal and its path brings complex issues. However, the development and successes of indigenous science education programs are vital in order to provide the foundation for successes in cross-cultural classrooms. This paper focuses on indigenous students' interests from international contexts and acknowledges the need to create way to support and promote achievement and equity in science education for these students. In my view, achievement and equity can only occur if there is careful consideration of students' language, cultural knowledge and experiences as well as an analysis of the current role of science education. Equitable instruction and assessment practices for diverse students involve consideration of their cultural and linguistic experiences, which should enable them to connect to science and maintain their identities (Lee, 2001). There is currently a global initiative of maintaining worldviews, languages, and environments of which science education can be a part (McKinley, 2007). As well, science education needs to consider the indigenous communities themselves and pay attention to the needs of the people. Because of the complex relationships that are reflected in the literature on indigenous students, which highlight the historical and current effects of colonization, including changes to their language and culture, indigenous studies are grounded in political and moral bases. Therefore, history, science education necessarily involves philosophy, sociology, history, psychology, and anthropology (Young, 1974). This paper is organized around five main topics that further guide the theoretical framework for this important area. These topics include: a) describing postcolonialism and indigeneity as they relate to science education, b) defining the terms indigenous knowledge, traditional ecological knowledge, c) western modern science and the effects of globalization on these terms d) examining the research on learning implications of IK and/or TEK in classrooms with a focus on the growing research into student learning in indigenous language, e) connecting place-based education to curricular implications for indigenous knowledge systems. Finally, I conclude with the gaps in the research that still remain and need to be addressed through future research.

## 2. Postcolonialism and Indigeneity in Science Education

A single, definite postcolonial theory is controversial among many researchers (Ashcroft, Griffiths, Tiffin, 1995; Mohanram, 1999). Postcolonialism generally deals with the cultural identity in colonized societies including the issues after the colonial rule. However, the term "after" indicates finality in the rule and definite point of time. Homi Bhabha (1994) argued that a more realistic term is "beyond" to signify the blurring of borders of a linear progression. In *Post-Colonial Drama: theory, practice, politics,* Helen Gilbert and Joanne Tompkins (1996) write:

The term postcolonialism — according to a too-rigid etymology — is frequently misunderstood as a temporal concept, meaning the time after colonialism has ceased, or the time following the politically determined Independence Day on which a country breaks away from its governance by another state, Not a naïve teleological sequence which supersedes colonialism, postcolonialism is, rather, an engagement with and contestation of colonialism's discourses, power structures, and social hierarchies ... A theory of postcolonialism must, then, respond to more than the merely chronological construction of post-independence, and to more than just the discursive experience of imperialism. p.

Here, Gilbert and Tompkins describe the long-term effects of colonialism that have often changed societies and cultures and do not return to pre-colonial days as soon as the colonizers leave. By viewing postcolonialism as not only blurred point in history but also an integration of ancestry, cultural history, and language, helps to step away from the "them and us" position that is often present in this type of discourse (McKinley, 2007). To disconnect from this binary view, we need to understand that colonial rule was very different for different cultures and people, for some people there was wealth and success with the rule while others were forced to change languages and religions. For example, in India was seen as "the jewel of the British Empire" (McKinley, p. 201). In contrast, Australia was colonized with the purpose of a military base (Pagden, 1998). Therefore, the experiences of colonial rule were very different not only because of the indigenous cultures but also because of the intentions of the colonizers. However, one commonality between indigenous groups is the colonizing experience will always be ongoing in their country. Therefore,

throughout this review, I will use postcolonialism not to mean a point of time after colonization occurred, but to describe a complexity and hybridity of culture, language, history, politics, and education due to colonization, which are also relevant to the process of globalization. Therefore, this blurring of lines will be used to describe the challenges and complexity that globalization has added to postcolonialism and indigenous knowledge.

The link between postcolonialism and science education is strengthened due to globalization. One result globalization that ultimately affects science education and threatens indigenous knowledge is the changing of environments. For example, invasive species have profound affects on indigenous people as they are often a serious threat to the biodiversity, which is often central to the knowledge and way of life of these people whose language, belief systems, and survival are often embedded in the environment. For example, French settlers in Cambodia brought Arugula lettuce seeds with them with the intention of creating a cash crop for the indigenous people in the regions of Mondulkerri, however they underestimated the travel time to the markets to be sold and now Arugula is an expensive, way for the farmers to feed their pigs. In many cases, the environments of the indigenous people have changed due to colonization. Other introductions were accidental such as, the predatory brown tree snake, introduced in cargo from the Admiralty Islands, which has eliminated ten of the eleven native bird species from the forests of Guam (Simberloff, 2008). As well, other invasive species were intentional such as the introduction of the red fox to Australia. The fox was introduced from British for recreational hunting. Now the fox has a threat level of "extreme" and is considered an elusive prolific predator of native animals and livestock (NBII & ISSG, 2005). These disruptions to the environments put a huge financial burden to the indigenous people who are left with the disruptions caused by others and depend on agriculture for survival.

Another effect of postcolonalism on science education is through curriculum development, which is highly influenced by Western countries. As explorers and settlers attempted to "modernize, develop, instruct, and civilize the natives they found" (McKinley, 2007, p.202), colonizers brought with them books, curricula, and wildlife with the intentions of "helping" the indigenous people and to make their new home more comfortable (Crosby, 2004). Countries who want to "succeed" in a global world are forced to learn Western modern science that follows a curriculum based out of the European or North American countries. Phnom Penh, Cambodia sits in the heart of the Kirirom Rainforest however the majority of Year 11 Biology focused on deciduous and desert biomes, neither of which is present anywhere in the country (MoYES website).

Indigeneity is an extremely complex concept, particularly in the contexts where colonizers were not numerically dominant such as Africa, South America, Southeast Asia, and India. Here, these countries had settlers that never were a majority but highly influenced through educational institutions, culture and language (Maddock, 1981). Defining an indigenous group can be equally difficult. Although the term is meant to include cultural groups (and their continuity or association with a given region, or parts of a region, and who formerly or currently inhabit the region either, based on the groups history this can be challenging and therefore consideration of the history of the place is equally important. A central part of this definition is including the linguistic, cultural, and social characteristics that make it different from the colonizers of the place. However, the term is not meant to assume that all the people are the same, but form "a collective of people who share some similarities in their aspirations and circumstances" (McKinley, 2007, p. 203). Even if all the criteria are met, some people may not consider themselves as indigenous even when governments, organizations and scholars do. This again touches on the complexity of indigeneity. At the same time, it is also important to note that the people does typically not use this term and often they have their own ideas of outsiders. For example, in Cambodia, Cambodian call themselves *lok nung lok srey* (men and women) whereas they called all foreigners regardless of the color of their skin, *barrang,* (white). This is important to keep in context; this term was developed for purposes of academia but is not used locally.

For indigenous groups, what is often important in regard to "others" is they are respected and live without threat to their language, culture, and resources but this gets even more complicated when involving education. They see education as important for preparing their children both locally and globally because of the dual environments they will live in and therefore the challenges arise. Currently, their world is combination of both local and global spaces and they recognize both spaces as a concurrent part in their everyday lives. Research, however, has tended to focus on the problems indigenous students have in integrating in the global world. In an analysis of the beliefs and practices of indigenous people from around the world, Knudtson and Suzuki (1992) identified the following characteristics as distinguishing their worldviews from the predominant beliefs and practices in western society. Nisbett succinctly describes how these completely different worldviews have maintained themselves for thousands of years:

These approaches [to the world] include profoundly different social relations, views about the nature of the world, and characteristic thought processes. Each of these orientations is self-reinforcing and homeostatic. The social practices promote the worldviews; the worldviews dictate the appropriate thought processes; and the thought processes both justify the worldviews and support social practices. (p. xx)

The compartmentalization, hierarchical and linear thinking that are inherent features of western world are often in direct conflict with social structures and practices in indigenous societies, which tend toward collective decision-making, a relationship with and a respect for nature, and a slower pace of life. Western people often have a remarkable sense of "personal agency", which is the sense that are in charge of their own lives and free to act as they chose, (Nisbett, 2003). One definition of happiness described by the Greeks was "being able to exercise their powers in pursuit of excellence in a life free from constraints" (Nisbett, p. 3). In contrast, indigenous peoples counterpart to personal agency, is "collective agency" or harmony. It is often described as "the totality of roles I live in relation to specific others…taken collectively, they weave for each of us, a unique pattern of personal identity such that if some of my roles change, the others will necessity change also, literally making me a different person" (Rosemont, 1997, p.65). The ideal of happiness for indigenous people is often described a life shared within a harmonious social network. It is little wonder then that formal education structures, which often support Western worldviews, have not addressed the educational needs of indigenous societies. However, Dzama and Osborne (1999) challenged this idea that opposing worldviews were main issue by arguing that the problems that plague indigenous people often plague Western societies as well. They stated, "It is often forgotten that the emergence of the scientific way of thinking was a radical change in worldview that occurred between 1500 and 1700 a.d. Attempts to permeate national life with the scientific worldview initially were unsuccessful" (p. 401). They concluded poor performance in science in developing countries is not due to the worldviews of students in these countries but to the absence of supportive environment for serious science learning and a lack of scientists as role models for the youth. Here Dzama and Osborne urge researchers to step away from the worldview model and focus on the real life problems that are preventing success in indigenous peoples.

However, even though the indigenous youth are able to function adequately in their fragmented world, science educators need to tap into the important resource of indigenous people and realize the vast knowledge base of science they use in their daily life. Castellano (2000) also argued that the challenge for science educators of indigenous peoples is to include all types of knowledge valued by these people including traditional knowledge and empirical knowledge. Traditional knowledge is passed down from generations, which keeps records of genealogies and creations of species. It also passes along values and beliefs and well as some forms of technologies. It is passed on through the elders who are highly respected. This often leads to a conservative attitude toward change and therefore is linked to the slow pace of the environment. Empirical knowledge is gained only through careful observation of entire ecosystems and extends over many persons and much time. It is often described, as a loop in which is refined only when new information is gained and needs to replace other information. Therefore, Castellano argues that the challenge is "to open up space for Aboriginal initiative in schools and colleges, work sites, and organizations so that indigenous ways of knowing can flourish and intercultural sharing can be practiced in a spirit of coexistence and mutual respect" (p. 23). It is with this type of inclusive space that science education can contribute to the overarching aspirations of indigenous peoples including preparing their youth for involvement in their own indigenous societies, which are both local and global.

### 3. Defining terms: Indigenous knowledge (IK) and Traditional Ecological Knowledge (TEK*)*

School science traditionally has had the goal of preparing students for future science courses by focusing on intellectual knowledge acquisition specifically guided by Western modern science (WMS), however, alternatives to this science curriculum have existed since its inception. The most enveloping alternative describes science as a human endeavor, which includes culture, language, society, technology, experiences, and community views. This is the focus of indigenous knowledge. Indigenous cultures are found worldwide: for example, Native Americans; First Nations of Canada, Indian nations of South America; the Maori of New Zealand. These cultures possess knowledge systems of nature that serve their people. The goal of this science is to contribute to practical ends of the community.

The concept of indigenous knowledge (IK) refers to acquisition of and practices that are developed by groups with long histories of intimate relationships with their natural environment. This base of knowledge is part of a cultural system that encompasses native languages, naming and classification systems, utilization of resources, rituals, spirituality, and worldviews. This is often described as a frame of knowledge and a subset of that is Traditional Ecological Knowledge (Cajete, 1999). Indigenous science relates to the science knowledge of long-resident, usually oral culture peoples, as well as the science knowledge of all peoples who as participants in culture are affected by the worldview and relativist interests of their home communities. A well-documented branch of indigenous science, known to biologists and ecologists as traditional ecological knowledge (TEK), focuses on the science that is highly localized and socialized. TEK, though difficult to disconnect from the larger IK system, is a way to understand the complexity of social relationships between a particular groups of indigenous people in their community. Therefore, the knowledge is accumulative and ongoing. In the literature, it is generally used to denote the worldviews of indigenous peoples. Therefore, I will follow this demarcation created by the literature and I will use IK to mean the knowledge and worldviews of indigenous communities and TEK to focus on localized knowledge. Although it is important to note that from indigenous point of view the two objects, TEK and IK are the same.

Disputes regarding the universality of the standard scientific account are of critical importance for science educators because the definition of science is a *de facto* "gate keeping" device for determining what can be included in a school science curriculum and what cannot. When Western modern science (WMS) is defined as universal it does displace revelation-based knowledge (i.e., creation science); however, it also displaces pragmatic local indigenous knowledge that does not conform to formal aspects of the "standard account." Thus, in most science classrooms around the globe, Western modern science has been taught at the expense of indigenous knowledge. However, because WMS has been implicated in many of the world's ecological disasters, and because the traditional wisdom component of TEK is particularly rich in time-tested approaches that foster sustainability and environmental integrity, it is possible that the Universalist "gatekeeper" can be seen as increasingly problematic and even counterproductive (Snively & Corsiglia, 2001). Because of the Western Modern Science (WMS) stronghold on the American public schooling system since colonization, IK and TEK have often times been reduced to primitive or technical knowledge for survival. WMS emphasizes the importance of data and empirical evidence on which to build theories. The reverence for WMS is seen in its ties to governmental, political, and social spheres of influence. Many attribute WMS as being predominately influenced by white, male, Western meanings (McKinley, 2007).

**4. Western Modern Science (WMS) and the Current Challenges of Globalization for Indigenous Knowledge**

There is a large amount of international literature that explores the relationship between indigenous and WMS. The nature of these types of knowledge underlies much of the debate. This debate began with Kuhn's (1970) "scientism" attitude, which challenged an objective science and legitimized challenging positivism thought inherent in WMS. Current discussions in science education, center on the undeniable roots of WMS in non-Western thinking. One question raised by some researchers is whether WMS is a threat to IK. However, Sandra Harding (1991) argues that modern science owes its roots to African, Asian, and other Third World indigenous peoples. Harding outlines these contributions that tend to get de-emphasized, or often completely ignored, when people conceive of modern science. In effect, her claims provide an opportunity for expanding our historical perspectives on science and illuminate the Eurocentric assumptions that narrowed our understanding of the humanity in science, complete with its forces of power and domination. Certainly, most funding in the sciences is from Westerners to research diseases and technologies that would seemingly benefit mainly Westerners. The effects of this de-development of the Third World are seen readily in modern day, with the mass genocides and disease pandemics that plague Africa and other Third World countries. This continues to be exacerbated as globalization continues.

A recent phase in globalization, which simply put means the extension of Western capitalism and modernist institutions and practices to the whole world in the development of a global capitalist system (Segesvary, 1998). These institutions and practices "include the OPEC oil crisis and saturated markets of the 1970s; abandonment of international exchange controls; the competitive penetration of Western markets by newly industrialized countries; the development of new information, communications and transport technologies; and more recently, the fall of the Berlin wall and disintegration of the communist bloc" (Carter, 2008, p. 620) Globalization not only refers to a series of economic changes but technological changes that have changed the way the world works and transfers information (Penn, 2005, p. 4). These changes include: changes in the financial markets, changes in international trade, changes in investment patterns, even changes in the way crimes are carried out. Brown and Lauder (1996) extended this definition of globalization to include "a change in the rules of eligibility, engagement, and wealth creation" (p. 2). The rules of eligibility have changed to either include or exclude certain groups. The included are wealthy, highly mobile, and typically Western with certain skills (Freidman, 2000) while the excluded are incorporated into the global world by the dominance of the global markets. Therefore, the new terms of eligibility due to globalization are creating a new binary view from have/have-not into eligible/ineligible (Carter, 2008). Those that are eligible participate in new modes of wealth creation, changing from industrial work to the ever-changing knowledge that design, produce and market products and services. Specifically, this is having a profound effect on scientific knowledge moving away from fundamental inquiry towards discovery of new products and services (Carter, 2008).

Leading these changes is the USA, which is the richest country in the world in terms of amount of money it earns. Furthermore, USA is also contributing greatly to globalization through language, as English is the prominent language; English has been the dominant language of trade, commerce, law and science (Penn, 2005). Today, globalization continues to accelerate at an extreme rate through development of technologies of communication however people living in poor countries access is very difficult because of the energy and financial demands that technology requires. In the Western world, one can connect to the Internet wirelessly and often for free. However, in most developing countries, the opposite is true. For example, the connection of Cambodian people to the global ocean of knowledge is a very small stream that is both slow and expensive to navigate. Cambodia has one of the lowest rates of Internet connectivity with one of the highest pricing structures to access such connectivity (http://www.unescap.org).

This shifting of information is one type of globalization that indigenous communities face. Another is the shifting of people and goods. Air travel has increased at a phenomenal rate and one can now fall asleep in Johannesburg and

wake up in London 8 hours later. Goods are now travelling huge distances to arrive at our stores. Apples picked in Peru travel to China to be concentrated and bottled and then ship to California to be distributed to the Midwest. Even with all of the travelling of people and goods, indigenous people are unlikely to travel great distances. Those travelling around the world mostly hold European or North American passports, and the cost of flights is astronomical in compared with their wages (Penn, 2005). Therefore, in terms of science education it is necessary to understand that it is the "Others" rather than indigenous peoples choosing to be introduced to other cultures bring the majority of the globalization indigenous people face into their world.

One consequence of globalization for science and science education is it creates even more complex societies and challenges for indigenous communities. Similarly to colonization globalization changes indigenous knowledge systems, even if that is not the goal. "Globalization has meant that at the local level, the world's peoples rub more closely together ensuring that diversity, plurality, hybridity, dislocation, and discontinuity have become the leitmotifs of the global age" (Carter, 2004, p. 820) Therefore, indigenous communities are forced to encounter the Western world more rapidly and frequently. "Science has seen considerable change in recent decades with the emergence of a new economic and sociopolitical contract between science, the nation, state, and private commercial interests. Generally regarded as having been precipitated by globalization, these changes in the sciences are beginning to be documented by a range of commentators" (Carter, 2008, p. 617). Science's changing forms hold profound implications for the development of science education. There is little science education scholarship exploring the implications sciences' altering forms. Detailing this relationship is important because it can help formulate new questions, and methods for their investigation, relevant to the work of science education in the newly global world (Carter, 2008).

Because of the USA being the powerhouse of globalization, English has become the language of globalization. Because of the power it holds in trade, diplomacy, aid, technology, and academia, all other languages are disadvantaged. As well, there are repercussions for those who communications must always be through a second or third language, particularly in a learning environment. Access to scientific literature in developing countries is marginal at best. While scientists and college students can use the resources of fairly good technical libraries, young students are less fortunate. While many scientists in developing countries typically read and understand English, most scientific journals are not within easy reach. University libraries in these countries are often strapped for funds and can barely afford to subscribe to even a few journals in each specialty field. The rest are generally unavailable to scientists and students. Without access to current literature, the preparation and publication of works directed to the more general public is delayed or impaired. Simultaneously, and perhaps more damaging in the long run, is the difficulty that many scientists in developing countries have in trying to publish their research results in American, European or global-scope journals. The conventions and regulations with respect to language use, reference citations, and the necessity of supporting research results with up-to-date bibliographic information, makes the publication of their articles an ordeal. (de la Rosa, 2008). Therefore, learning English and following the "rules" of WMS becomes a necessity for scientists in indigenous communities. This is only one of the many effects of globalization on science education for indigenous communities.

As science education research continues to pay more attention to cultural diversity, indigenous knowledge systems, and globalization, the long-held notions of WMS are being challenged, and questions such as how to have a science education that truly is for "all" and in what ways other ways of knowing can be incorporated into our public education system are being explored like never before.

**5. Research on Culture and Learning for Indigenous Students in Science Education**

One complexity of indigenous students learning science is culture. This section examines studies that relate culture and learning to indigenous students in science education classrooms. Until the very recent past, there has been little debate about a likely connection between culture and science education. The scenario is now changing as more and more attention is being paid to the science exposure of indigenous students who live in communities in which traditional practices and beliefs guide daily actions. The interest has been fuelled, in part, by the global thrust towards school science programs that are intended, not for a select few, but for all students. The "science for all" movement is intended to equip all students to use their knowledge of science in their daily lives. "Science for all" and "science for daily living" take on new meaning when indigenous communities' needs are considered in cultural context.

Currently, there are three approaches dominating the IK field that are all derived from anthropology. These are worldviews (Cobern, 1991), collateral learning (Jegede, 1995), and border crossing (Costa, 1995; Aikenhead, 1996). Cultural anthropology (Maddock, 1981) and postcolonial scholarship (McKinley, 1996) both influenced the direction of indigenous science education research toward humanistic school science. In 1981, Maddock focused on theory building through a review of literature in science education and anthropology. He argued against the deficit model that focused on bring Western modern science into developing nations. His viewpoint was that science and science education are cultural enterprises, which form part of the cultural matrix of society, and that educational considerations concerning science must be made in light of that wider perspective. He considered the science curriculum projects of many nations,

and emphasizes that they were greatly influenced by Western scientists. Many of the science curricula developed by Western scientists was simply transplanted from one culture to another, often for little regard to resources or place. Typically, it had been assumed that 'primitive' cultures had no science, yet there had been little research in these cultures to confirm that assumption. Finally, Maddock concludes with the argument that to continue to progress, science education, both in its practice and research, needs to adopt an anthropological point of view.

Empirical research incorporated Maddock's viewpoint of including an anthropological approach to science education research. These studies were localized and used this humanistic framework (Ogunniyi, 1982; Henry, 1987; Ogunniyi, 1987). The purposes of these studies were to study specific curricula in a specific location. These new curricula were attempting to focus on science learning that was relevant to everyday life. They used quantitative techniques to determine how students or teachers were negotiating their opposing viewpoints (WMS and indigenous knowledge) often through Likert-scale or surveys. Most of the findings described that the curriculum needs to be relevant to the specific culture and not force the learners or teachers to abandon their traditions; however a distinction still remains between indigenous knowledge and WMS. It was with this use of anthropological definition of culture that a framework for worldview was brought into science education (Cobern, 1991).

Within this framework, George (1987) sought to explore the role of practical and culturally relevant curricula in a Caribbean context, which added a new dimension to the argument for indigenous knowledge in school science. She argued that, "Children in developing countries therefore need to learn that technological innovation does not always have to originate in the developed world but that they too have the ability to create" (p. 818). She proposed that in addressing this idea through science curriculum, students would have pride of their heritage and would drive to continue to innovate.

There have been many studies that explore how culture affects the students' learning abilities and desires. Deloria's (1992) ethnography claimed that American Indians made careful observations based on the principle that all things are related, an idea that is investigated in the modern theory of physics. Employing a multi-cultural theoretical perspective, Deloria asserted that American Indian students could radically transform scientific knowledge by grounding themselves in traditional knowledge about the world and working this understanding into the Western scientific format. However, Cajete (1999) cautions how using these cultural differences can causes isolation. He claimed there is a mismatch between cultural perspectives that results in many young Native Americans and other indigenous students becoming alienated from science**.** Kawagley (1999) attempted to resolve this issue and sought ways to maintain culture despite strong opposition and set up Alaska native camps in an attempt to assert more control over the changes. This worldview perspective outlines suggestions for seasonal camps in which elders would teach Native language, culture, environmental knowledge, and subsistence skills, as well as the means of bridging Native and Eurocentric science and worldviews. In this model, natives had autonomy to focus on the context and language imperative to the study of IK. Garroutte (1999) echoed calls for culturally relevant programming that recognized the legitimacy of American Indian models of inquiry into the natural world Davidson & Miller (1998) described a course for teachers of American-Indian students that focused on the development of culturally relevant activities as part of the science and mathematics curricula. Programs were embedded in a holistic approach to the curriculum and linked the informal science and mathematics of the culture with traditional school science and mathematics. Rowland and Adkins (1995) wrote about the Science and Mathematics for Indian Learners and Educators (SMILE) Project at Northern Arizona University, which provided science in-service training to K-8 teachers from Bureau of Indian Affairs schools on the Navajo reservation. The training aimed to increase and improve science instruction for Indian children and to connect science education to Native science. McKinley (1996) discussed the development of a Maori curriculum in New Zealand. An important emphasis was the participation of the Maori people throughout the curriculum development. The ideas were many, however, remained unevaluated in research.

Some proposed programs, however, were evaluated for success. The U.S. Global Change Research Program was established in 1990 to develop scientific projections of anticipated impacts of the changing biosphere on humans and social systems. As part of this program, the National Science Foundation created the Arctic System Science Program (ARCSS) to consider how humans interact with physical and biological environmental change in the Arctic. Over a 5-year period (1995-2000), initiatives systematically documented the indigenous knowledge systems of Alaska Native people and developed educational policies and practices that effectively integrate indigenous and Western knowledge**.** Program emphasis was on renewing Native pathways to education so that traditional knowledge systems, ways of knowing, and worldviews may be used as a foundation for learning all subject matter. Elders' councils and the Alaska Native/Rural Education Consortium provided overall guidance. Resources were assembled in each of Alaska's five cultural regions (Yup'ik, Inupiaq, Athabasca, Aleut/Alvtiiq, and Southeast regions) and entered into a curriculum resource collection maintained through the Alaska Native Knowledge Network and listed on the World Wide Web. During the first 3 years of implementation, these schools showed a net gain relative to control schools in mathematics achievement scores and dropout rates. Entering its third year, effects have shown a decrease in the dropout rate and

increases in student achievement scores; the number of rural students attending college; and the number of Native students pursuing studies in fields of science, math, and engineering (Barnhardt & Kawagley, 1998).

Historically, little research has been done to address student learning and indigenous languages. Because of the paucity of research in this area, there is no consistency among researchers about how or if indigenous language should included in science instruction and the majority of research is in debate of how much indigenous language to use in the science classroom. Rutherford and Nkopodi (1990) carried out a study of English language learners in South Africa and found that the use of vernacular hindered student learning in a science classroom. They argued that there should be more English language usage to avoid confusion. However, this study did not examine the questions they asked the students from a linguistic viewpoint, which has demonstrated helping to eliminate misconceptions in the testing (Clerk & Rutherford, 2000). McKinley (2005) argued that one of the main ways in which indigenous knowledge systems will survive and thrive is through the establishment of programs taught through indigenous languages so that a dialectal relationship between language and science knowledge is established that continues to act as the wellspring. However, the critical issue is not only what happens in the science classrooms but also what happens in the teacher education institutes. Indigenous languages in science education face many barriers with a possibility of extinction of the languages and this area of research is in urgent need. Therefore, the focus needs to move away from what makes teaching and learning effect for indigenous peoples to understand, what makes an effective indigenous language learner and teacher of science? (McKinley, 2007)

**6. Incorporating Indigenous Language through Placed-Based Curriculum**

The multicultural debates are linked to other debates in science education aimed at inclusion, such as the constructivism approach, 'science for all', and SSI initiatives, which can improve the learning and achievement in science of a wider range of students. "However, the failure of science education research during these times was in not taking culture, language, 'race' or colonization as major factors in any of the projects" (McKinley, 2005, p. 230). This is despite that fact that a number of indigenous writers have argued the importance of connecting school science education to the students' cultural background (Cajete 1995, Kawagley 1995, Kawagley and Barnhardt 1999, McKinley, 1997). Making the connection to the cultural background can be done in two different ways, both of which are the foundations for place-based curriculum: 1) making science 'relevant' to the student, which usually involves teaching in culturally relevant contexts or everyday science, 2) using culturally responsive teaching or culturally based pedagogy (see Bishop and Glynn 1994, Ladson-Billings 1995).

A multidisciplinary analysis of place reveals the many ways that places are profoundly pedagogical. That is, as centers of experience, places *teach* us about how the world works and how our lives fit into the spaces we occupy. Further, places *make* us: As occupants of particular places with particular attributes, our identity and our possibilities are shaped. Snyder's (1990) assertion "The world is places" (p. 25) can be expanded: People make places and that places make people. The kind of teaching and shaping that places accomplish, of course, depends on what kinds of attention we give to them and on how we respond to them. Although culture and place are deeply intertwined (Feld & Basso, 1996), our relationship with places has been obscured by an educational system that currently neglects them. That is, schooling often distracts our attention from, and distorts our response to, the actual contexts of our own places.

To appreciate "place" as a productive educational construct, one must first explore its meanings. Place has recently become a focus for inquiry across a variety of disciplines, from architecture, ecology, geography, and anthropology, to philosophy, sociology, literary theory, psychology, and cultural studies. No single, obvious theory of place exists that might inform educational studies, although most scholars who study place would agree that an understanding of it is key to understanding the nature of our relationships with each other and the world (Grunewald, 2003).

Place-conscious education recognizes that places are what people make of them, which also include human culture. This suggests a more active role for schools in the study, care, and creation of places. If human beings are responsible for making the place, then we must become conscious of ourselves as place makers and participants in the sociopolitical process of place making. Educationally, this means developing the connections with places that allow us to invest them with particular kinds of meaning. The perceptions of students and teachers must be extended to include reflection on how a diversity of places became what they are today. In addition, from the perspective of democratic education, schools must provide opportunities for students to participate meaningfully in the process of place making to include the process of shaping what our places will become. As Grunewald suggests:

Systems of education that do not take on this work can be said to reproduce the unconscious assumption that material cultural formations-places-are natural and inevitable parts of our social and geographical landscape. Such an assumption is dangerous because (a) it obscures the connections between education, culture, and place; (b) it releases people from their responsibility as place makers; and (c) it legitimizes the ideology that is embedded in the places we take for granted. Educational disregard for places, therefore, limits the possibilities for democracy (and for places) because it diverts the attention of citizens, educators, and students from the social, cultural, and political patterns involved in place making. (p. 628)

Place-based theory and indigenous knowledge systems often use feminist pedagogical strategies. Feminist pedagogy is democratic, cooperative, and concerned with the connected and relational approaches to learning (Maher & Tetreault, 1994). Feminist perspectives include an inclusion of both place and experience (Nielsen, 1990, 24). A relational approach to learning, which centers on connecting students to teachers and subject matter, is central to the teaching process (Bingham & Sidorkin, 2004; Clandinin, 1985; Cochran-Smith, 2001; Greeno, 1997; Noddings, 1986, 2004). Relational knowing does not suggest that knowledge and knowing are not important; rather they are entrenched together with relation (Stengel, 2004). In relational knowing, the classroom is community and content knowledge "whose paths through life have fallen together" (Rorty, 1979). Thus, this relates to the importance of place in indigenous communities by viewing education from a holistic standpoint, which is the nature of indigenous people, and one that includes all views, cultures and backgrounds as central to the classroom.

Schroder (2006) explored the ways to bring together local and global knowledge systems in the context of education using place-based education. She discussed the concepts of native science and intercultural education in Ecuadorian indigenous education today and explored the views of Ecuadorian indigenous educators and leaders around issues of education and science. The primary need voiced by these individuals is that of defending their communities against various kinds of encroachment, economic and well as cultural, and the enterprise of education is viewed within this reality. The paper discussed the paradigm of place-conscious education, which Schroder argued is a unifying conceptual framework that speaks to the concerns voiced by the educators in Ecuador and elsewhere.

Grunewald (2003) agreed with this need for place and he pointed out that students and their teachers are too often isolated from the places outside the classroom, leading to a limiting of the experiences and perceptions of the students, a stunting of development and a lack of connection to and appreciation of the place in which they are located. This isolation from the place outside the school walls is exacerbated in many countries by the standardized curriculum, testing, emphasis on high scores at the conclusion of schooling, and a reliance on textbooks produced to serve a wide range of students.

Although the research in indigenous knowledge and place-based education is extremely limited, in 2007, Chinn (2007) provided a clear framework of how this can be successfully implemented She explored how would teachers evaluate traditional/indigenous knowledge, would there be evidence of transformative learning defined as interest in developing place-based curriculum relevant to environmental issues, and finally would place, culture, and prior experience figure in their lessons and evaluations. The context for her study was a 10-day Summer Teacher Institute in Honolulu titled "Thinking in Math and Science: Making Connections" and was described as a "global learning opportunity for middle and high school teachers of math and science." Nineteen experienced secondary teachers participated in the institute and the study. Chinn reported her results through teachers' written responses as part of the collaborative action research, analysis of lesson videotapes, written evaluations, interviews and e-mails. Chinn concluded that teachers recognized the overlaps between indigenous and Western science knowledge, the value of including indigenous science in the curricula, and in final writings, an explicitly ethical stance that pure positivism and scientism are no longer relevant to science education. Chinn also concluded that the professional development institute provided a model for developing place and problem-based science curricula responsive to students' lives and incorporating indigenous perspectives. Furthermore, Chinn argued that teacher's desires to address culture and place-based environmental literacy should be considered in the debate on national education policies. She concluded that most participants connected topics to familiar contexts and places towards the larger project of developing place-based lessons oriented to active environmental literacy. Thus, these results implied that science teacher education incorporate active learning active learning situated in contexts and issues that recognize personal, socio-cultural, and ethical contexts of science.

## 7. Gaps in the Literature

The research in indigenous knowledge is dominated by cultural approaches that focus on worldviews, collateral learning, and border crossing. While this research helped us to step away from a deficit-model approach, it still has issues of power and economic privilege. In effect, underachieving of indigenous students continues to be a problem. This is most likely due to cultural conflict between home and classroom, low teacher efficacy and expectation, low student self-expectation, inadequate teacher subject, cultural and pedagogic knowledge, and a rigid curriculum framework with little space for culturally based pedagogy. Perhaps due to economic and technological strains, the Euro-American domination of science education is powerful and resistant to alternate worldviews. There is continued debate on worldviews and their place in the science curricula. Because researchers can have problems getting articles on local communities published in international journals, it can be difficult to access a broad view of the work that is being done in this area of study. There is a lack of empirical studies on indigenous languages, assessments of indigenous learning, and science education in terms of a dynamic exchange with indigenous cultures. Grouping together all other forms of knowledge uncritically as 'indigenous knowledge' and separating them from their context makes it nearly impossible to avoid generalization and oversimplification. Such generalization fails to recognize the potentially unique and important contribution that local knowledge can make to development. More research needs to be done on IK systems, and methods need to be developed for dealing with it. This research must be done together with the people

who possess the IK and with the local communities involved. This growing interest in IK is reflected in statements made by governments and non-governmental organizations in many countries are now acknowledging the contribution that local knowledge can make to sustainable development. An awareness of the value of indigenous knowledge is growing at the same time when such knowledge is under great threat to being lost and forgotten. It is in danger of disappearing not only under influence of global processes of rapid change, but also because the lack of resources needed to document, protect, and share such knowledge. Besides the need for facilities, research, and financial resources, there is also a need for a shift in moral and political support, as local knowledge continues to be denoted a lower status in both development and scientific circles than Western-based science and technology.

Overall, we need to avoid reducing the purpose of education to producing workers that can compete in the global economy (Apple, 2001). Globalization survives on uneven development, which includes economic, social, and political conditions and is necessary for the acquisition of wealth and power. And therefore, adding a new dimension to "science for all" as it is creating even greater disparity among populations. Globalization impact is felt in a range of domains including science education. Clearly, science's changing forms from globalization hold profound implications for science. However, few studies situate science with the impact of globalization (Carter, 2008). Therefore, to move beyond the science as identified as important in the West, we need to be paying attention to the non-Western science within postcolonial thinking with concern for culture, rights, language, and place of indigenous peoples.

There continues to be a call for a sincere attempt to get indigenous students participating and achieving in science, as well as to find a place in the curriculum for IK that recognizes and protects its value and contribution to our society. If the focus was shifted towards what makes an effective indigenous language learner and teacher of science, the primary issues indigenous learners face would be illuminated by preventing language loss and protecting indigenous information. The use of indigenous languages as a means of science instruction is essential to develop the culture and language (McKinley, 2005). By creating a place in science curricula and classrooms for indigenous knowledge, this will add to scientific knowledge and methods by learning from indigenous people. Not only would these indigenous students be empowered by this could serve as a model for cross-cultural classrooms that are forced to face similar issues due to globalization. This approach also has implications for Western science classrooms as these students learn another valid approach to thinking about the world and can serve as a way to examine internally their own beliefs and habits of mind.

**References**

Aikenhead, G. S. (1996). Science education: Border crossing into the subculture of science. *Studies in Science Education, 27*(1-52).

Aikenhead, G. S. (1997). Toward a first nations cross-cultural science and technology curriculum. *Science Education, 81*, 217-238.

AK, A. R. C. o. t. U. S. F. (1997). *Building Partnerships in Polar Research and Education. Report from the Arctic Science Education Workshop (New Orleans, Louisiana, April 6-8, 1997)* o. Document Number).

Alaska Univ. Fairbanks. Alaska Native Knowledge Network. (1998). *Alaska Rural Systemic Initiative: Year Three Annual Progress Report, December 1, 1997-November 30, 1998* (No. ED443603)o. Document Number).

Alaska Univ. Fairbanks. Alaska Native Knowledge Network. (1999). *Sharing our pathways: A newsletter of the Alaska Rural Systemic Initiative, 1996-1999* (No. ED450981)o. Document Number).

Andrews, T. (2002). The land Is like a book. *Pathways: The Ontario Journal of Outdoor Education, 14*(1), 18-20.

Apple, M. (2001). Markets, standards, teaching, and teaching education. *Journal of Teacher Education, 52*(3), 182-196.

Arctic Research Consortium of the United States Fairbanks AK. *People and the Arctic: A Prospectus for Research on the Human Dimensions of the Arctic System (HARC) for the National Science Foundation Arctic System Science Program* (No. ED435515): Website: <http://www.arcus.org/HARC/index.html>.o. Document Number).

Arellano, E. L. Barcenal, T. L., Bilbao, P. P., Castellano, M. A., Nichols, S., & Tippins, D. J. (2001). Case-based pedagogy as a context for collaborative inquiry in the Philippines. *Journal of Research in Science Teaching, 38*, 502-528.

Barker, M. (1999). The Maori language science curriculum of Aotearoa/New Zealand: A contribution of sustainable development. *Waikato Journal of Education, 5*, 51-60.

Barnhardt, R. (1999). Educational Renewal in Rural Alaska: The Alaska Rural Systemic Initiative. *Rural Educator, 21*(2), 9-14.

Battiste, M. & Henderson, J. Y. (2000). *Protecting indigenous knowledge and heritage*. Saskatoon, SK, Canada: Purich.

Bhabha, H. K. (1994). *The location of culture*. New York: Routledge.

Biesta, G. (2004). "Mind the gap!": Communication and the educational relation. In C. Bingham & A. Sidorkin (Eds.), *No education without relation*. New York: Peter Lang Publishers.

Bingham, C. & Sidorkin, A. (Eds.). (2004). *No education without relation*. New York: Peter Lang Publishers.

Bishop, R., & Glynn, T. (1999). *Culture counts: Changing power relations in education*. Palmerston North: New Zealand: Dunmore Press.

Brown, P. & Lauder, H. (1996). Education, globalization and economic development. *Journal of Educational Policy, 11*, 1-25.

Brown-Acquaye, H. A. (2000). Each is necessary and none is redundant: The need for science in developing countries. *Science Education, 85*, 69-70.

Cajete, G. (1995). *Look to the mountains: an ecology of indigenous education*. Durango, CO: Kivaki Press.

Cajete, G. A. (1999). *Igniting the sparkle: An indigenous science education model* (No. ED449937)o. Document Number).

Castellano, M. B. (2000). Updating of aboriginal traditions of knowledge. In G. J. S. Dei, B. L. Hall & D. G. Rosenberg (Eds.), *Indigenous knowledge in global context. Multiple readings of our world* (pp. 21-36). Toronto, Canada: University of Toronto Press.

Chinn, P. W. U. (2007). Decolonizing methodologies and Indigenous knowledge: The role of culture, place and personal experience in professional development. *Journal of Research in Science Teaching, 44*(9), 1247-1268.

Clark, D. A. T. (2004). Not the end of our stories, not the end of our songs. In D. A. Mihesuah & A. C. Wilson (Eds.), *Indigening the academy*. Lincoln, NE: University of Nebraska.

Clerk, D. & Rutherford, M. (2000). Language as a confounding variable in the diagnosis of misconceptions. *International Journal of Science Education, 22*, 703-717.

Cobern, W. W. (1996). Worldview theory and conceptual change in science education. *Science Education, 80*, 579-610.

Cobern, W. W. & Loving, C. C. (2000). Defining "science" in a multicultural world: Implications for science education. *Science Education, 85*, 50-67.

Cochran-Smith, M. (2001). The outcomes question in teacher education. *Teaching and Teacher Education,, 17*(5), 527-546.

Corsiglia, J. & Snively, G. (2000). Rejoiner: Infusing indigenous science into western modern science for a sustainable future. *Science Education, 85*, 82-86.

Costa, D. B. (1995). When science is "another world": Relationship between worlds of family, friends, and science. *Science Education, 79*, 313-333.

Crosby, A. (2004). *Ecological imperialism: The biological expansion of Europe*. London: Cambridge University Press.

Garrison, E. R. (1994). Transforming biology curriculum at Navajo Community College to include Navajo and Western cultural knowledge. *Journal of Navajo Education, 12*(1), 18-22.

Garroutte, E. M. (1999). American Indian science education: The second step. *American Indian Culture and Research Journal, 23*(4), 91-114.

George, J. M. (1988). The role of native technology in science education in developing countries: A Caribbean perspective. . *School Science Review, 14*, 815-820.

George, J. M. (1999). Indigenous knowledge as a component of the school curriculum. In L. M. Semali & J. L. Kincheloe (Eds.), *What is indigenous knowledge? Voices from the academy*. New York: Falmer Press.

Gilbert, H. & Tompkins, J. (1996). *Post-Colonial Drama: Theory, practice, politics*. London: Routledge.

Greeno, J. G. (1997). On claims that answer the wrong questions. . *Educational Researcher, 26*(1), 5-17.

Gruenewald, D. A. (2003). Foundations of place: A multidisciplinary framework for place-conscious education. *American Educational Research Journal, 40*, 619-654.

Hill, F., Kawagley, O., Barnhardt, R. & Alaska Univ. Fairbanks. Alaska Native Knowledge Network. (2000). *AKRSI Final Report: Phase I* (No. ED453994)o. Document Number).

Jegede, O. J. & Aikenhead, G. S. (1999). Transcending cultural borders: Implications for science teaching. *Research in Science and Technological Education, 17*(1), 45-66.

Jegede, O. J. & Okebukola, P. A. O. (1991). The effect of instruction on socio-cultural beliefs hindering the learning of science. *Journal of Research in Science Teaching, 28*(3), 275-285.

Kawagley, A. O. (1995). *A Yupik worldview: a pathway to ecology and spirit*. Prospect Heights, IL: Waveland Press.

Knudtson, P. & Suzuki, D. (1992). *Wisdom of Elders: Honoring Sacred Native Visions of Nature*. Ontario, Canada: Stoddart Publishing.

Kuhn, T. (1970). *The structure of scientific revolutions (2nd ed.)*. Chicago: University of Chicago Press.

Ladson-Billings, G. (1995). Multicultural teacher education: Research practice and policy. In J. Banks (Ed.), *Handbook of multicultural education*. New York: Macmillan.

Lee, O. (2001). Culture and language in science education: What do we know and what do we need to know? *Journal of Research in Science Teaching, 38*, 499-501.

Maddock, M. N. (1981). Science education: An anthropological viewpoint. *Studies in Science Education, 8*, 1-26.

Maher, F. A. & Tetreault, M. H. (1994). *Going Beyond Sex Equity*. New York: Basic Books.

McKinley, E. (1996). Towards an indigenous science curriculum. *Research in Science Education, 26*(155-167).

McKinley, E. (1997). Maori and science education: Participation, aspirations and school curricula. In B. Bell & R. Baker (Eds.), *Developing the science curriculum in Aotearoa New Zealand*. Auckland: Longman.

McKinley, E. (2005). Locating the global: Culture, language and science education for indigenous students. *International Journal of Science Education, 27*(2), 227-241.

McKinley, E. (2007). Postcolonialism, indigenous students, and science education. In S. K. Abell & N. G. Lederman (Eds.), *Handbook on Science Education* (pp. 199-226). Mahwah: NJ: Lawrence Erlbaum Associates, Inc.

Mohanram, R. (1999). *Black body*. St. Leonards, Australia: Allen & Urwin.

Mueller, M. P. & Bentley, M. L. (2007). Beyond the "decorated landscapes" of educational reform: Toward landscapes of pluralism in science education. *Science Education, 91*, 321-338.

National Biological Information Infrastructure (NBII) & IUCN/SSC Invasive Species Specialist Group (ISSG). (2005). Global Invasive Species Database (Publication. Retrieved July, 7, 2008, from National Biological Information Infrastructure: http://www.issg.org/database/species/ecology.asp?si=143&fr=1&sts=sss&lang=EN.

Nielsen, J. M. (1990). *Feminist research methods : exemplary readings in the social sciences* Boulder, CO: Westview Press.

Nisbett, R. E. (2000). *The Geography of Thought: How Asians and Westerns Think Differently*. New York: Free Press.

Noddings, N. (2004). High stakes testing: Why? *Theory and Research in Education, 2*, 263-269.

Ogawa, M. (1989). Beyond the tacit framework of 'science' and 'science education' among science educators. *International Journal of Science Education, 11*, 247-250.

Ogunniyi, M. B. (1982). An Analysis of Prospective Science Teachers' Understanding of the Nature of Science. *Journal of Research in Science Teaching, 19*, 25-32.

Ogunniyi, M. B. (1988). Adapting western science to traditional African culture. *International Journal of Science Education, 10*, 1-9.

Ogunniyi, M. B. (2007). Teachers' stances and practical arguments regarding a science-indigenous knowledge curriculum: Part 1. *International Journal of Science Education, 29*, 963-986.

Pagden, A. (1998). *The Origins of Empire, The Oxford History of the British Empire*. Oxford: Oxford University Press.

Penn, H. (2005). *Unequal Childhoods: Young children's lives in poor countries*. London: Routledge.

Rosemont, H. (1997). Classical Confusician and Contemporary Feminist Perspectives on Self: Some Parallels and Their Implications. In *Douglas Allen*. Boulder: CO: Westview Press.

Rowland, P. M., & Atkins, C. R. (2003). Native American science education and its implications for multicultural science education. In S. M. Hines (Ed.), *Multicultural science education: Theory, practice, and promise* New York: Peter Lang.

Rutherford, M. & Nikopodi, N. (1990). A comparison of the recognition of some science concept definitions in English and North Sotho for second language English speakers. *International Journal of Science Education, 12*, 443-456.

Schafer, J. (1993). Introducing agronomy students to the concepts of indigenous and cultural knowledge. *Journal of Natural Resources and Life Sciences Education, 22*, 22-30.

Segesvary, V. (1998). *From illusion to delusion: Globalization and the contradictions of late modernity.* San Francisco, CA: International Scholars Publications.

Shizha, E. (2007). Critical analysis of problems encountered in incorporating indigenous knowledge in science teaching

by primary school teachers in Zimbabwe. *Alberta Journal of Educational Research, 53*(3), 302-319.

Shumba, O. (1999). Relationship between secondary science teachers' orientation to traditional culture and beliefs concerning science instructional ideology. *Journal of Research in Science Teaching, 36*, 333-355.

Snively, G. & Corsiglia, J. (2001). Discovering indigenous science: Implications for science education. *Science Education, 85*, 6-35.

Snyder, G. (1990). *The practice of the wild.* New York: North Point Press.

Solomon, J. (2002). Changes to science education: Where next? *Canadian Journal of Science, Mathematics and Technology Education, 2*(1), 25.

Stanley, W. B. & Brickhouse, N. W. (2001). Teaching sciences: The multicultural question revisited. *Science Education, 85*, 35-49.

Stengel, B. (2004). Knowing is response-able relation. In C. Bingham & A. Sidorkin (Eds.), *No education without relation*. New York: Peter Lang Publishers.

Young, M. F. D. (1974). Notes for a sociology of science education. *Studies in Science Education, 1*, 51-60.

International Education Studies
www.ccsenet.org/journal.html
Vol. 2, No. 1
February 2009

# The Application of Simulated Experimental Teaching in International Trade Course

Tao Ma
School of Economics, Tianjin Polytechnic University
Tianjin 300160 China
Tel: 86-22-8395-6411 E-mail: tjpumt@tom.com

Wen Chen
School of Economics, Tianjin Polytechnic University
Tianjin 300160 China
Tel: 86-22-8395-6411 E-mail: xiaohaha10000@126.com

**Abstract**

International Trade Practice is a professional basic course for specialty of International Economy and Trade. As the core of International Trade Practice, it is extremely related to foreign affairs and needs much practical experience. This paper puts forward some suggestions on how to improve the performance of teaching in order to educate the outstanding graduates, which are urgently demanded by the foreign trade enterprises.

**Keywords:** International trade practice, Simulated experimental teaching, Practical experience

To create the professional brand of international trade, enhance the competitive strength, it's an inevitable choice for college to strengthen the teaching reform and focused on "High Quality, Sufficient Abilities", to improve the status of professional practice in the education system, so as to adapt the public's new requirement for the international professional. In order to adapt the new position of our entering the WTO and receive new challenge, speed up to cultivate high diathesis professionals with the ability of innovating, reining the market, and managing the international business affairs, who are shortage in the international trade, many domestic colleges adopt the simulated experimental didactics one after another. In theory, they do widely research; while in practice, they summarize a mass of experience. But meanwhile we should know that, the simulated experimental didactics has not been long-playing used in China. So we may have something to be ameliorated and ulterior improved in our education activity, which cause us to go on intensifying education reforms, so as to create conditions for the further application of simulated experimental didactics.

## 1. The comparative advantages of international trade simulated experimental didactics

The international commerce is not only a subject researching the specific process of international commodity exchange, but also a comprehensive and practical subject which is practice-needed and involving foreign interest. As a practical subject, just by learning teaching material to make students be "High quality, Sufficient Abilities "are never enough. We should also get help from simulated experimental teaching to reach the goal. Compared with traditional teaching method, the simulated experimental didactics undoubtedly have many obvious advantages.

Simulated Experimental Teaching is favorable for training the student's ability of integrating theory with practice, consolidating and deepening their understanding of theory. Theories originate from practice, and are the refinement, abstract and summary of practice. The penetration of practice will in turn deepen our understanding of theory. In teaching, students get abstract theory, which is hard to make sense of and accept. For example, the teachers will take about half a period to explain the international contracts, which contain contract subject matter with its quality, quantity and packing, mode of transportation, shipment clause, transport documents, form of contracts and its basic components, performance of import and export contracts, main import and export document, claims and settlement of claims and so on. But for students, it is low efficient and difficult to grasp. However, if you use international trade simulated experimental didactics, students with the aid of adviser, fill the transport documents and main import and export document by their own hands and simulate signing import and export contracts. So we can bridge the gap between theory and practice. One more example, to explain the payment in the international trade, agreement and fulfill the Contract of International Goods Sales and international electronic commerce in e-commerce and so on in business of international trade settle accounts, will make the beginning students puzzled and at sea. Yet once you finish a period of

simulated experiment and change the abstract theory into tangible data, you may get a thorough comprehension of international trade rudiments.

Simulated Experimental Teaching is favorable for making up the need of practice outside the college to protect their trade secret. Many of them refuse to accept students to practice. They worried that the interns may give out their trade secret. Or perhaps they settle for the interns for some relations, they won't arrange them to do pacific operation commonly. Instead, they may give them some documents to fill, some data to tabulate, or even ask them to do some laughing matter. Besides, because of expand admission, the schools' internship expenditure per student is decreasing year by year, while the cost of internship is increasing gradually. The only way is to practical work placement nearby and as simple as possible. Due to multifarious factors above, students' practicing outside the college is just a form and results in worse effect. The International Trade Simulated Experimental Teaching therefore plays a growing part in education system.

**2. Optimization the positioning and content of International Trade Simulated Experimental Teaching**

Whether the design of this system is scientific has a close bearing on the quality of simulated experimental teaching. It should has a specific aim, which is strengthening the students' understanding and grasp on booklore (the Terms of International Trade, Clause in the Contract for the International Sale of Goods, the Negotiation and Fulfillment of International Sale of Goods, Pattern of International Trade, etc.), setting up the concept of competition and have an all-around idea of what you have learn. Getting some practice effects, lead the students to have perceptions of the requirement about international business and master the skill of international trade business work.

The international trade instructional system makes international trade business work as the central task. Analog simulates the whole procedure of international trade business. First, preparation works before trade. In order to ensure compliance of import and export contracts, we should keep good preparation before trade. It includes choosing suitable markets and trade partners, application import and export license, etc. Second, it is the consultation of import/export contracts. Business consultation is a procedure that buyers and sellers consult on condition of merchandising, to reach an agreement. It’s the basis of entering into a business contract. Whether the business consultation is good or not directly influences the award of contract and has respect to each other’s benefit. We should attach importance to it. Negotiation covers Name of Article, Quality, Packing, Price, Shipment, Insurance, Payment, commodity inspection, claim, arbitration, force majeure, etc. The procedures of business negotiation can be concluded into four steps, that is Inquiry, Offer, Counter-offer and Accept. We take the business process below into consideration in the education system design. Export company give an offer---Import company counter-offer to bargain---Reach an agreement---Enter into a contract. Third, signing contracts. In the international trade, we need to do business negotiation to conclude business, and the form of law is contract. Business negotiation is a process while award of contract is a result. Fourth, each negotiating party carries on the contract. After signing a contract, both parties should fulfill obligations as the contract tells. The export company's main obligation is delivering the goods, handing over all the relevant documents, and transferring the ownership of the goods to the import company. While that of import company is paying and receiving the goods.

Simulation experiment is good for the development of college and student, and it also cater for the need of first-rate international college in 21st century. It can not only change the adverse consequences of low efficiency and the drudge caused by the traditional teaching of the theory of international trade, which make the students realize the actual hands-operation, familiar with the specific trade procedures and operation process, but also enrich teaching model, enhance the enthusiasm and innovation of college research, expand the impact of college, enhance the school's reputation. So we should vigorously promote the application of simulation teaching in the international trade courses.

**References**

Liu, Ying. (2008). Analysis on Teaching Methods of International Trade Practice. *Journal of Huazhong* Agricultural University. (Social Science Edition), 1, 24-25.

Zhang, Qingxiang. (2007). Probing into Reform of Teaching Methodology for InternationalTtrade Practices. *Journal of Changchun University of Science and Technology.* (Higher Education Edition), 1, 35-36.

Wang, Wu-yi. (2002). Analysis of the Teaching Reform of International Trade Business and Researches on the General Teaching Scheme. *Journal of Anhui University of Technology.* (Sociel Sciences), 1, 40-41.

Zhu, Wei. (2001). Thinking and Practice of the International Business Simulation Laboratory. *Laboratory Research and Exploration,* 2, 17-18.

International Education Studies
www.ccsenet.org/journal.html
Vol. 2, No. 1
February 2009

# On the Characteristics of Higher Education in Canada and Its Inspiration

Qingyun Xu
Pingdingshan University
No.240 Jianshe Road, Foreign Affairs and Research Office
Pingdingshan 467000, China
Tel: 86-375-207-7266 E-mail: kyc01@yahoo.com.cn

**Abstract**

Higher education in Canada has rich features: the unique system of educational administration and policy; the distinct features of university management model; dynamic international education; and flexible and diverse in the school system and the financing system. Drawn from the four aspects, it could be used for reference in China's higher education reform: to strengthen macro-control; to expand university autonomy; to establish the credit system as the main content of teaching management system; to continue to strengthen international exchanges and cooperation; to ensure the government's main body of investment in higher education and to establish the systems of multi-channel financing.

**Keywords:** Canada, Higher education, Education characteristics, Inspiration

Canada is one of the world's seven major industrialized countries, and also is a country with developed technology and education. The strong economy support and the continued development of a century's history makes Canada have gradually developed a higher education with its own characteristics and advantages. The accumulated lots of valuable experience are worthwhile for us to learn.

## I. The Development History and its Characteristics of Higher Education in Canada

### *1.1 Development history of higher education in Canada*

There is 300-years-history of higher education in Canada. As the British and French colonies in the past, and influenced strongly by Europe at the beginning, the earliest university in Canada was founded by the Church. Canada's first private non-church university, McGill University, founded in 1821, evolved into the first comprehensive university in the 1950s, after that, the comprehensive universities were founded one by one, such as Dalhousie University, Queen's University, Toronto University and so on. Until the establishment of the Federation in 1867, there were 18 universities in the four provinces in Canada. Several universities named by the provinces were founded after western four provinces joined the Federation. After the end of World War II until the 1970s, it is Canada's booming period of higher education; the 1960 saw Canadian higher education into a golden period of development and the formation of institutionalizing the public universities as the main body; From the late of20 Century to the beginning of the 21st century, Canada entered the stage of the popularization of higher education. [1] At present, in Canada with the only 30 million people, there are 92 Universities, 122 Colleges, more than 400 community colleges and technical colleges and a small number of practical and private vocational schools. Each year, nearly 1,300,000 full-time and part-time Students study in the College or University, the gross enrollment rate of higher education in Canada is about 50%, ranks higher in the world.

### *1.2 Canada's characteristics of higher education*

#### 1.2.1 Unique administrative system of higher education and policy

Canada is a multicultural country, there is no the Ministry of Education at the central level, it is mainly by the Council of Ministers of Education (CMEC) to coordinate the provincial education policy. The Federal Constitution in 1867 gives the provinces the legal education and management of legislative power, and until now it is unchanged. Provincial laws clearly stipulates that the provincial government is directly responsible for higher education, according to the provincial legislative, they can approve the establishment of public universities and other institutions of higher education, standardize the standards use of the name of university, approve the right of the granting degree, oversee the establishment of University Board of Trustees and the Senate of the University as the regulatory body based on the legal proceedings. Most of Canada's colleges and universities are provincial public, so most of the run fund of colleges and universities are supplied by the provincial government, but the provincial government does not directly interfere with

the university of academic activities, the universities have a high degree of autonomy and academic freedom, the autonomy of the universities also have been fully reflected, such as their own admission, setting up their own expertise and professional direction, setting their own courses and credits, developing their own personnel system and the distribution of the new teaching and administrative staff, jointing independent schools and independent international education exchanges and cooperation. It is the right kind of clear-cut system that promotes Canada's higher education strong, powerful and positive.

Although the federal government does not charge directly management of education, but it guide generally the development of education from the perspective of the national interest of. First, federal legislation and government departments through language, religion aboriginal, cultural heritage, human resources development, and immigration, etc, the related legislation and regulations departments guide for the development of Canada's education development, providing a legal guarantee for equality of opportunity in national education. Second, the federal government transfer payments to provinces to allocate funds, funding for education is not limited to the specific amount, but it has a direct impact on the size of the provincial education funding. And part of the federal government departments related to the human resources, economic development invests from the budget in education or education of foreign exchange. In addition, the federal government fund to *"Natural Sciences and Engineering Research Council", "Social Sciences and Humanities Research Council" and "Canadian Institutes of Health"* and other agencies, which provide a large number of university research funds by tender.

1.2.2 Distinct Features of the University Management

Canada's universities have different characteristics and educational goals. Such as, University of Toronto, in Ontario, is a university which has right to award medical doctorate, its outstanding contribution to medicine, has been identified as Canada's most extensive research universities for many years. It is a well-known institution of Canada, the fifth university in North America and one of the world's leading universities. Department of Mathematics of the University of Waterloo is one of the world's largest mathematics and computer science education and research centers; its high standard of education and research win it world-class reputation. Although the different features, the Universities of Canada have the following basic common features on the whole:

Firstly, it is the flexible teaching and management system. In Canada's university education system, there exist system of credit course, the academic year with credit and the academic year, even in a university different teaching management system are used because of different majors, the University of Toronto is a combination of all three. As a result, students in schools have a larger degree of freedom in study. It can take into account the different levels of learning needs of students, and fully reflect the people-centered philosophy of education. After enrollment, students have not any classes, according to their personal interests, hobbies, talents, expertise, as well as future development need; they could have their own design, choice of courses, on-demand programs, teachers-on-demand, self-study, the formation of individual knowledge, skills and capacity system. Students can also determine the number of their own education according to the completion of their credit. Canadian students have a free course, but it is not easy to obtain credit. Failed courses must be rebuilt; there is no opportunity for make-up. Besides the free classes, students also have the option program; students must decide the teaching plans and all courses needed at the second year. In order to encourage the enthusiasm of students, the school also allows a small number of good students design their own teaching plan. Canada's post-graduate entry has no uniform requirements without entrance examinations. Entry requirements to a post-graduate are a 4-year bachelor's degree, the average level in above-B (the equivalent of 73 percentage points system) of the subject in the final year or the high grades. Entry requirements to a doctoral student are a master's degree, the average level in above-B (the equivalent of 78 percentage points system) of the subjects during the master stage.

Secondly, it is the use of heuristic teaching and interactive teaching methods in class, and the focus on innovation ability. First, paying attention to the students' hands-on practical ability and capacity, each course requires students to complete a task. This task requires students to have their own project based on the curriculum, after approved, it could be completed in the lab. Second, paying attention to students' plays the initiative and creativity training. When the teacher instruct, they encourage questions and discussion, students can ask questions and exchange ideas with teachers in order to stimulate creative thinking. The third is to create the atmosphere of learning and application of modern teaching methods. In addition to the needed big classrooms, generally small classrooms are used. Desks are placed to make more use of the U-shaped mainly for the sake of the discussion and exchange among students. Classrooms are equipped with modern teaching facilities and teachers use the modern means of teaching.

Thirdly, it is the student-centered service system for students. Students get a very good service as soon as they are enrolled. Even the work of student affairs is taken as the academic affairs. Schools generally set up special network for the freshmen, thus providing timely service and guidance from the Internet for all students. Students can get a card for photocopying, fax, food; borrow books, and so on as soon as they attend the school. School also hire consultants, and set up a learning center for students, any student in need of help can get counseling in person in the center. Meanwhile, the school also set up employment centers, and often gets in touch with employer. Each school set up different clubs for

students, in which students can show their interests and expertise. Through the network, schools offer special service and information for the future students.

Fourthly, it is the global appointment of teachers and the system of combing "full-time" with "part-time". With the internationalization of education and diversity, the appointment of teachers has no national boundaries. School principals, the president of the department, are appointed from the world. For example, School of Business and Information Technology affiliated from Ontario University and Technology Institute own 14 professors, from 8 countries and they can speak 12 languages. Canada College also has a system both "full-time" and "part-time". The latter occupies a large proportion of the teaching staff, mainly because of the appointment of "non-full-time" teachers spend less, to alleviate the financial pressure on schools. The ratio of "Full-time" and "part-time" faculty is about 6:4 in general.

1.2.3 Vibrant international education

Canada's colleges and universities have a strong sense of internationalization, whether in the establishment of institutions or hiring teachers, the research subjects, students' enrollment and employment, they can consider from the international point of view . For example, the recruited 3,200 international students of the University of York are from 50 countries; the enrolled 3,000 students in Seneca College are from 75 countries. They truly believe that the idea of internationalization is to allow students have access to international culture, so they require students to learn foreign languages and cultures. Canada's international education includes the following six aspects: first, encouraging their students to learn a second language. Such as the University of York in recent years has increased the variety of European language courses, adding Chinese, Japanese, Korean, Arabic and so on. Second, integrating the foreign language and courses. The third is the implementation of the cooperation with foreign institutions. The fourth is to send students abroad for short-term internships. The fifth is to attract international students to study in Canada. The sixth is to carry out scientific research cooperation with foreign colleges and universities.

1.2.4 Flexible and diverse in the school system and the financing system

Canada colleges and universities adopt flexible and diverse system on running school. It can be summed up in four combined systems [2]: First, universities and colleges directly joint. Take York University and Seneca College for example, one branch of Seneca College is established in York University campus, the two schools implement the sharing of resources, mutual recognition of credits. The second is setting up a new educational institution on the cooperation of the university and college. Take the University of Guelph and the Institute of Hanbo for example; the two universities jointly produce a new educational entity, that is, Cuelph-Humber branch. Funded by the government, the branch gains a separate legal entity and has its own board of directors and an independent intellectual property rights, teachers are from the two schools. Students can get the two schools diploma. Third, many universities form a new alliance together. For example, in Ontario, ten 10 universities work together to build a "Coalition of Nurses". The League has its own budget, separate and independent board of directors, developing their own teaching plan and teaching quality standards. But students are still in various colleges and universities and get diplomas from them. The fourth is the formation of a new university based on the development of the Institute. Approved by the Ontario provincial government, on the basis of Ontario Institute of Technology and General Motors, Ontario University was established.

Canadian universities are mainly funded out of the four channels: First, the federal government and provincial government funding; second is the university's own income, mainly from tuition fees, and contract research fees; Third, the provision of public funds, including individual donations, corporate sponsorship, as well as charitable organizations; fourth, the turned in miscellaneous fees from students, including a library card, student card fees, the cost of student experiments and the graduation ceremony. In the establishment of the financing system, Canada's thinking of running colleges and universities generally have a clear awareness of the industry, the concept of market and cost accounting concepts. A variety of educational resources has to be cost accounting, calculation of input-output ratio, and the individuals, families and society are turned over to the school as a basic input. [3] Tuition fee are formulated by classification methods. Majors controlled and regulated by the provincial government are developed criteria by the provincial government. Taking a donation as the school's an important adding channel. Such as University of Toronto, annual contributions are about 1 billion Yuan.

## II. The Inspiration of Canada's Higher Education on China's Higher Education

*2.1 strengthen the government's macro regulation and control, expand college and university's right of autonomous running.*

The Ministry of Education in Canadian provinces only carries out macro-control for enrollment plan and standards of tuition fees. University has a high degree of autonomy in setting standards of enrollment, setting majors and courses and the financial and personnel. [4] In our country, on the one hand, it should strengthen the government's macro-control, meantime, it should expand gradually the autonomy in the enrollment, major settings, the appointment of teachers, and

the distribution of income according to the *Law on Higher Education* distributed by our country. So that colleges and universities can become a real entity for construction and social development with independent legal personality. At the same time, according to the *Regulations in Colleges and Universities of CCP* and *Higher Education Act*, it should study further the operational implementation details under the leadership of colleges and universities in order to regulate branch of CCP in university, administrative and academic committees, trade union duties, powers limitations and operating mechanism, set up an effective mechanism of self-restraint and self-development.

*2.2 The establishment of the credit system as the main content of the teaching management system.*

Canadian colleges and universities implement fully the general credit system, and implement the people-centered education philosophy and application of emphasizing capacity-building mode of teaching so that students can design and learn by themselves based on personal interests, hobbies, strengths and future development needs. The first is to establish truly the management philosophy of student-centered. In terms of enrollment, student attendance, credit, employment guidance, community activities, or in the teacher-student interaction in teaching, learning and communication, living facilities, and other aspects management philosophy of people-oriented and student-centered should be reflected. Second, the powerful colleges and universities should promote fully the implementation of the credit system, in the emphasis on teaching students the practical ability and the spirit of innovation, initiative and creative ability. Third is the true implement of heuristic and interactive teaching. Teachers in the classroom should leave appropriate time for students to ask questions, and exchange with the teachers. Fourth is paying attention to the application of modern teaching methods, classrooms must be equipped with modern teaching facilities, teachers use modern means of teaching.

*2.3 Continue to strengthen international education cooperation and exchanges.*

Internationalization of higher education is both the objective requirement of economic and social, political, scientific, technological and cultural development on higher education, and the role that university can and should be able to play in the world economy, information, technology and markets of the historical trend of internationalization. Promoting colleges and universities' international exchanges can not only promote multi-country cultural exchange, upgrade university quality, but also increase revenue for colleges and universities. This is one of the trends in the development of higher education in the 21st century. With regards to these, Chinese universities are in the beginning stage. It should further strengthen the Government's guidance, coordination and services in colleges and universities' recruiting international students. Promote strongly international exchanges and cooperation, and increase in teacher training, student exchanges and cooperation with international research. It is necessary to formulate relevant policies to promote employment among university teachers, apparatus, equipment and library books, and other information resources, to establish co-production system.

*2.4 Ensure effective government investment in the dominant position of higher education, the establishment of multi-channel financing of the education system.*

Through various channels to ensure the supply of funds, meanwhile, establish dynamic and cost-sharing mechanism for compensation. [5] First, the government should continue to be major investment in education, and provide guarantee from policy about loans in colleges and universities. Second, like Canada, tuition fee could be different for different majors, for some high-cost, high rate of return and hot majors, fees should be open to take the dynamic way, thus solve the problem of inadequate investment from the government. Third, vigorously promote national student loan system to ensure the realization of the principle of equitable education. Fourth, it should provide policy support in increasing revenue and donations in colleges and universities, through donations, the financial pressure can be alleviated to improve teaching conditions.

**References**

Qinghua Dai & Pengfei Wang. (2005). Canadian Provinces and the Federal Government Contribute to Education. *World Education*. (9).

Cuiling Feng. (2007). On the Characteristics of Higher Education of Canada and its Inspiration. *Journal of Henan University.* (Edition of Social Sciences). (9).

Ganlt ,Fred, Peterson & Gereg . (2003). Measuring the Diffusion of Information and communication Technology in society and its Effects: Canadian Experience . *International statistical Review*.

Beifang Wang. (2005). Characteristics of Canada's Higher Education and its Inspiration on Chinese Higher Education. *Education Research.* (11).

International Education Studies
www.ccsenet.org/journal.html
Vol. 2, No. 1
February 2009

# Perception Differential between Employers and Undergraduates on the Importance of Employability Skills

Chung-Khain Wye (Corresponding author)
Department of Economics and Finance, Faculty of Business and Finance
Universiti Tunku Abdul Rahman (Perak Campus)
Jalan Universiti, Bandar Barat, 31900 Kampar, Perak Darul Ridzuan, Malaysia
Tel: 60-12-661-5021 E-mail: wyeck@utar.edu.my

Yet-Mee Lim
Department of Management, Faculty of Accountancy and Management
Universiti Tunku Abdul Rahman (Sungai Long Campus)
Lot PT 21144, Jalan Sungai Long, Bandar Sungai Long, Cheras 43000 Kajang, Selangor, Malaysia
Tel: 60-3-9019-4722 E-mail: limym@utar.edu.my

**Abstract**

This paper attempts to investigate if the undergraduates' core competencies are able to meet with the requirements set by the employers and to analyse the effectiveness of personal qualities and employability skills development in private university in Malaysia. Questionnaires survey, mean score comparison, and independent sample t-test are used to capture the perception differential between 30 employers and 600 undergraduates from a local private university on the importance of employability skills. Our results show that the undergraduates are all highly competent in possessing the said personal qualities and skills. However, such skills as critical analysis, planning, problem solving, oral communication, decision making, and negotiating report a slightly higher level of mismatch between employers' and undergraduates' perception on their importance and development in the University.

**Keywords:** Employability skill, Personal quality, Competency, Mismatch, Graduate unemployment

## 1. Introduction

It has traditionally and shallowly been regarded that a remarkably outstanding cumulative grade point average (CGPA) obtained by graduates through laboriousness in university has been a passport to seeking for a qualification suited, if not highly rewarded employment. It has therefore prompted undergraduates to be devoted to concentrating solely on their studies for academic excellence while compromising co-curricular activity participation, through which employment related soft skills are accumulated. Consequently, hard skills learnt from and emphasised through courses of study in university are virtually not complemented by the possession of personal qualities and soft skills among undergraduates. It has therefore come to our knowledge that a perfect blend of personal qualities, soft skills and hard skills will definitely contribute to enhancing graduate employability, a term where its definition can be connoted from various angles (Harvey, 2001).

Graduate employability is largely referred to as graduates' possession of certain level of skills and attitudes, as well as their ability to utilise them for job search and retainment (Nabi, 2003). The direct beneficiaries of their skills utilisation process are the employers whose job recruitment and candidate selection decision could affect the probability of graduates in securing employment. Graduates whose skills and attitudes are highly valued by employers would definitely succeed in paving their way into the labour market. It is, however, not the case for those whose skills possession is not up to the mark, thus driving up the unemployment rates drastically. With 21 487 new graduate registrants and 33 925 job vacancies recorded through the Electronic Labour Exchange (ELX) system under the Ministry of Human Resource of Malaysia [MOHR] (2008) in the second quarter of year 2008, graduates should not have found it difficult to fit themselves into the labour market. One of the reasons to explain this scenario is their poor command of personal qualities and employability skills which are most sought after by employers nowadays. Employers assume our graduates to have been fully equipped with various skills, and hence, are able to demonstrate them to a higher extent. This assumption may probably be due to the fact that employability skills enhancement has

been viewed as a specific target to be achieved in tertiary education. As suggested by Fallows and Steven (2000), an emphasis on employability skills in the curriculum of every discipline would be able to equip students with critical skills by the time they graduate.

As such, a survey of the importance of employability skills is of utmost importance in generating insights to universities in developing their courses of study. It is always believed that an inclusion of the employers' dimension into the analysis of the importance of employability skills will produce significant explanation to this issue as they are the closest and most direct evaluators to the graduates' performance. They are definitely in the right position to comment on the types of skills most needed in different field of employment. This paper, therefore, seeks to expand the dimension of studies previously carried out by the Careers Advisory Board of the University of Western Australia [UWA] (1996) in Australia, and Wye and Liew (2005) in Malaysia on the importance of employability skills. This paper explores that dimension from the perspective of undergraduates as well as the employers. More specifically, this paper attempts to investigate if the undergraduates' core competencies are able to meet with the requirements set by the employers, besides analysing the development effectiveness of personal qualities and employability skills in private university in Malaysia.

The remaining of the paper is organised as follows: A literature of the works on employability skills done previously is reviewed. Research methodology employed in this paper is explained followed by a research finding in the next section. Policy implication and a conclusion are presented in the last section.

## 2. Employability skills: conceptual framework and literature review

Change in organisational and employment structure has been widely recognised as the cause of increasing requirement for broader types of skills by employers (Brown, Green, Lauder & Sakamoto, 2001; Kämäräinen, Attwell & Brown, 2002; Kämäräinen & Streumer, 1998). The concept of employability skills can sometimes be referred to as generic skills (UWA, 1996) or the career and employability skills (C&ES), and sometimes be considered as the workplace basics or workplace know-how skills (Hollenbeck, 1994). Despite its diverse definition, employability skills have to be greatly emphasised. In the present paper, employability skills refer to such cognitive abilities as learning to learn, analytic and problem solving, innovative, and communication skill (Bikson, 1994; Bikson & Law, 1995; Stasz, McArthur, Lewis & Ramsey, 1990). These skills make learning new applications possible when these applications are becoming increasingly needed, which validates the fact that 'graduate attributes' are more important than the degree subject studied (Harvey, 2000). For some employers, the degree subject studied is not as important as the graduates' ability to handle complex information and communicate it effectively (Knight & Yorke, 2002). Graduate recruiters want a variety of other skills, personal and intellectual attributes; rather than specialised subject knowledge. Oral communication, teamwork, self-management, problem solving and leadership (Warn & Tranter, 2001) are all important.

In view of the important emphasis placed on the aspect of employability skills in the labour market, measures need to be taken by putting in concerted efforts to equip the employees with as many of the employability skills as possible. Among all types of employability skills that we could ever mention, however, which skills are more highly valued by employers and are most sought after in carrying out daily work tasks?

The Career Advisory Board of the University of Western Australia suggested a survey to be conducted on the development of generic skills among final-year students in the end of 1994 (UWA, 1996). The survey aimed at identifying the generic skills developed through various courses of study offered in UWA, and monitoring students' general awareness towards these generic skills. Fifteen generic skills were listed in the questionnaires distributed to final-year students of UWA. Based on the framework developed by UWA, Wye and Liew (2005) carried out a similar research within Malaysian context. They concluded that the five skills with the biggest magnitude of differences between Development Index and Importance Index are: 1) to communicate orally in English, 2) to master information, communication and technology and computer skills, 3) to communicate in written English, 4) to release tension and handle risk; and 5) to think creatively and innovatively.

Apart from the soft skills mentioned above, the inclusion of 'personal qualities' into the concept of employability is considered to be of great importance to the 'Skills *plus* Project' (Knight & Yorke, 2001, 2002, 2003; Yorke, 2001) as these can have a considerable bearing on students' success. Drawing upon the work of Dweck (1999) and Bandura (1997), the 'Skills *plus* Project' considers there to be two broad categories of self-belief: (1) an entity/immutable/fixed belief, that one has a set amount of something – intelligence for example, that cannot be changed; and (2) an incremental/mutable/malleable belief that development is possible and even probable.

Students with a fixed belief about their intelligence are likely to be discouraged by failure because failure is construed in terms of inadequate intelligence. These students may avoid more challenging work for fear of failure. Conversely, students with a malleable self-belief are more likely to attribute failure to a lack of effort, and believe that poor performance can lead to further learning. Hence, it is the learning that becomes a source of self-esteem. These students are more likely to learn from mistakes and apply this learning to future tasks. It is therefore this type of self-belief that

should be encouraged and nurtured. In addition to a student's beliefs about their own fixed or malleable self, students who have a belief in their own ability to produce, organise and undertake tasks (self-efficacy) will have an effect on their performance. Yorke (2001) considered that it is not enough to have a range of cognitive, social, emotional and behavioural sub-skills, but that these have to be integrated into the challenges faced. Therefore, perceived self-efficacy or ability will play an important role in choice of degree programme, career choice and personal development, and is thus significant for an individual's employability. Personal qualities are also important in the acquisition of subject understanding and the development of skills. A willingness to learn – often from mistakes – implies a preparedness to tolerate a degree of stress in order to achieve success (Knight & Yorke, 2001; Yorke, 2001).

Lees (2002) provided an excellent review on the employability skills literature to look at the employability agenda, curriculum developments and academic perspectives, employability attributes, and Employability Performance Indicators and Employers needs in relation to Higher Education in the United Kingdom. He compiled the following key skills and qualities sought by employers: (1) *Personal Qualities*. These include malleable self-theory, self-awareness, self-confidence, independence, emotional intelligence, adaptability, stress tolerance, initiative, willingness to learn, and reflectiveness. (2) *Core Skills*. These include reading effectiveness, numeracy, information retrieval, language skills, self-management, critical analysis, creativity, listening, written communication, oral presentations, explaining, and global awareness. (3) *Process Skills*. These include computer literacy, commercial awareness, political sensitivity, ability to work cross-culturally, ethical sensitivity, prioritising, planning, applying subject understanding, acting morally, coping with ambiguity and complexity, problem solving, influencing, arguing for and/or justifying a point of view or a course of action, resolving conflict, decision making, negotiating, and team work.

The theoretical framework of the present paper is based on the compilation of skills and qualities done by Lees (2002) and UWA (1996) with a special adaptation made to fit into Malaysian context.

## 3. Research methodology

A survey has been conducted on two different samples, namely employers and undergraduates. A number of 30 sets of questionnaires have been distributed and mailed to employers or executives who are actively involved in recruitment processes, such as the Human Resource Manager, Personnel Manager, and Human Resource Executive, from large- and medium-size companies in Malaysia. Questionnaires have also been distributed to 600 final-year undergraduates, of which 200 are randomly selected from the Faculty of Accountancy and Management, Faculty of Information, Communication and Technology, and Faculty of Arts and Social Science, respectively, in an anonymous private university in Malaysia (hereafter referred to as "the University"). The undergraduates' sampling frame used is based on the student's name list from each faculty (Note 1). __

Questionnaire designed for undergraduates comprises of three sections. Section A captures the demographic information of the respondents, and section B requires them to rate their level of competency for each of the personal qualities and skills listed with a five-point Likert Scale measured from 1, being "Very Poor" to 5, "Excellent". Respondents have then been asked to list and rank the top ten personal qualities and skills that they may think as important to their future employment. Section C elicits information on the development of those personal qualities and skills in the University. The ratings of how well the University is in developing and preparing students with the said qualities and skills are measured from 1, being "Very Poor" to 5, "Excellent".

Questionnaire designed for employers comprises of two sections. Section A captures the demographic information of the respondents. Section B studies about the employers' perception on the importance of the personal qualities and skills listed using five-point Likert Scale ranging from 1 being "Not at all Important" to 5, "Very Important". Respondents have also been asked to list and rank the top ten qualities and skills that they consider as very important to be in the possession of a successful job applicant. Open-ended questions have subsequently been addressed to the respondents requesting them to suggest other qualities and skills not listed in the questionnaire but are deemed as crucial to be possessed by job applicants. Besides that, employers have also been asked to comment on the characteristics of a successful job applicant.

For data analysis, the statistical software, SPSS, has been used to perform Mann-Whitney U test to test the hypothesis of whether there is perception differential between salary offered by employers and expected by undergraduates. Besides that, mean score comparison has subsequently been carried out to compare between perception held by employers on the importance of personal qualities and skills, and perception held by undergraduates in relation to their core competency of such qualities and skills. This analysis reveals the fact of whether students' possession of qualities and skills is competent in meeting with the expectation and requirement set by employers. Using Independent-Samples T test, the highest mean rating of importance by employers corresponding to the lowest mean rating of competency by undergraduates on the qualities and skills show the highest level of incompetency of the undergraduates in meeting with the expectation of employers. Besides that, mean comparison has also been carried out to identify the mismatch between employers' requirements and the development of the University on personal qualities and employability skills. Again, the highest mean rating of importance by employers associated with the lowest mean rating of

development by undergraduates on the qualities and skills show the highest level of the mismatch based on an Independent-Samples T test.

## 4. Research findings

Table 1 displays the Normality Test for the data on the monthly salary offered by employers and expected by undergraduates with a position requiring work experience and not requiring work experience, respectively. The Kolmogorov-Smirnov statistics are statistically significant at 0.01 alpha level, suggesting that the salary data is not normally distributed. As such, nonparametric test has been employed to test the hypothesis of whether there is perception differential between salary offered by employers and expected by undergraduates.

Table 2 shows that the Mann-Whitney U test statistic denotes a sufficient evidence to conclude that there is statistically significant difference between the salary offered by employers and expected by undergraduates with a position requiring work experience and not requiring work experience, respectively ($U_w$ = 4824.0, p-value = 0.000; $U_{w/o}$ = 6547.5, p-value = 0.011). The RM2 000 monthly median salary with experience expected by undergraduates is RM200 higher than that offered by the employers; while the RM1 600 monthly median salary without experience expected by undergraduates is RM100 higher than that offered by the employers. Although the difference is small, it does, to certain extent, show that undergraduates nowadays over-estimate their ability as fresh graduates in getting higher salary, thus feeling uncomfortable to receive anything lower than their expectation.

Table 3 shows the job areas normally offered by employers and interested by undergraduates. One can notice that Accounting and Finance, Marketing, and Operation/Production are among the job areas mostly offered by employers. Different perception has been found among undergraduates where they are virtually interested in such job areas as Secretarial/Administrative/Human resource/Management, Information technology, and Marketing. The revealed fact can, to certain extent, explain the job market mismatch where undergraduates' employment expectation is twisted away from that of the employers'. The mismatch, however, is not as serious as one has expected amidst high graduate unemployment rate, since a match of expectation is reported for the job area in Marketing – a well-known and well-rewarded line.

Table 4 displays the mean difference between the levels of importance of personal qualities rated by employers and core competency possessed by undergraduates. Overall, one will notice that the mean ratings of undergraduates in the University for all the personal qualities are between a scale of 3 and 4, denoting that they are confident in viewing their ability of mastering the said qualities as between fair and good. Among all the qualities, they consider themselves as of especial competence in showing their punctuality, willingness to learn, and integrity and honesty. These are the personal qualities rated by employers as between important and very important to be in the undergraduates' possession (i.e. mean ratings between a scale of 4 and 5). Apart from that, employers even regard graduates' possession of such qualities as responsible, having positive attitude toward his or her works, and hardworking, as essential in the labour market and would expect graduates to possess them. Using Independent-Samples T test, the results of the level of incompetency lying between 0 and 1 generated from two different perspectives of employers and undergraduates on personal qualities are all statistically significant at 0.05 alpha level, except for such qualities as adaptability and ambitious. This shows that the undergraduates from the University are all highly competent in showing almost all the qualities listed. Such qualities as energetic and enthusiasm denote the highest level of competency among the undergraduates in meeting with employers' expectation. However, the undergraduates really have to take responsibility seriously when they are at their workplace soon.

Table 5 shows the mean difference between the level of importance of skills rated by employers and core competency possessed by undergraduates. Overall, one will notice that the mean ratings of undergraduates in the University for almost all the skills are between 3 and 4, denoting that they are confident in viewing their ability of mastering the said skills as between fair and good. However, their mean ratings are slightly lower than that of their personal qualities. Among all the skills, they consider themselves as of especial competence in possessing such skills as teamwork, self management, and commercial awareness. These are the skills indicated by employers as between average important and very important to be in the undergraduates' possession (i.e. mean ratings between a scale of 3 and 5). Apart from that, employers even regard graduates' possession of such skills as teamwork, problem solving, oral communication, decision making, and critical analysis, as essential in the labour market and would expect graduates to possess them. Using Independent-Samples T test, the results of the level of incompetency between 0 and 2 generated from two different perspectives of employers and undergraduates on skills are all statistically significant at 0.05 alpha level, except for such skills as numeracy and commercial awareness. This shows that the undergraduates from the University are all highly competent in showing almost all the skills listed. Such skills as reading effectiveness and computer literacy denote the highest level of competency of the undergraduates in meeting with employers' expectation. Interestingly, and perhaps worth-noted that a slightly higher level of incompetency is found in such skills as critical analysis, problem solving, decision making, and oral communication – skills in which employers rated as of especial importance.

When being asked how well the University is in preparing undergraduates for job market, majority of the undergraduates (56.8%) indicated that the University has shown average performance while 18.7 percent of them regarded the performance of the University as good (shown in Table 6). This is indeed an overwhelming majority and thus a credit to the University.

Table 7 shows the mean difference between the level of development of personal qualities in the University perceived by undergraduates and their level of importance as rated by employers. The results postulate a rather good performance of the University in developing and preparing its undergraduates with all the personal qualities listed (i.e. mean ratings between a scale of 3 and 4). Among all, such qualities as respect for authority, hardworking, willingness to learn, and responsibility are most perceived to have been well developed in the University. However, stress tolerance and emotional intelligence are perceived to have been moderately developed. Interestingly, Independent-Samples T tests show that the level of mismatch generated from the mean ratings differential between employers and undergraduates reveals a rather encouraging scenario. A scale between 0 and 1 denotes a rather statistically significant low level of mismatch between the employers' job market requirements and the development of all the personal qualities in the University. Among all, such qualities as ease fit into culture, respect for authority, adaptability, energetic, ambitious, receptive to training, and independence record the lowest level of mismatch; while integrity and honesty, responsibility, positive attitude toward work, and punctuality report a slightly higher level of mismatch.

Table 8 shows the mean difference between the level of development of skills in the University perceived by undergraduates and their level of importance as rated by employers. The results postulate a rather good performance of the University in developing and preparing its undergraduates with all the skills listed (i.e. mean ratings between a scale of 3 and 4). Among all, such skills as team work, information retrieval, written communication, global awareness, oral communication, computer literacy, and problem solving are most perceived to have been well developed in the University. However, such skills as influencing, critical analysis, and negotiating are perceived to have been moderately developed. Interestingly, Independent-Samples T tests show that the level of mismatch generated from the mean ratings differential between employers and undergraduates reveals a rather encouraging scenario. A scale between 0 and 1 denotes a rather statistically significant low level of mismatch between the employers' job market requirements and the development of all the skills in the University. Among all, such skills as numeracy, commercial awareness, global awareness, computer literacy, information retrieval, and ability to work cross-culturally record the lowest level of mismatch; while critical analysis, planning, problem solving, oral communication, decision making, and negotiating report a slightly higher level of mismatch.

## 5. Conclusions and policy implications

An inclusion of the employers' dimension into the analysis of the importance of employability skills will generate insights to universities in developing their courses of study as they are the closest and most direct evaluators to the graduates' performance. They are definitely in the right position to comment on the types of skills most needed in different field of employment. This paper, therefore, seeks to expand the dimension of study on the importance of employability skills from the perspective of undergraduates, as well as the employers.

Research findings show that undergraduates nowadays over-estimate their ability as fresh graduates in getting higher salary, thus feeling uncomfortable to receive anything lower than their expectation. This attitude is simply intolerable and deserves an effort for change prior to their graduation. Career Advisory Board or even the academics themselves should inculcate in the undergraduates the virtue of being modest as a fresh graduate. They must have the right work values and regard their first job upon graduation as a means of gaining useful experience, which is served as a platform of securing future career. They should not have treated their first job as a way of earning handsome remuneration to reward an effort put and to recoup expenses incurred in schooling investment. Only with this attitude will fresh graduates put aside pecuniary consideration in searching for their first job, thus reducing the graduate unemployment rate while facilitating their efforts in paving their way to a brighter prospect in their career.

Besides that, the undergraduates from the University are all highly competent in showing all the personal qualities listed. Such qualities as adaptability, ambitious, energetic, and enthusiasm denote the highest level of competency of the undergraduates in meeting with employers' expectation. These personal qualities are of especial importance owing to the fact that it takes a person's ambitiousness, energy, and enthusiasm to excel in his or her career. Adaptable nature is needed to fit into unforeseeable changes, be it within the job description, or within the organisational structure. As such, Career Advisory Board of a university must make career counselling one of the important agendas as early as in the orientation week of newly recruited undergraduates. Only after the undergraduates are clear of their work values can they choose the right course majoring, thus leading to the right choice of their future career. Apart from that, academics should also expose their undergraduates to different real-life possibilities within the work context. This enables undergraduates to sharpen their adaptability skill in tackling unforeseeable circumstances taking place within their job and company. As such, lectures that are based on case studies of real-life examples related to topics lectured can be conducted.

When asked about how well the University has performed in nurturing and developing the personal qualities among its undergraduates, the result shows that such qualities as stress tolerance and emotional intelligence are perceived to have been moderately developed. Furthermore, such qualities as integrity and honesty, responsibility, positive attitude toward work, and punctuality also report a slightly higher level of mismatch. As such, a course module on stress and emotion management should be made compulsory at higher learning institutions. Different possibilities of stress experienced at workplace of different fields should be exposed to the undergraduates of different disciplines. This is aimed at emotionally preparing them with the kind of stress potentially encountered and measures taken to handle the stress. Besides that, the scope of academic-industry cooperation may also be expanded. Experienced personnel from different industries can be invited to be guest lecturers to share their experience with undergraduates on the type of personal qualities required for different positions.

A slightly higher level of mismatch between the level of importance and development is found in such skills as critical analysis, planning, problem solving, oral communication, decision making, and negotiating. As such, higher learning institutions should design their courses of studies to be more practical. Case studies based on real-life examples should be incorporated in lectures and tutorials by means of classroom simulations and group work assignments. Taking advantage on the academic-industry cooperation practice, real cases at work could also be brought into lectures in order to enable the undergraduates to have a hands-on experience in tackling job task in their areas of studies at the real working world environment. To facilitate this practice, guest lecturers from the corporate sector can play a role in pointing out the mistakes occurred along the learning process. They can subsequently provide constructive feedback to the undergraduates as a means of sharpening their critical analytical skills, problem solving skills, decision making skills, oral communication skills, negotiating skills, and planning skills which are most sought after by employers nowadays.

The importance of having equipped with personal qualities and skills in seeking for an employment is indisputable. It therefore deserves concerted efforts among academics, industries, and students themselves to fully nurture and develop these essentials in an effort to produce competent graduates for the ever-changing labour market.

**References**

Bandura, A. (1997). *Self-theories, the exercise of control*. (2nd ed.). New York: Freeman.

Bikson, T. K. (1994). Organizational trends and electronic media. *American Archivist*, *57*(1), 48 – 68.

Bikson, T. K., & Law, S. A. (1995). Toward the borderless career: Corporate hiring in the '90s, *International Educator*, *4*(2), 12 – 33.

Brown, P., Green, A., Lauder, H., & Sakamoto, A. (2001). *High skill economies*. London: Macmillan.

Dweck, C. (1999). *Self-theories: Their role in motivation, personality and development*. Philadelphia: Psychology Press.

Fallows, S., & Steven, C. (2000). Building employability skills into the higher education curriculum: A university-wide initiative. *Education + Training*, *42*(2), 75 – 82.

Harvey, L. (2000). New realities: The relationship between higher education and employment. *Tertiary Education and Management*, *6*, 3 – 17.

Harvey, L. (2001). Defining and measuring employability. *Quality in Higher Education*, *7*(2), 97 – 109.

Hollenbeck, K. (1994). The workplace know-how skills needed to be productive (Technical report). MI: Upjohn Institute for Employment Research. (ERIC Document Reproduction Service No. ED 413 712).

Kamarainen, P., Attwell, G., & Brown, A. (2002). Qualifications, competences and learning environments for the future: European reference publication, CEDEFOP, Thessaloniki.

Kamarainen, P., & Streumer, J. (1998). Curriculum development, new learning environments, and transfer of innovations in Europe. In *CEDEFOP Vocational Education and Training – the European Research Field*, Background Report 1998, Vol. II, CEDEFOP, Thessaloniki.

Knight, P., & Yorke, M. (2001). *Employability through the curriculum*, Skills Plus Project Report, the Open University, United Kingdom.

Knight, P., & Yorke, M. (2002). *Skills plus: Tuning the Undergraduate Curriculum*, Skills Plus Project Report, the Open University, United Kingdom.

Knight, P., & Yorke, M. (2003). Employability and good learning in higher education. *Teaching in Higher Education*, *8*(1), 3 – 16.

Lees, D. (2002). *Graduate employability – literature review*. LTSN Generic Centre Website [Online] Available: http://www.gla.ac.uk/employability/documents/litrev.rtf (August 5, 2008).

Ministry of Human Resource Malaysia. (2008). *Monthly labour market report.* [Online] Available: http://www.mohr.gov.my/index.php?option=com_content&task=category&sectionid=19&id=115&Itemid=296 (August 5, 2008).

Nabi, G.R. (2003). Graduate employment and underemployment: Opportunity for skill use and career experiences amongst recent business graduates. *Education + Training*, *45*(7), 371 – 382.

Stasz, C., McArthur, D., Lewis, M., & Ramsey, K. (1990). *Teaching and Learning Generic Skills for the Workplace*, RAND, R-4004-NCRVE/UCB, Santa Monica, CA.

UWA (The University of Western Australia). (1996). *Generic skills survey*, Careers Advisory Board, The University of Western Australia. [Online] Available: http://www.csd.uwa.edu.au/tl/skills/report.html (August 5, 2008).

Warn, J., & Tranter, P. (2001). Measuring quality in higher education: A competency approach. *Quality in Higher Education*, *7*(3), 191 – 198.

Wye, C. K., & Liew, C. S. (2005). Undergraduates' perceptions on the importance and development of generic skills: A case study at the Faculty of Economics and Business in UKM. In *Proceeding on Human Resource Development: Practices and Directions for a Developed Malaysia* (pp. 200 – 207), Serdang: Universiti Putra Malaysia Press.

Yorke, M. (2001). *Employability in the first cycle higher education*, Working paper for the 'Skills plus' Project, Liverpool John Moores University, United Kingdom.

**Notes**

Note 1. For very helpful research assistance on data collection we are indebted to Soo-Ling Tan, Siu-Wai Tang, Soak-Khuan Tang, and Keng-Hiong Tay. The usual disclaimer to the effect that none of these persons should be held responsible for the arguments made in this essay is especially appropriate.

Table 1. Tests of Normality

| Variables | Group | Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|---|---|
| | | Statistic | df | Sig. | Statistic | df | Sig. |
| Salary (with working experience) | Undergraduates*** | 0.166 | 600 | 0.000 | 0.709 | 600 | 0.000 |
| | Employers | 0.156 | 30 | 0.059 | 0.940 | 30 | 0.093 |
| Salary(without working experience) | Undergraduates*** | 0.123 | 600 | 0.000 | 0.871 | 600 | 0.000 |
| | Employers*** | 0.186 | 30 | 0.009 | 0.888 | 30 | 0.004 |

Notes: [a] Lilliefors Significance Correction *** Statistically significant at 0.01 alpha level

Table 2. Mann-Whitney U Test

| Test Statistics | Salary (with working experience) | Salary (without working experience) |
|---|---|---|
| Mann-Whitney U | $U_w$ = 4824.000 | $U_{w/o}$ = 6547.500 |
| Wilcoxon W | 5289.000 | 7012.500 |
| Z | -4.331 | -2.547 |
| Asymp. Sig. (2-tailed) | 0.000*** | 0.011** |
| Monthly Median Salary | | |
| *Expected by undergraduates* | RM2000 | RM1600 |
| *Offered by employers* | RM1800 | RM1500 |

Notes: *** Statistically significant at 0.01 alpha level ** Statistically significant at 0.05 alpha level

RM refers to Malaysia currency (Ringgit Malaysia)

Table 3. Job area offered by employers and interested by undergraduates

| Area | Job Offered by Employers | Job Interested by Undergraduates |
|---|---|---|
| | Percent | Percent |
| Accounting & Finance | 26.7 | 11.8 |
| Marketing | 23.3 | 13.5 |
| Operation/Production | 20.0 | 1.8 |
| Secretarial/Administrative/Human resource/Management | 16.6 | 29.3 |
| Information technology | 3.3 | 25.5 |
| Others[b] | 10.0 | 18.0 |
| Total[c] | 100.0 (30) | 100.0 (600) |

Notes: [b] Including research and development and legal related areas.

[c] Total number of respondents is shown in parenthesis.

Table 4. Mean difference between the level of importance of personal qualities rated by employers and core competency possessed by undergraduates

| Personal Qualities | Undergraduates | | Employers | | Level of Incompetency[d] |
|---|---|---|---|---|---|
| | Mean | Std. Dev. | Mean | Std. Dev. | |
| Adaptability | 3.64 | 0.81 | 3.83 | 0.70 | 0.19 |
| Ambitious | 3.62 | 0.81 | 3.83 | 0.79 | 0.21 |
| Ease fit into culture | 3.36 | 0.92 | 3.80 | 0.71 | 0.44** |
| Emotional intelligence | 3.30 | 0.94 | 3.83 | 0.75 | 0.54** |
| Energetic | 3.56 | 0.79 | 3.87 | 0.63 | 0.31** |
| Enthusiasm | 3.59 | 0.80 | 3.90 | 0.76 | 0.31** |
| Hardworking | 3.70 | 0.86 | 4.47 | 0.57 | 0.77** |
| Independence | 3.63 | 0.76 | 4.23 | 0.68 | 0.60** |
| Initiative | 3.26 | 0.92 | 4.17 | 0.70 | 0.90** |
| Integrity and honesty | 3.75 | 0.75 | 4.50 | 0.73 | 0.75** |
| Loyalty and commitment | 3.49 | 0.99 | 4.10 | 0.71 | 0.62** |
| Positive attitude toward work | 3.62 | 0.80 | 4.50 | 0.63 | 0.88** |
| Punctuality | 3.84 | 0.82 | 4.30 | 0.60 | 0.47** |
| Receptiveness to training | 3.66 | 0.89 | 4.07 | 0.52 | 0.40** |
| Respect for authority | 3.74 | 0.77 | 4.17 | 0.65 | 0.42** |
| Responsibility | 3.69 | 0.84 | 4.73 | 0.45 | 1.04** |
| Self-awareness | 3.59 | 0.78 | 4.00 | 0.64 | 0.41** |
| Self-confidence | 3.42 | 0.98 | 4.23 | 0.50 | 0.81** |
| Stress tolerance | 3.37 | 0.89 | 3.80 | 0.55 | 0.43** |
| Willingness to learn | 3.76 | 0.84 | 4.50 | 0.51 | 0.74** |

Note: [d] 0 being highly competent; 4 being highly incompetent

** Independent-Samples T test is statistically significant at 0.05 alpha level.

Table 5. Mean difference between the level of importance of skills rated by employers and core competency possessed by undergraduates

| Skills | Undergraduates | | Employers | | Level of Incompetency[e] |
|---|---|---|---|---|---|
| | Mean | Std. Dev. | Mean | Std. Dev. | |
| Ability to work cross-culturally | 3.39 | 0.82 | 3.70 | 0.65 | 0.31** |
| Commercial awareness | 3.58 | 0.81 | 3.67 | 0.71 | 0.09 |
| Computer literacy | 3.54 | 0.94 | 3.83 | 0.59 | 0.29** |
| Creativity | 3.25 | 0.86 | 3.83 | 0.83 | 0.58** |
| Critical analysis | 2.99 | 0.88 | 4.20 | 0.66 | 1.21** |
| Decision making | 3.27 | 0.88 | 4.27 | 0.78 | 1.00** |
| Global awareness | 3.47 | 0.85 | 3.80 | 0.76 | 0.33** |
| Influencing | 3.12 | 0.87 | 3.53 | 0.90 | 0.41** |
| Information retrieval | 3.57 | 0.75 | 3.93 | 0.58 | 0.36** |
| Negotiating | 3.38 | 0.82 | 3.97 | 0.67 | 0.59** |
| Numeracy | 3.33 | 0.83 | 3.57 | 0.63 | 0.24 |
| Oral communication | 3.41 | 0.93 | 4.40 | 0.67 | 0.99** |
| Planning | 3.42 | 0.81 | 4.30 | 0.70 | 0.88** |
| Problem solving | 3.39 | 0.84 | 4.40 | 0.62 | 1.01** |
| Reading effectiveness | 3.48 | 0.90 | 3.77 | 0.82 | 0.28** |
| Reasoning/Comprehension | 3.43 | 0.76 | 3.87 | 0.63 | 0.44** |
| Resolving conflict | 3.53 | 0.78 | 3.97 | 0.85 | 0.44** |
| Self management | 3.65 | 0.78 | 4.23 | 0.57 | 0.58** |
| Team work | 3.93 | 0.76 | 4.60 | 0.56 | 0.67** |
| Written communication | 3.34 | 0.84 | 4.13 | 0.73 | 0.79** |

Notes: [e] 0 being highly competent; 4 being highly incompetent

** Independent-Samples T test is statistically significant at 0.05 alpha level.

Table 6. How well the University is in preparing its undergraduates for job market

| Level of Goodness | Percent (%) |
|---|---|
| Excellent | 0.8 |
| Good | 18.7 |
| Average | 56.8 |
| Fair | 18.3 |
| Poor | 5.3 |
| Total[f] | 100 (600) |

Notes: [f] Total number of undergraduates is in parenthesis.

Table 7. Mean difference between the level of development of personal qualities in the University perceived by undergraduates and their level of importance rated by employers

| Personal Qualities | Undergraduates | | Employers | | Level of Mismatch[g] |
|---|---|---|---|---|---|
| | Mean | Std. Dev. | Mean | Std. Dev. | |
| Adaptability | 3.22 | 0.80 | 3.83 | 0.70 | 0.62** |
| Ambitious | 3.17 | 0.89 | 3.83 | 0.79 | 0.67** |
| Ease fit into culture | 3.41 | 0.90 | 3.80 | 0.71 | 0.39** |
| Emotional intelligence | 3.06 | 0.82 | 3.83 | 0.75 | 0.78** |
| Energetic | 3.21 | 0.90 | 3.87 | 0.63 | 0.65** |
| Enthusiasm | 3.10 | 0.85 | 3.90 | 0.76 | 0.80** |
| Hardworking | 3.65 | 0.82 | 4.47 | 0.57 | 0.82** |
| Independence | 3.53 | 0.76 | 4.23 | 0.68 | 0.70** |
| Initiative | 3.39 | 0.80 | 4.17 | 0.70 | 0.77** |
| Integrity and honesty | 3.22 | 0.79 | 4.50 | 0.73 | 1.28** |
| Loyalty and commitment | 3.30 | 0.91 | 4.10 | 0.71 | 0.80** |
| Positive attitude toward work | 3.43 | 0.84 | 4.50 | 0.63 | 1.07** |
| Punctuality | 3.34 | 0.90 | 4.30 | 0.60 | 0.96** |
| Receptiveness to training | 3.37 | 0.95 | 4.07 | 0.52 | 0.70** |
| Respect for authority | 3.73 | 0.86 | 4.17 | 0.65 | 0.44** |
| Responsibility | 3.61 | 0.84 | 4.73 | 0.45 | 1.13** |
| Self-awareness | 3.12 | 0.72 | 4.00 | 0.64 | 0.88** |
| Self-confidence | 3.33 | 0.84 | 4.23 | 0.50 | 0.91** |
| Stress tolerance | 2.93 | 0.86 | 3.80 | 0.55 | 0.87** |
| Willingness to learn | 3.63 | 0.79 | 4.50 | 0.51 | 0.87** |

Note: [g] 0 being No Mismatch; 4 being Highest Level of Mismatch

** Independent-Samples T test is statistically significant at 0.05 alpha level.

Table 8. Mean difference between the level of development of skills in the University perceived by undergraduates and their level of importance rated by employers

| Skills | Undergraduates | | Employers | | Level of Mismatch[h] |
|---|---|---|---|---|---|
| | Mean | Std. Dev. | Mean | Std. Dev. | |
| Ability to work cross-culturally | 3.21 | 0.86 | 3.70 | 0.65 | 0.49** |
| Commercial awareness | 3.32 | 0.83 | 3.67 | 0.71 | 0.35** |
| Computer literacy | 3.37 | 0.93 | 3.83 | 0.59 | 0.47** |
| Creativity | 3.07 | 0.88 | 3.83 | 0.83 | 0.76** |
| Critical analysis | 2.92 | 0.94 | 4.20 | 0.66 | 1.28** |
| Decision making | 3.26 | 0.86 | 4.27 | 0.78 | 1.01** |
| Global awareness | 3.40 | 0.86 | 3.80 | 0.76 | 0.40** |
| Influencing | 2.87 | 0.89 | 3.53 | 0.90 | 0.67** |
| Information retrieval | 3.45 | 0.84 | 3.93 | 0.58 | 0.49** |
| Negotiating | 2.97 | 0.91 | 3.97 | 0.67 | 1.00** |
| Numeracy | 3.27 | 0.89 | 3.57 | 0.63 | 0.30** |
| Oral communication | 3.39 | 0.92 | 4.40 | 0.67 | 1.01** |
| Planning | 3.09 | 0.89 | 4.30 | 0.70 | 1.21** |
| Problem solving | 3.35 | 0.81 | 4.40 | 0.62 | 1.05** |
| Reading effectiveness | 3.23 | 0.87 | 3.77 | 0.82 | 0.54** |
| Reasoning/Comprehension | 3.26 | 0.84 | 3.87 | 0.63 | 0.60** |
| Resolving conflict | 3.06 | 0.95 | 3.97 | 0.85 | 0.91** |
| Self management | 3.31 | 0.89 | 4.23 | 0.57 | 0.93** |
| Team work | 3.94 | 0.81 | 4.60 | 0.56 | 0.66** |
| Written communication | 3.42 | 0.88 | 4.13 | 0.73 | 0.71** |

Note: [h] 0 being No Mismatch; 4 being Highest Level of Mismatch

** Independent-Samples T test is statistically significant at 0.05 alpha level.

International Education Studies
www.ccsenet.org/journal.html
Vol. 2, No. 1
February 2009

# Study on the Microwave Permittivity of Single-walled Carbon Nanotube

Xiaolai Liu
Department of Physics and Electronic Science
Beijing University of Chemical Technology
Beijing 100029, China

Donglin Zhao
Education Ministry Key Laboratory of Science and Technology of Controllable Reactions
Institute of Carbon Fiber and Composites
Beijing 100029, China

*The research is financed by the Science and Technology Nova Program of Beijing of China (No.H020821280120) and the Science Foundation for Post-doctor of China (No.2001030521). (Sponsoring information)*

**Abstract**

In this article, we studied the microwave permittivity of the complex of the single-walled carbon nanotube and paraffin in 2-18GHz. In the range, the dielectric loss of single-walled carbon nanotube is higher, and the real part and the imaginary part of the dielectric constant decrease with the increase of frequency, and the dielectric constant possesses the property of dispersion frequency response. The ε′, ε″ and tanδ of the complex of the single-walled carbon nanotube and paraffin increase with the increase of the content of carbon tubes, and it presents good second-order function relationship with the volume fraction of carbon in certain range. The polarization dispersion dielectric response is the main reason that the single-walled nanotube absorbs and wastes microwaves.

**Keywords:** Single-walled carbon nanotube, Microwave permittivity, Microstructure, Microwave absorption

## 1. Introduction

Since Iijima found the carbon nanotube in 1991 (S. lijima, 1991, P.56), the carbon nanotube has been broad concerned by people, and it has been the research hotspot in many scientific domains such as chemistry, physics, and material science. There are many methods such as graphite electric arc method (DC electric arc method), catalytic crack method, laser evaporation graphite rod method, pyrolytic polymer method, flame method, ion (electron beam) radiation method, electrolysis method and model carbonization method to be used to prepare nanotube (G, Ya, Slepyan, 2001, P.121-123, Bachtold A, 2001, P.1317, Tans SJ, 1998, P.49, Wagner HD, 1998, P.188, Planeix JM, 2001, P.1447, Cheng HM, 2001, P.1317, Service RF, 1998, P.940, John W, 2003), and the method which takes Fe, Co, Ni and other metals as activators and catalyze and crack the hydrocarbon to prepare the carbon nanotube makes the industrialization production of carbon nanotube possible. Various forms and structures of carbon nanotube make the nanotube possess many potential applied values, for example, it can be used in the strengthening of materials, one-dimensional quanta lead, semiconductor materials, activator carrier, molecule absorbent, tunnel scanning and the detector of the atom force microscope. The carbon nanotube has many characters such as small tube diameter and big length-diameter ratio, and the diameter is in tens nanometers, and the axial length of the tube is on the level from micron to centimeter, and it is the thinnest fiber material, and this sort of special structure makes the carbon nanometer possess excellent mechanical performance and special electric performance, and the experiment shows that the Yong modulus of single multiple layers nanotube averagely is 1.8TPa, and the curve intensity can achieve 14.2GPa (J, A, Roberts, 2004, P.4352-4356), and because the carbon nanotube is the one-dimensional material with hollow structure, so we can utilize the capillary phenomenon of carbon nanotube to fill some elements into the interior of the carbon nanotube and make the one-dimensional quanta line with special performance (K, G, Ong, 2002, P.82, C, Bower, 2002, P.3820, Zhao D L, 2001, P.2471). In a word, the preparation and application of carbon nanotube have been implemented for a long time, and in recent years, the research about the complex material of carbon nanotube has been one hotspot of the carbon nanotube appplicaiton, and there are few researches about the microwave permittivity of carbon nanotube, especial for the single-walled carbon nanotube and the function relationship between the effective dielectric constant of single-walled carbon nanotube and the volume

fraction of carbon nanotube. In this article, we study the change rule of the dielectric constant of single walled carbon nanotube and paraffin complex with the volume fraction and frequency of carbon nanotube in 2-18GHz, which will offer references for the application of single-walled carbon nanotube in the absorbing materials.

## 2. Experiment

The single-walled carbon nanotube used in the experiment is made by Shenzhen Nanotech Port Co., Ltd, and the diameter of the single-walled carbon nanotube is less than 2nm, and length is in 5-15μm, and the specific surface area is 450-600$m^2$/g. We use the coaxial line method to measure the dielectric constant of the single-walled carbon nanotube in the frequency range of 2-18GHz, and the type of the network analyzer is HP8722ES. The preparation process of the dielectric constant testing sample of single-walled carbon nanotube is that putting the single-walled carbon nanotubes dispersed in the melting paraffin evenly, and casting the liquid compound of paraffin and single-walled carbon nanotubes into the copper loop standard flange, and testing the dielectric constants of the complex with the flange after solidification to eliminate the testing error induced by the gap between sample and flange. And the contents of single-walled carbon nanotube respectively are 5wt%, 8wt%, 10wt%, 15wt% and 20wt%.

## 3. Results and discussions

The function between the microwave and the agglomeration matter can be described by the complex dielectric constant $\varepsilon^*$ ($\varepsilon^*= \varepsilon'-i\varepsilon''$, $\varepsilon'$ is the real part of the dielectric constant, and $\varepsilon''$ is the imaginary part) and the complex electrical conductivity $\sigma^*$. And the relationship between the real part $\sigma'(\omega)$ of the electrical conductivity and the imaginary part $\varepsilon''(\omega)$ of the complex dielectric constant is $\sigma'(\omega) = \omega\ \varepsilon''(\omega)$, where, $\omega$ is the angle frequency of the electromagnetic wave (K, G, Ong, 2002, P.82, C, Bower, 2002, P.3820, Zhao D L, 2001, P.2471, A, K, Jonscher, 1983, P.138, P, Debye, 1945, P.257, E, Mouchon, 1996, P.323, Liu, Xiaolai, 2005, P.721, A, K, Jonscher, 1983, P.13). Most researchers mix the measured samples with the paraffin to test the electromagnetic parameters of the complex (Zhao D L, 2001, P.2471, A, K, Jonscher, 1983, P.138, P, Debye, 1945, P.257, E, Mouchon, 1996, P.323).

Because the specific surface area of the single-walled carbon nanotube is very large, and it is hard to be compacted, so we can not exactly measure the microwave dielectric constant of the pure single-walled carbon nanotube. In this article, we studied the change rule of the dielectric character of single-walled carbon nanotube and the paraffin with the content of the carbon nanotube, and researched the dielectric character of the samples with five different contents (5wt%, 8wt%, 10wt%, 15wt% and 20wt%) in 2~18GHz, and the real part and imaginary part of the dielectric constant of the paraffin used in the experiment were constants, i.e. $\varepsilon'=2.26$ and $\varepsilon''=0$. Figure 1, Figure 2 and Figure 3 respectively show the change curves of the dielectric constants of the complex with different single-walled carbon nanotube and paraffin ($\varepsilon'$ and $\varepsilon''$) and the dielectric waste angle tangent ($tg\delta=\varepsilon''/\varepsilon'$) with the frequency. We can see that with the increase of the content of single-walled carbon nanotube, the $\varepsilon'$, $\varepsilon''$ and $tg\delta$ of the complex gradually increase, and with the increase of the frequency, $\varepsilon'$ and $\varepsilon''$ gradually decrease, and it possesses obvious frequency response property, which is very beneficial to enhance the absorbing performance of absorbing materials in the wide frequency range.

The research about the complex electromagnetic property is an old and active topic (Liu, 2005, P.721, A, K, Jonscher, 1983, P.13, J, C, M, Gamett, 1904, P.385, J, C, M, Garnett, 1904, P.237, A, H, Sihvola, 1998, P.420, K, Bober, 1997, P.101, G, F, Dionne, 1976, P.1708), and J.C. Maxwell Garnett educed the famous effective medium formula which was used to solve the complex dielectric constant in 1904, i.e. the Maxwell Garnett formula (A, K, Jonscher, 1983, P.13, J, C, M, Gamett, 1904, P.385). With the development of science and technology, many microwave apparatus, especially for the microwave absorbing materials developing from stealth technology, all need the materials with special electromagnetic property, but single material could not fulfill these special requirements, so we need prepare complex materials to implement these objectives, and though researches try to look for a sort of mathematical theoretical model to compute the microwave electromagnetic parameters of complex materials all along, but they could not establish a sort of general theoretical model (G, F, Dionne, 1976, P.1708).

The effective dielectric function of complex material is generally obtained by experiment and test or the establishment of proper mathematical model, and the later has important function in the material design, but up to now, there is not very satisfactory model, so researchers still try to find the optimal model all along. Bober et al (G, F, Dionne, 1976, P.1708) used Maxwell Garnett formula to respectively compute the complex dielectric constant and complex permeability for the complex materials which are respectively composed by resin with nickel zinc ferrite, mangan zinc ferrite, Sr ferric oxide and graphite in 10GHz, and they found the Maxwell Garnett effective medium formula could approximately compute $\varepsilon'$ for the complex material of nickel zinc ferrite and resin, but obvious warp would occur in $\varepsilon''$, $\mu'$ and $\mu''$, and $\varepsilon'$, $\varepsilon''$, $\mu'$ and $\mu''$ all had very large warps in other sorts of complex material. Boner's study result also indicated that the dielectric constant ($\varepsilon'$ and $\varepsilon''$) and permeability ($\mu'$ and $\mu''$) of the complex materials which are respectively composed by resin with nickel zinc ferrite, mangan zinc ferrite, Sr ferric oxide and graphite and the volume fractions of ferrite and graphite accorded with the second-order multinomial relationship ($\varepsilon'$, $\varepsilon''=Av^2+Bv+C$). Dionne et al studied the dielectric constants of the complex of rutile ($\varepsilon'=100$), anatase ($\varepsilon'=48$) and paraffin, and found that the warp would occur between measured value with computation value of Maxwell Garnett formula. Above research results

indicate the Maxwell Garnett effective medium formula is not fit to compute the dielectric constant and permeability of the microwave complex materials.

From above discussions, we can see that we should look for other methods to compute the dielectric constant of the complex materials composed by single-walled carbon nanotube with different materials in the frequency band of microwave. Our research indicated that the dielectric constant measured value of the complex materials with different single-walled carbon nanotube contents had very good fitting relationship with the volume fraction of nanometer powder, and ε′ and ε″ with the volume fraction of nanometer powder accord with the second-order multinomial relationship (ε′, ε″=$Av^2$+Bv+C). Figure 4 and Figure 5 respectively are the second-order function curves of ε′ and ε″ which are obtained by the fitting of dielectric constant measured value in 10GHz for the complex of single-walled carbon nanotube with paraffin with the volume fraction of nanometer powder (v). From the figures, we can see that ε′=-39.444$v^2$ +214.531v-7.717, $r^2$=0.9999, ε″=2049.436$v^2$-283.591v+11.011, $r^2$=0.9929, and they possess very good fitting relationship.

The researches also indicate that when the content of single-walled carbon nanotube is in 5wt%-20wt%, and in the frequency range from 2GHz to 18GHz, for different frequency testing sites, good second-order function relationship among ε′, ε″ and v, and the coefficients A, B and C are different with the change of frequency. This research result is very important for the optimal design utilizing single-walled carbon nanotube and its polymer complex for the single narrow frequency, multiple frequencies and wide frequency absorbing wave.

In the single-walled carbon nanotube gives priority to the $sp^2$ hybridization structure with carbon atom hexagonal close array, and the hybridization orbit presents electric moment, and the π electron bond energy is small, and its combination force with atom is weak, and the effective quality is small and it presents high speed move and super polarization property, and in the alternation electric field function of microwave, the turning polarization of electric moment forms, and with the increase of frequency, the turning polarization of electric moment gradually trails the change of the exterior field, so this sort of polarization will decrease with the increase of frequency. In the turning process of electric moment, the energy loss will occur because of the non-elasticity mutual function with surrounding particles, and the move will trail the electric field, so the polarization dispersion dielectric response is the main reason that the single-walled nanotube absorbs and wastes microwaves.

## 4. Conclusions

(1) The dielectric loss of single-walled carbon nanotube is higher in the microwave frequency range of 2-18GHz, and the real part and the imaginary part of the dielectric constant will decrease with the increase of the frequency, and the dielectric loss angle tangent increases with the increase of frequency, and it possesses the property of polarization dispersion dielectric response.

(2) In the single-walled carbon nanotube gives priority to the $sp^2$ hybridization structure with carbon atom hexagonal close array, and the hybridization orbit presents electric moment, and the π electron bond energy is small, and its combination force with atom is weak, and the effective quality is small and it presents high speed move and super polarization property, and in the alternation electric field function of microwave, the turning polarization of electric moment forms, and the polarization dispersion dielectric response is the main reason that the single-walled nanotube absorbs and wastes microwaves.

(3) In the microwave frequency range of 2-18GHz, the ε′ and ε″ of the complex of single-walled carbon nanotube with paraffin have significant independence relationship with the content of single-walled carbon nanotube, and in the 5%-15% of the single-walled carbon nanotube content, the ε′ and ε″ have good second-order function fitting relationship with the volume fraction of single-walled carbon nanotube, i.e. ε′, ε″=$Av^2$+Bv+C.

## References

A, H, Sihvola & J, A, Kong. (1998). IEEE Trans, Geosc, Remote Sensing. No.26. P.420.

A, K, Jonscher. (1983). *Dielectric Relaxation in Solids.* (Chelsea Dielectric Press, London). P.13.

A, K, Jonscher. (1983). Dielectric Relaxation in Solids (Chelsea Dielectric Press, London). P.138.

Bachtold A, Hadley P & Nakanishi T. (2001). *Science.* No.294. P.1317.

C, Bower, W, Zhu, D, Shalom, D, Lopez, P, L, Gammel, and S,Jin. (2002). *Appl, PhysLett,* 80, 3820.

Cheng HM, Yand QH & Liu C. (2001). *Carbon.* No.294. P.1317.

E, Mouchon & Ph, Colomban. (1996). *J, Mater, Sci.* No.31. P.323.

G, F, Dionne, J, F,F itzgerald, R, C, Aucoin. (1976). *J, Appl, Phys.* No.47. P.1708.

G,Ya, Slepyan, S, A, Maksimenko. (2001). *Synthetic Metals.* No.124. P.121-123.

J, A, Roberts, T, lmholt, Z, Ye. (2004). *Journal of Applied Physics.* No.95. P.4352-4356.

J, C, M, Garnett. (1904). Philosoph, Trans, Roy, Soc, London. No.203. P.237.

J, C, M, Gamett. (1904). Philosoph, Trans, Roy, Soc, London. No.203. P.385.

John W, Schultz, Rick L, Moore. (2003). Mat, Res, Soc, Symp, Proc, 739 *Materials Research Society*.

K, Bober, R, H, Giles, J, Waldman. (1997). Inter, J, Infr, Mill,Wav. No.18. P.101.

K, G, Ong, K, Zheng, and C, Grimes. (2002). IEEE *Sensors.* J,2,82.

Liu Xiaolai. (2005). Microwave Permittivity of Multi-walled Carbon Nanotube AICAM. (in Chinese). P.721.

P, Debye. (1945). Polar Molecules (Dover, New York). P.257.

Planeix JM, Coustel N & COQ B. (2001). *J Am Carbon.* No.39. P.1447.

Service RF. (1998). *Science.* No.281. P.940.

S, lijima. (1991). *Nature (London).* No.354. P.56.

Tans SJ, Verschueren AR & Dekker C. (1998). *Nature.* No.393. P.49.

Wagner HD, Lourie O & Feldman Y. (1998). *Appl Phys Lett.* No.72. P.188.

Zhao D L, Zhou W C, Wan W. (2001). *Acta Phys, Sin.* No.50. P.2471. Acta Physica Sinica. No.50. P.2471.

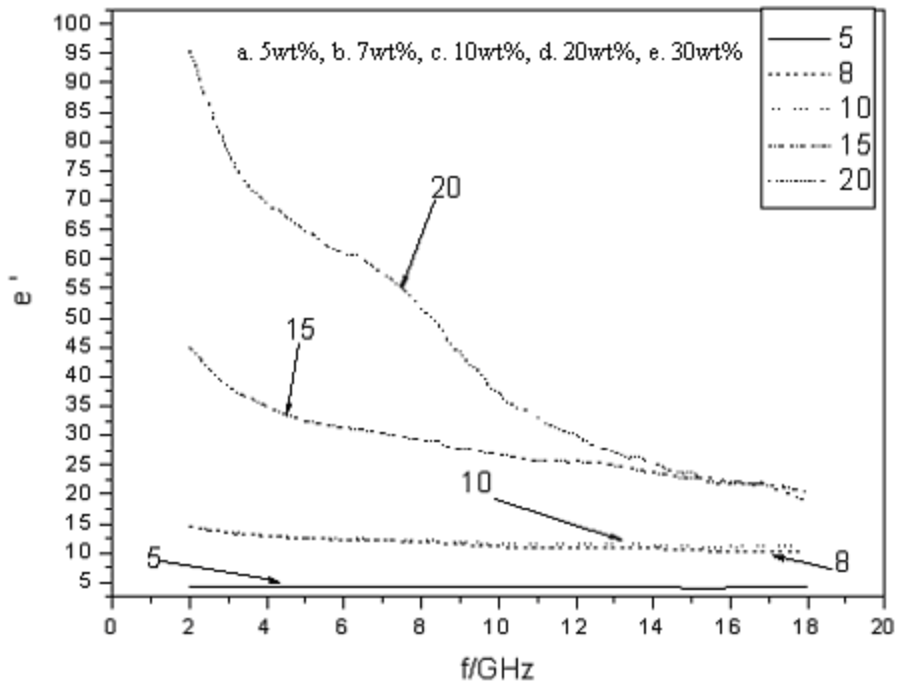


Figure 1. Relationship between ε′ and frequency

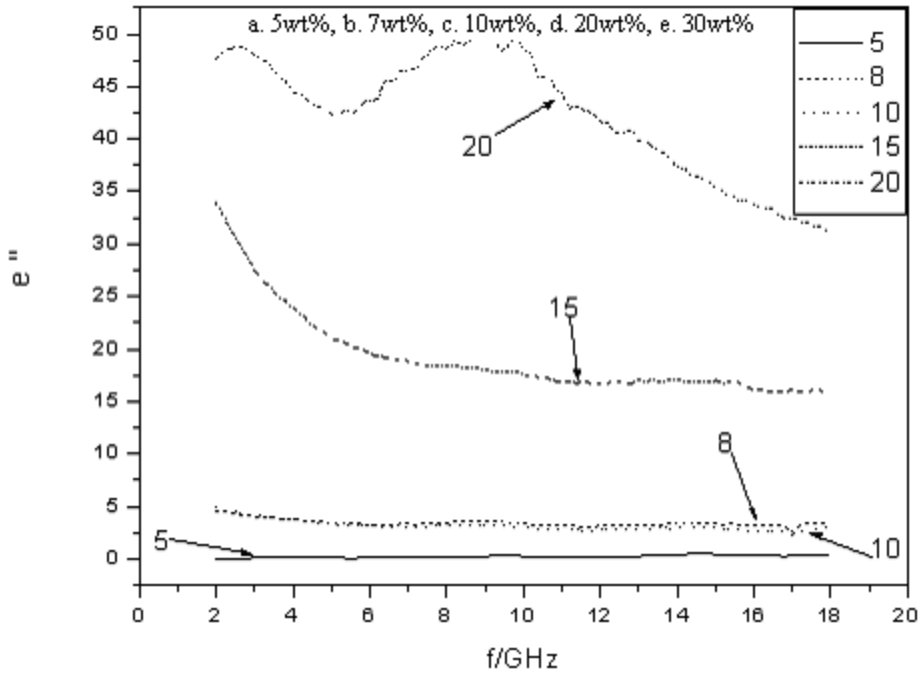


Figure 2. Relationship between ε″ and frequency

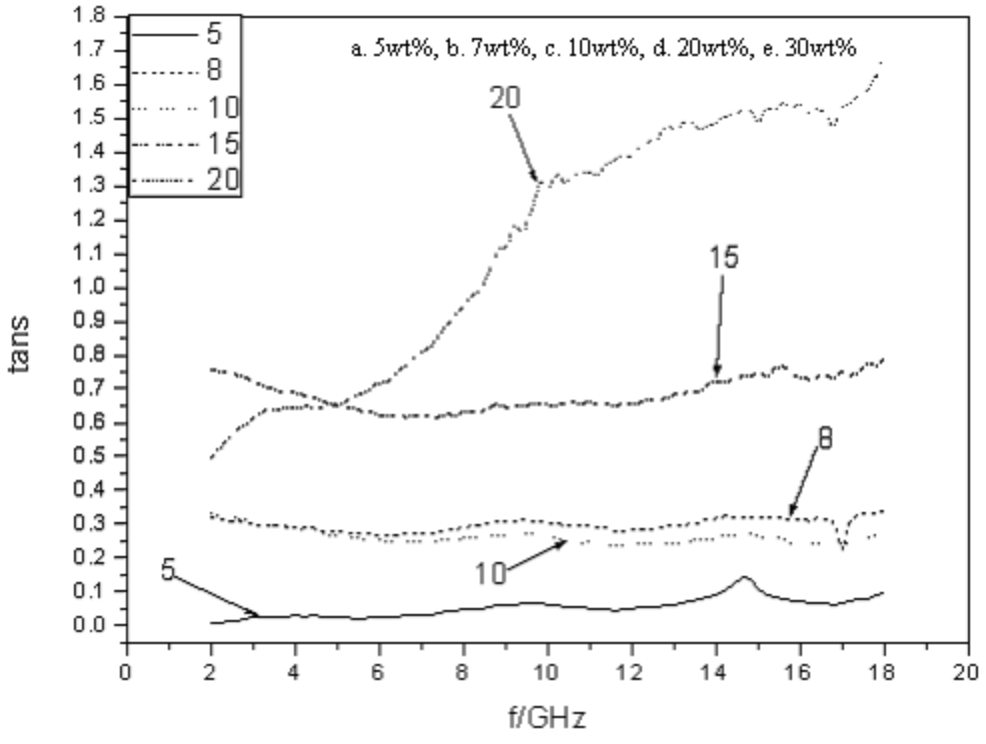


Figure 3. Relationship between tgδ and frequency

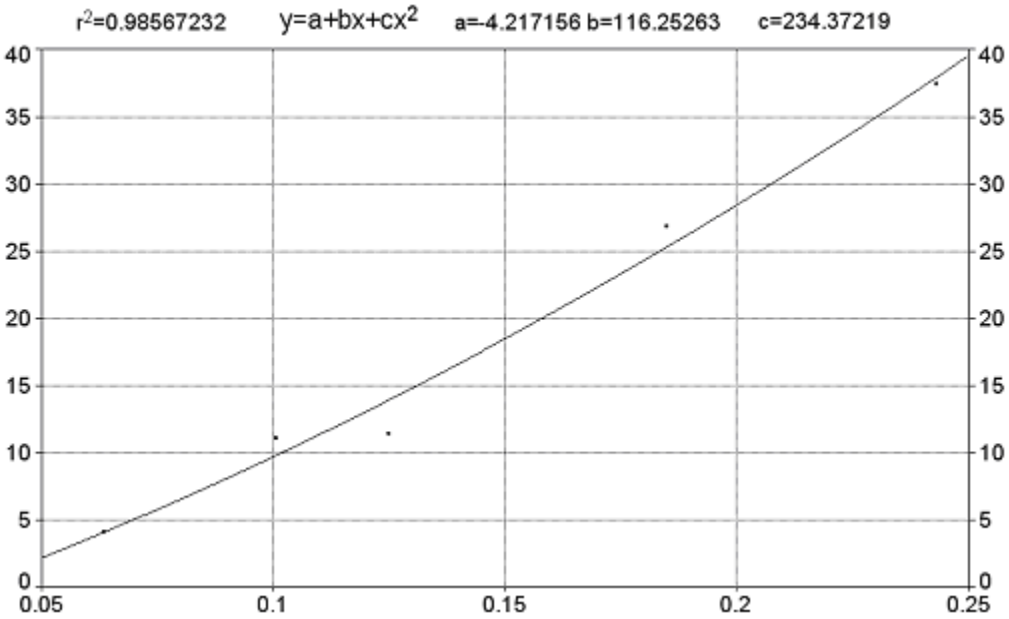


Figure 4. Relationship between ε′ in 10GHz and nanometer power volume fraction (v)

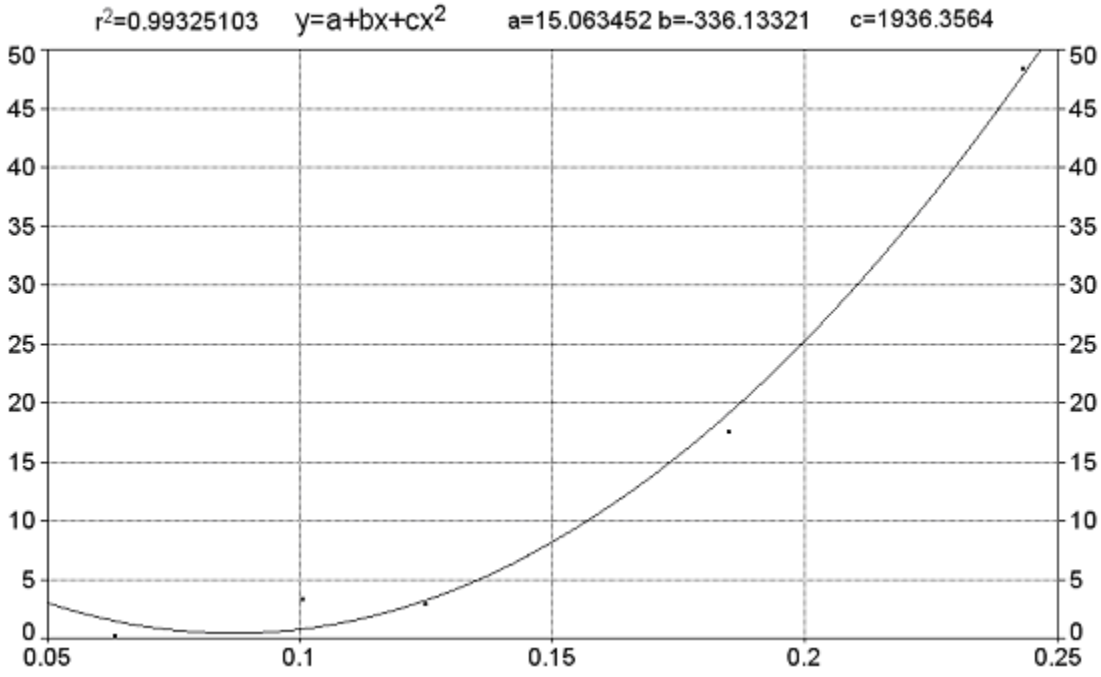


Figure 5. Relationship between ε″ in 10GHz and nanometer power volume fraction (v)

International Education Studies
www.ccsenet.org/journal.html
Vol. 2, No. 1
February 2009

# Analyzing Exertion of Hardy's Tragic Effect in Tess

Wei Yang
English Resource Center
Chongqing Education College library
Chongqing 400067, China
E-mail: lanwei79@hotmail.com

**Abstract**

This paper begins with a brief introduction to Hardy's whole life and his works, especially this novel Tess and points out the tragic effect's importance and Hardy's tragic idea. Linked to this tragic effect, this paper analyzes the nice application in Tess. At last, we can understand more the fame of tragic effect and how it applies in Hardy's works.

**Keywords:** Tragic effect, Victorian times, Fatalism critique, Morality, Destiny

## 1. Introduction

Thomas Hardy (1840-1928) was one of the greatest critical realistic writers. His works deeply displays countries' changes in social economy, politics, morality, custom and painful destiny of unemployed farmers. Under the invasion of Capitalism from 1870's to 1890's, Hardy creates a great number of works in his life. His several long pieces of fictions make him be famous in the history Of English literature. Owing to exploring commonly the problems of human existence, his works form a series of "character and environment fictions", which represents the highest achievement of author' novel creation, tortuously expresses human crisis in spirit and belief in the latter period of Victorian Times. When he goes on realistic description and social critique, his tragic recognition to human existence environment and future is endowed these fictions melancholy and grieved central theme so that these fictions have strong tragic effect. Tess is Hardy's latter work and is comparatively mature in artistic and creative techniques. It describes the devils of Capitalism and embodied his ideas and literature achievements. The novel is set in the background of the invasion of Capitalism and the great bankruptcy of village economy and poor farmers' lives. These results undoubtedly are exposal and flogging to evils of Capitalism.

## 2. Speciality in Hardy's tragic effect of his works

### *2.1 Background of bringing tragic effect*

The Victorian Times was well known for the optimism of stiff ethnics. Such a social atmosphere would surely have some impact on him. As a matter of Fact, the critical tragic effect Hardy possessed coordinated with what was rife then. The only difference was that Hardy was a novelist who regarded critical tragic effect as the starting point to understand life and write novels, while critical tragic effect was only an empty talk to those aristocrats. In Tess, nearly all the ferocious social evils he criticized concern traditional value ideas, such as religious doctrine, legal article, education of liberalism, marriage ethnics and so on. The outlook of critical tragic effect in his works shows his anti-society inclination---seeking natural beauty of life and substantiation of free emotional life. The theme stands together with the realistic one and forms the two pillars of the work.

### *2.2 Its difference between traditional tragic effect and other effects*

Traditional tragic idea naturally has a certain influence on formation of Hardy's tragic idea. But traditional tragedy emphasizes the conflict between people and destiny, Hardy's tragic idea is different from this, he emphasizes the conflict between people and society. So, his works are social tragedies with more criticism. In 1885, Hardy wrote: "tragedy, simply speaking, tragedy expresses a state of thing in personal life, its instinctive ability and desire finally inevitably cause painful result." Why it is inevitable is "the ideal life that humans want to live doesn't suit to their present simply realistic life." Linked to Hardy's works, it is difficult to see what he talks here is the core of his tragic idea. He thinks tragedy is not simple conflict between people and environment, but human instinct and progressive tendency (the certain conflict between hero's seeking to humanitarianism and free, nice life) and hostile, evil social reality. This necessity is not the reflection of God's consciousness, fatalism but the deep reflection of essence and rule in social life. As Hardy himself says "Comedy is tragedy, if we can observe if profoundly enough." so what Hardy emphasizes on "certainty" brings deep historical truth and stimulating historical depth to his tragic works.

*2.3 Far-reaching social influences*

Tess's tragedy is not an occasional tragedy in personal life, but a deep social tragedy that is excellent people's common tragedy among common laborers in Capitalistic society. Here, it is so happy that we see the fighting and progressive spirit of laborers change their own social positions and old world. Hardy also thinks the nice nature of human beings disappears on Capitalistic classes, but only exists on common laborers, especially people who live in remote villages which are away from Capitalistic civilization, they meanwhile have "instinctive sense of justice and faith of fairness," only their hope and seeking can represent the common requirements of human development and progress. Here, though Hardy's conclusion is non-historial, abstract, super-class, but saying the times Hardy is in, it is so right that he sees humanitarianism does not suit anti-humanitarianism, they can shake the optimism of Capitalism. So it is very natural that Hardy's tragic novels arouse the strong shaking and fear of ruling classes in Capitalism. Here, we have to admire valuable honesty and bravery as a Capitalistic humanitarianistic author.

**3. Tragic expressions in Tess**

*3.1 The whole structure of tragic effect*

Critical tragedy has, in its turn, tended to align itself with these three modes in emphasis on one or the other: on the analysis of archetypes, on characterization and dramatic probability, or on the novelist's social vision. Partisanship, one notes, has not been unknown. Let us try some other formulations of the nature of tragedy, particularly as they might apply to Tess of the D'Urbervilless. Hardy's own definition seems worth consideration-"the WORTHY encompassed by the INEVITABLE." Too brief though this is, it is not difficult to see how this might be applied to both Greek and Elizabethan tragedy. To expand somewhat, from other ideas Hardy often expressed and sometimes implied by his practice, the worthy are those of high moral stature. "The inevitable is the nature of the universal," according to Marcus Aurelius'phrase that Hardy quotes frequently with approval. Until about 1895, he did develop his conception of the Immanent Will that is unconscious but may become conscious through its infection by the consciousness of good men, nor did he give it definitive expression until THE DYNASTS in the early years of our century. Until he was forty-five, Hardy believed that the Inevitable was a combination of natural law as Darwin formulated it, the occurrence of coincidence or not, and the inevitable presence of flaws in man's character, Tess's sexuality-that was controlled except when she was tired. Though these elements were never fitted together with absolute cohesion in any of the novels (particularly since Hardy inconsistently added to these the belief that man, conditioned by nature and in turn conditioning society, could alter society towards the better), and though Hardy never regarded himself as a systematic philosopher and was always somewhat the agnostic who framed "weak phantasies" out of the finally incomprehensible nature of reality, they form an adequate basis for tragedy if one does not assume with Mr. Paterson that tragedy must "justify the ways of God to man."

*3.2 Description of mood*

Tess is sometimes sentimental and I doubt that Henry James would have ended with "the president of the immortals had finished his sport with Tess," an interpolation which, like many others Hardy made, is an aesthetic flaw. (Yet somehow,since it was written into the novel and all of us have sometimes felt just as unreasonably bitter,I like even this with the unobjective part of me.) Father Time travesties the bitter view Hardy often felt and spoils (for a while) the tragic vision the novel as a whole expresses (as little Nells spoil Dickens'novels, a pile-up of sensational incidents the work of Wilkie Collins, and sentimental moralizing a lot of Thackeray's good fiction). The aesthetic manner of this novel admirably enabled Hardy to express his intellectual conception of life, from its outer show of events to the most primal discord of its nature, and even to the necessary tragic resolution of the discord. But it withheld him from adding to his formation of life and the gloss of his own opinion of the tragedy. "That tragedy is not an accidental accompaniment of life, but essential to its nature, this manner of art can be brought, without any violence, to assert, but it is very difficult for it to assert either that the tragedy is a fine, heartening business or, on the contrary ,pitiable and unjust. So a change of aesthetic habit becomes necessary, and Tess is wtitten in a form which the artist's conscience easily allows to control an emotional as well as an intellectual judgment of life. Instead of being constructed round a progressive harmony of several individual themes, the form of these two novels [termed "epic" as a convenient label] develop a single theme, the life-history of one person, and send this uninterruptedly forward. This is obviously the case in Tess." (HILLIS MILLER, 1970)

*3.3 Admiration of Hardy to Tess*

Tess is Hardy's heroine, this novel,indeed, strikingly similar as regards Hardy's conception of the characters and themes in general and the female protagonists in particular. Like Eustacia, Tess is firmly linked to a pre-christian world. Not only does Angel Clare imagine her "a frush and virginal faughter of nature" but he also puts Tess in a again environment by calling her "Artemis, Bemeter and other fanciful names" and by discussing with her "pastoral life in Ancient Greece" and at the end of the novel Tess identifies the setting of the final scene, stonehenge, as "The heathen temple". Then, as she realizes how appropriate the place is for the staging of the closing scene of the drama, she tells ANGEL "you used

to say at Talbothays that I was a heathen. So now I am at home". Hardy's sympathy for Tess has not been seriously questioned and it seems reasonable to assume that Eustacia is an early version of the child of nature image that was to be her emotions she simply listens to the same voice of nature.

*3.4 Reflecting woman's charming of Tess*

Tess is a concentrating study of a woman who battles to be recognized as a person in her own right, but who never gets the chance to realize her womanhood. Considered inferior as a woman and as a peasant, her self-esteem is constantly eroded by a society which brands her as socially, economically, and morally unacceptable. The hunting predatory men like Alec and others, the scorn of the morally-righteous like Angel, the victim of family loyalty, it is no wonder that to toward the end she looks like a woman out of whose body all the blood has run. The black flag which goes up on the prison roof as signal that her execution for murder over becomes a symbol of a blinted life. The most poignant thing about Tess, though, is not her death but her loneliness in life. The special loneliness which comes from inside is not being known by others. The novel is a high point of maturity in Hardy's fiction. He deals with poverty and the woman, the double standard of morality, the role of passivity forced upon women, and how woman's chances for happiness are eventually blighted. "To examine Tess in any detail is to be made more than usually aware of two things – the varying levels of imaginative intensity which it contains, and the way in which these levels disappear to leave the reader with a dominant impression of unity. There is the art of the ballad writer, the beautiful village maid, sefuced in the green wood, who rallies to find her true lover, only to be rejected by him when he discovers her act and brought to a tragic end. There is the art of the writer who feels that such a world is dying in the shadows of the new industrial the writer who reflects philosophically on these things."(IANGREGOR, 1962) Nevertheless, the total impression that Tess leaves on the reader is undeniably one of unity and we must start by asking how that is done, before going on to isolate the various elements that make it up. The first thing to be noted is the extraordinary vividness and imaginative density with which Tess herself is presented. Tess is continually before the reader as a living presence. She is the heart of the novel, giving it all the life it has, and that life remains a personal Life, it does not transform itself into symbolic terms so that she becomes the agricultural community in its moment of ruin. If an enlargement of the Character takes place, it is to increase the force of the character, not to point out its significance. Tess felt akin to the landscape – this is Hardy's way of providing a dramatic notation for material which, in another novelist, would have been handled psychologically. At every stage of the tale interior states are visualized in terms of landscape. Then when consider Alec D'urberville, we move into a world different from this one, but the shift still lies completely within Hardy's power of dramatic presentment. It has been frequently urged against Alec that he is simply a stock-in-grade figure from victorian melodrama. He is certainly a stock figure, but only because he belongs to a stock world, he is the eternal tempter. He describes himself to Tess as "the other old one who can tempt you in the disguise of an inferior animal". To a large degree, he is simply the anonymous villain of he ballad, here Hardy is establishing an historical perspective. The rural ballad world now comes to be seen more specifically as an agricultural community beginning to disintegrate under the threats of industrialism. Is Tess a moral woman? The beauty and ugliness of a character lay not only in its achievements, but in its aims and impulses, its true history lay not among things done, but things willed. This is a forceful passage, making the point succinctly and without rhetorical flourish. Hardy is here feeling his way toward a criticism of behavior as an adequate moral register-not things done, but things willed. In James this criticism is vastly extended and subtilized, and the way is prepared for the characteristic twentieth-century novel, which takes as axiomatic the moral supremacy of things willed. The citadel defended by the victorian novelist was innocent, the citadel defended by the modern novelist has shifted to integrity and here we are more naturally at home in the psychological world of motive and intention. Abstractly Hardy could see the shifting strategy, but in practice, He occupied the old position. The last analysis what does come through is the force of Hardy's sub-title a pure woman seen and presented within a social framework. Hardy may talk of things willed but here everything is externally done, the gauntlet is visibly thrown. The individual physically confronts her antagonist. But the way is beginning to be clear for things willed to find their imaginative expression in art, for the contest between corruption and innocence to take place not in a field, but within the human heart itself. For this we have to leave Hardy and enter the world of Henry James. Tess is almost the only novel of Hardy's in which a single character is great enough to transcend too-crushing mechanisms of plot. Tess has for its sub-title a Pure Woman. Why this laboured attempt on Hardy's part to establish Tess as an emblem of chastity before the book begins? Obviously it is, I think that because the dice is loaded before the book begins, and that Hardy that he has loaded it himself. Tess was victimized both ways, by Hardy on the one side and by victorian England on the other. With Tess the cry is not this pity she is a whore! But he knows that whatever he might think, victorians that very purity was the secret of the trouble. A wanton labeled wanton, but not a wanton labeled pure.

## 4. Conclusion

Critical tragic effect of Hardy during his novel-writing days was directed more toward his pessimism than toward the sexuality of his themes. Perhaps Hardy's readers would have more readily accepted Tess's happiness (after sufficient penance) than the cruel death that she must suffer D.H.Lawrence, frequent critical tragic effects of Hardy are that as counters to mid-victorian optimism, he would not allow anyone who could feel deeply or think broadly to be happy.

Hardy had been strongly influenced by Darwin's work during his maturing years prior to his first published novel in 1871. The battle between man and nature, manifest in the mysterious and even malevolent power that determines the process of natural selection, becomes translated into a cosmic pessimism in which man is countered at every turn by antagonistic forces. Because man can never be sure of himself, Hardy was clearly reacting to victorian sentimentality, although he did not evade it on several occasions when he was sure his audience desired tears. He did recognize, though, that to approximately such tragedy he would have to manipulate many things artificially in order to make his philosophy work out consistently. Hardy was generally isolated from the beliefs of a dominant part of his audience. Therefore, we sense the strain, the need to impose consistency even at the expense of art. He still says the business of the poet and novelist is to show the sorriness underlying the grandest things, and the grandeur underlying the sorriest things. Most of Hardy's novels have markedly unhappy endings. This is a significant characteristic of their forms. He is the first major English author to write a number of novels that end unhappily, although the conclusions of his best novels can only be called tragic. He does not simply negate happiness, he insists on sorrow. His achievement, in terms of form, is to have combined the tragedy and the novel. Hardy is a writer of great subtlety. He makes full use of the force of reserve, and the emphasis of understatement, but he can be obvious, heavy-handed and unrelenting as well. He seems sometimes to resemble the man with the tinpot of red paint in Tess who paints biblical texts in fiery letters around the countryside, but he ,observations ,as when he describes how the strangers drinking outside Rolliver's inn "threw the dregs on the dusty ground to the pattern of Polynesia", or tying Eustacia's bonnet strings after their quarrel. He uses the most delicate touch and the hammer blow. His harshness and his ruthlessness can be obscure for us the fact that these qualities exist together. Hardy needs the tragic because of the overwhelming power of his feelings. It may be said that the novel as he found it was too slack and diffuse for his purposes. Tragedy may be considered the most rigorous of narrative form, the novel is perhaps the most commodious. Hardy's combination of the two enables him to express sorrow as no other English novelists can. His work is remarkable for the varieties and nuances of sadness. Among English writers, perhaps only Shakespeare surpasses him in this capacity. Hardy worked consciously and deliberately as an artist in the tradition of the greatest European art. His idea of tragedy represents a combination of Greek, Shakesearian and Biblical tragedy.

**References**

Ann Charters. (1991). *The elements of fiction*. New York: Bedford Books of St.Martin's Press.

Dorothy Van Ghent (1982). "On 'Tess of the D'Urbervilles' ". *Twentieth-Century Literary Criticism*, Vol.18 (Kansas: Gale Research Company, p.98.

F.R.Leavis Frank Raymond. (1986). *Valnuation in criticism and other essays*. Cambridge: Cambridge University press.

Ian Ousby. (1988). *The Cambridge guide to literature in English*. Cambridge: The press Syndicate of the University of Cambridge.

Thomas Hardy. (1990). *Tess of the D'Urbervilles (Norton Critical Editions) (Paperback)*. New York: W. W. Norton; 3 edition.

Thomas Hinde. "Accident and Coincidence in 'Tess of the d'Urbervilles' ". *Twentieth-Century Literary Criticism*, Vol.18 (Kansas: Gale Research Company,1982), p.116.

International Education Studies
www.ccsenet.org/journal.html
Vol. 2, No. 1
February 2009

# The Place of "Culture" in the College English Classroom

Qing Xu
College of Foreign Languages
Qingdao University of Science & Technology
69 Songling Road, Qingdao 266061, China
Tel: 86-532-8895-6018 E-mail: allyxq@sina.com

*The paper is part of the research findings of the 2006 key Social Science project establishment "Research of College English STSR Teaching Strategies" of Qingdao University of Science & Technology.*

**Abstract**

In response to the contrast between the instructional focus of the classroom practice and the actual communicative requirements of campus setting, this paper points out the constructive suggestions for the cultivation of culture awareness in college English education.

**Keywords:** Cultural awareness, Cultural instruction

## 1. Introduction

In the field of foreign language teaching, one aspect that occasionally emerges as a topic of discussion is the relationship between knowledge of a foreign language, and knowledge of the culture from which that language "originated". From my experience with college English education, it would appear that the question of "culture" is often relegated to the end of a language teaching plan. It seems as if it is always something of a bonus if the teacher manages to find time to introduce a bit of the culture of the foreign language into the classroom - some music perhaps, or a typical idiom, in the final lesson of the course. Hence, we may want to ask "how much of the culture of a country should be taught along with the language?"

## 2. Statement of the problem

Acquiring the ability to handle English is very important, which equals to make the efforts to understand the lectures, for a successful academic life at the university. Students have to have communicative competence in English. In other words, what the students are expected to have would be the following skills: listening to lectures, reading textbooks, writing papers, participating in class discussions, etc. These are all indispensable to survive in the university. In the meantime, we know language and culture are inextricably linked. When a person decides to learn English, he or she is not merely absorbing the linguistics of the language, but everything to do with English and English-speaking countries. To speak a language well, one has to be able to think in that language, and thought is extremely powerful, even if the learners themselves are not initially aware of the cultural associations attached to the language they are learning, others will perceive them as being aligned with that culture. However, the students' socio-cultural competence is much weaker than their language competence. After seven years of formal English education, they are still deficient in the ability to actually use English and to understand its appropriate use in normal intercultural communications.

The students' motivation and ability to learn English in the college are influenced by their degree of involvement in the English language and culture. Gardner and Lambert (1972) postulated that learners may have two basic kinds of motivation. The first is integrative motivation, which refers to the desire of language learners to acquire the language while immersing themselves into the whole culture of the language, in order to "identify themselves with and become part of that society" (Brown 1994: 154). The second is instrumental motivation, which refers to the functional need for learners to acquire the language in order to serve some utilitarian purpose, such as securing a job, or a place at a university. The argument is that such instrumentally motivated learners are neither concerned with the culture from which their target language emerged, nor interested in developing any feelings of affinity with the native speakers of that language. However, the traditional attitude among engineering departments of universities has been that language skills are not as crucial for engineers compared to numeric and technical skill. Actually, the lack of interpersonal skills and writing skills were ranked first and second respectively. The fact that there is a gap between the English courses conducted in academic environments and the actual communication tasks required in the real world of work is nothing

new. Nevertheless, in an attempt to narrow the gap, it has been suggested that university English teachers pay more attention to the spoken and writing process, and focus on the broader social and cultural contexts.

## 3. Some tentative suggestions for college English teachers

### *3.1 Introduction*

The goal of foreign language instruction is to help the learners to develop a competence to use the foreign language for communication with people of different cultural backgrounds. Consequently, "Intercultural Communicative Competence" (ICC) ought to be established as the ultimate goal of college English teaching. It conforms most perfectly to the nature of language, language teaching, and foreign language teaching. ICC as the ultimate goal of FLT is supported by sociolinguistics, cultural linguistics, and the theory of intercultural communication. Besides, teaching methodology, course design, and teaching materials should also be adapted to cater to the accomplishment of the ultimate goal.

### *3.2 The teaching objective*

Let's take a quick glimpse of the pertinent descriptions and statements in the College English Syllabus (For Non-English Majors, Revised Edition):

“The teaching objective of college English is to help students develop a relatively strong reading ability and general skills of listening, speaking, writing and translating, and by so doing make students able to use English for communications. College English is intended to help students lay a solid foundation of language skills, acquire good language learning strategies, nourish their liberal accomplishment, and adapt themselves to the requirements of social development and economic construction."

But unfortunately, the current English syllabus does not provide a clear statement or description of the ultimate goal of ICC. Logically, in the college English syllabus, there ought to be more space for description and guidelines about cultural instruction in a comparatively systematic pattern in order for the goal of TEFL to have a chance to work.

### *3.3 Teachers*

First of all, college English teachers should have strong cultural awareness and pay attention to the cultivation of ICC throughout the whole teaching process. On one hand, they should guide the students to be aware of the customs, value system, behavioral patterns and communicative habits, etc. of the target nation when reading English textbooks, magazines and newspapers, which are the most vivid and wealthy materials for the understanding of a particular culture.

On the other hand, during the teaching of linguistic knowledge and the training of language skills, focus should be laid not only on the correctness of pronunciation, intonation and grammatical rules, but also on the context in which language is used. For example, while teaching writing and speaking, teachers should tell students to speak or write properly according to different occasions, times and social roles. Furthermore, teachers should pay attention to the teaching of non-verbal behaviors of the target culture in order to help the students know its different way of expressing.

### *3.4 Curriculum design*

The goal of the fundamental stage is to teach basic knowledge of English, to have students strictly trained in all-rounded fundamental language skills, and to foster students' ability to use the language for real situations, good study style and correct learning methods, and to lay a solid foundation for their studies at the advanced stage. The goal of the advanced stage is to continue the basic skills training, equip students with specialized knowledge and specialty-related knowledge, to further broaden their knowledge scope, to enhance their awareness of cultural differences, and to better their comprehensive use of English for communications. Therefore, the integration of the three strands (English knowledge, skills training and cultural instruction, Liu, 2000) is of vital importance in TEFL:

3.4.1 To change teaching methods, break away from outdated traditional teaching methods.

Language teaching should be interrelated with culture teaching, language competence and cultural competence. So from the perspective of a FL learner, to master a foreign language is also to master a new communicative tool, to learn and understand its culture while from the perspective of a FL teacher, to teach a foreign language is also to teach its culture at the same time. If we don’t master the cultural background, cultural modes and principles of that foreign language, we are unlikely to teach well that language, as culture is a very important part of language.

3.4.2 To strengthen the cultural awareness of both teachers and learners.

As teaching a language actually means to teach its culture at the same time, here I mean the cultural awareness of both source/native language and target language. It’s a progress now in China to bring about favor in teaching target language culture in this language teaching, but in the meantime we also realize the lack to culture knowledge of our own Chinese. Some language experts concerned ever did investigations to find out that students really knew little about Chinese culture. Therefore, when we are teaching a target language we can hardly avoid comparing its culture with our

own. Only in the course of comparison can we grasp their specific features and effectively convey all these to our students.

3.4.3 To select suitable teaching materials.

Language teaching, and particularly language teaching materials, should be directed toward improving intercultural communicative competence. As for teaching materials, they should adopt a common-sense and pragmatic approach, offer a rich array of interesting and highly motivating language-learning resource material and design activities which can raise cultural awareness. That is to say, when we select teaching materials we should know what cultural factors must be directed into our language teaching and what can possibly be omitted. We should select some up-to-date, original English materials with the British or American national flavors so that English teachers can easily develop their multilateral class activities, with cultural background combined with cultural contents. In the meantime materials must be of great interest to readers apart from nice contents. To be interesting or not is an important factor for the teaching materials. It's true for both teachers and students. It's really hard for language teachers to enliven the atmosphere of their classes when the actual teaching materials are boring or too serious while students just listen with a bored expression all the two hours. The textbook *Family Album, USA* is a practical teaching material, which brings learners to an American family to learn how to communicate with Americans. By introducing the daily life of the Stewarts family—a typical American middle class family, the book vividly shows American communicative culture, which is different from that of China.

## 4. Conclusion

To sum up, in college English classroom, the primary aim is to involve students in an active a way and help them to take on the role of a mediator of cultural knowledge and skills in the language classroom. Specifically, we should first foster students' proper motivation, arouse their cultural awareness, clear away anxiety and cultural stereotypes and at the same time help students to appreciate their native culture.

## References

Agar, M. (1994). *Language shock: Understanding the culture of conversation.* New York: William Morrow.

Brooks, N. (1968). *Teaching culture in the foreign language classroom*. Foreign Language Annals, 1, 204-217.

Liddicoat A. J. & Crozet C. (2000) (Eds) *Teaching Languages, Teaching Cultures.* Language Australia, Melbourne.

Paribakht, T. (1985) *"Strategic competence and language proficiency."* Applied Linguistics. Vol. 6, No.2, pp. 132−146.

Tomalin, B. & Stempleski, S. (1993). *Cultural Awareness*. Oxford: Oxford University Press.

Ulichny, M. (1997). *The mismanagement of misunderstandings in cross-cultural interactions*. Journal of Pragmatics, 27: 233-246.

International Education Studies
www.ccsenet.org/journal.html
Vol. 2, No. 1
February 2009

# A Probe into Classroom Teaching and Second Language Acquisition

Zhengdan Li
School of Foreign Language
Liaoning University of Petroleum & Chemical Technology
E-mail: yueguang1001@163.com

**Abstract**

Due to the popularization of foreign language study, more and more people from education filed further enhance their exploration and researches in how to apply second acquisition theories into classroom teaching. This paper probes into the orientation, research objects, age, language environment and classroom activities of second language acquisition.

**Keywords:** Second language acquisition, Classroom teaching

## 1. Second language acquisition researches

### *1.1 Second language acquisition researches orientation*

Second language acquisition researchers mainly explore how human beings, after having mastered their mother tongues, acquire the second language. The second language acquisition theories systematically do research the nature and acquisition process of second language acquisition. Second language acquisition researches began at the end of 1960s or at the beginning of 1970s in the west. Originally, second language acquisition was a branch of applied linguistics and mainly aimed to provide helps for language teaching. However, with the emergence of interlanguage hypothesis, second language acquisition broke away from applied linguistics and transformational generative linguistics and became an independent discipline.

### *1.2 Research objectives*

Second language acquisition researches could be divided into theoretical second language acquisition researches and applied second language acquisition. The former one mainly aims at establishing second language acquisition theories, such as universal grammar theory (Chomsky, 1965), monitor theory (Krashen, 1982), acculturation mode (Schumann), accommodation theory (Giles, 1982), functional theory (Givon, 1985), variable competent modal (Ellis & Widdownson, 1984). The researchers do researches on the psychological process, cognitive process and language process of second language acquisition from sociology, psychology and linguistics. To put it in detail, researches analyze how learners, after having mastered their mother languages, learn another new language system, what the learners have learned and have not learned, why most of the learners could not achieve their mother language level in their second languages, the influence of mother languages on second languages, and the process the learners apply second languages. The latter does researches on how to apply second language acquisition research outcomes to improve second or foreign language teaching, the compiling of teaching materials and teaching methods, how to write teaching methods, how to design classroom activities, how to improve teaching effect in classroom environment, the impact of classroom language teaching on language acquisition as well as the individual differences of second language learners.

### *1.3 The classifications of second language acquisition theories*

With the emergence of second language acquisition researches worldwide, second language acquisition theories came into birth and developed rapidly in the passed more than 40 years. There are a lot of second language acquisition theories, which hold different point of views. Each theory and point of view brings forth some characteristics and rules of second language acquisition from different perspectives. Ellis (1985) summarized seven second language acquisition theories or modes, which are acculturation mode, accommodation theory, discourse theory, monitor theory, variable competence mode, acquisition theory, creative conformation theory, and universal hypothesis and neurofunctional theory. Linghtbown (1993) summarized four theories, which are behaviorist theory, acquisition theory, and creative conformation theory and interactionist view of language acquisition. Brown (1994) summarized three theories, which are the input theory of Krashen, notice-disposal mode of Mclanghlin and the analysis-automation mode of Bialystok. Richards and Rodgers (1986) put forward two theories. Process oriented theories emphasize the psychological process the second language learners must experience. Condition oriented theories emphasize the teaching skills and classroom conditions that activate the psychological process of second language learners. We classify second language acquisition theories into nurture second language acquisition theories and nature second language theories. The second language theories based on nurture include zone of proximal development of Vygotsky, Skinner's verbal behavior, Piaget's view

of language acquisition, the competition model, and cognitive theory: language acquisition view, discourse theory, discourse theory, the acculturation model, accommodation theory, the variable competence, the inter-actionist view of language acquisition, and the connectionist model. Second language acquisition theories based on nature include neurofunctional theory, the universal grammar theory, Fodor's modular approach and the monitor model.

*1.4 Second language acquisition researches in China*

In China, second language researches started late and just drew people's attention at the beginning of 1980s. Currently, the researches on this discipline in China should master the main body feature of contents in second language acquisition researched and emphasize multi-discipline principle to build the content system of second language acquisition researches. We also need to follow the principle of combining localization and application and continue to introduce, analyze, criticize and re-construct second language acquisition research theories and hypothesis aboard and make them for our use. We need to show the Chinese features of second language acquisition researches, conduct description of English pronunciation, vocabulary, grammar, pragmatic features of Chinese English learners at various learning stage, explain the external influential factors of second language acquisition, such as social environment, foreign language education policies, foreign language study resources, classroom teaching, explore the inner systematical problems of second language acquisition, such as the transfer of mother language, psychology and brain system, do researches on individual differences, such as the cognitive styles, attitudes, motivations and ages of learners and the systems that generate such differences, and apply the research outcomes into the entire teaching process of foreign language teaching field, such as policy making, outline design, capacity development and skill cultivation.

**2. Second language acquisition and foreign language learning**

*2.1 The differences and sameness of first language and second language acquisition*

The first language acquisition and the second language acquisition are the same in psychological language system. However, the detailed learning strategies for the two acquisitions are different. The first language acquisition is the inborn ability of a person while the second language acquisition is not. The common points of the first language acquisition and the second language acquisition lie in that acquirers must have the conditions and abilities to acquire a language and are in language acquisition environment. The acquirers must follower certain pragmatics and culture rules to acquire pronunciation, vocabulary and grammar. The differences of the two are as stated in the following. Firstly, it is the differences of acquirers. The mother language knowledge of an acquirer will certainly exert positive or negative influence on the acquisition of the second language. Mother language acquisition occurs in a person's childhood while usually the learners of the second language are beyond childhood or even at adulthood. Secondly, it is the differences in acquisition environment and styles. More often, mother language acquires accept large amount of language inputs under natural environment. What is more, classroom environment which is used to improve writing ability is also excellent. Second language acquirers are not the same in this respect. They learn the second language out of target language countries or areas in non natural classroom. The acquisitions styles are of two are also different. Mother language acquisition acquires oral language first and then acquires written language. The second language acquisition usually acquires oral language and written language at the same time, which makes it harder. In addition, emotional state and learn motivation of the two are different too. A person acquires his or her mother language in order to meet their basic needs to survive and there is no learn motivation problem. However, the emotional sate of the second language acquirers are influenced by various elements and are different from person to person.

*2.2 Second language acquisition researches and age*

In recent years, the emphasis of foreign language teaching field transfers from the object of teaching to its subject. To put it in other way, the emphasis transfers from the researches on teaching methods to the researches on learners' individual differences. Researches on individual differences usually include age, language potentials, cognitive styles, learning strategies, and emotional factor, of which age is the important factor that influences the effect of second language acquisition. For the age factor in foreign language teaching, Professor Gui Shichun (1992) put forward two opinions. The first one is that learners who have suitable learning environment (such as bilingual system or foreign teachers) and start learning foreign language earlier may possibly, seeing from a long term angel, have advantages over those who start learning late. The second one is that under suitable learning environment, in most of the aspect, the youth and the adults could learn foreign language as well as children or even are better in learning efficiency.

*2.3 Second language acquisition and second language learning*

Acquisition refers to that learners subconsciously acquire a language through large amount of contacts and usage of target language. During this process, what learners care are the meanings of language but not language form. Learning refers to learn to consciously learn and do research on a language in order to master the language. During this process, language form is the core of learning. Acquisition includes conscious learning. Conscious learning may help unconsciously learn some unexpected knowledge. Therefore, it is hard to define whether it is conscious or unconscious or whether it is formal or informal teaching environment. Second language acquisition, to its true meanings, should

contain two basic concepts, conscious learning and unconscious acquisition. Therefore, second language acquisition researchers should not only cover informal learning environment, but also should place its emphasize on formal learning environment, classroom teaching. For any learners, these two processes are necessary and are usually interlaced.

## 3. Classroom teaching and second language acquisition

### *3.1 The environment of second language acquisition*

If having opportunities, most of learners could develop their second language abilities through learning and acquisition. As for which way is more importance, we need to know their learning environment. For example, our students have few accesses to second language environment. Hence, we could only depend on conscious classroom study to improve English. Because we have a Chinese environment around us, we could have many chances to acquire oral Chinese and its application. However, the acquisition of the first language is helpful for second language learning.

As soon as an infants are born, they start to "do research" on language because they have the inborn and inherent ability to acquire language. If language universal phenomenon do exist and could be recognized, then it seems that the universal elements in the second language should be taught to learners first and let them practice them. Teachers should not just provide mechanical classroom practice chances to learners. If the second language learning has some same features as mother language acquisition, then the language input the learners get and the practices should enable them to establish and examine the hypotheses on how the language is applied in actual life. Teachers should:

3.1.1 From the beginning of teaching, teachers should use second language as much as possible to organize activities or conduct social interactions.

3.1.2 When starting to ask students to generate second language, teachers should ask students to discuss events of "that time and that place". There are many relevant discussion topics in the classroom, such as the learners' appearance, family, clothing and hobbies or articles in the classroom including their shapes, sizes, colors and materials.

3.1.3 Design some language activities and help students clearly see the relationship between forms and meanings. Some activities require students to use language to do things so as to ensure that learners understand what they have heard or read and some activities require students to make use of oral language to achieve certain goals.

If the language learning environment is for learners to learn English as foreign language, under most of situations, there are few opportunities to acquire language through mutual actions and language learning will base on classroom teaching. At the class, how much time should be used to conduct formal learning and mechanical learning of second language structure depends on the aim of language learning. In China, learners usually are trapped in dealing with large amount of words. Therefore, it is necessary to formally teach and to control second language structures. However, it is not sufficient enough to just conduct two activities to put these structures into long term memory. It is necessary to provide learners with the opportunities at the very beginning so that they could practice what they have learned in acceptable and generative environment. What is more, we need to teach according to students' personalities. Teachers should know which student in the class is introverted or extroverted. Introverted students need encouraging and easy classroom atmosphere. For extroverted students, we need to require that they should not only speak fluently but also need to use language accurately.

### *3.2 Classroom activities*

Classroom teaching is the main channel to realize making education. If classroom teaching changes from simple knowledge teaching to multi-angle intelligent development, it will be the key and development direction of foreign language making education. In recent foreign language classroom teaching practices, we use to teach teaching materials in exact manner, to express clearly the teaching materials, to teach learning methods and to speak teaching procedures to optimize classroom teaching and have achieved good teaching effect.

3.2.1 To teach teaching materials in exact manner and to promote the unification of knowledge, feeling, awareness and behavior

English is a discipline that is of strong practice and has its language and teaching rules. To teach teaching materials in exact manner means that teachers need to analyze carefully the teaching materials and tell the position and functions of each class in the entire discipline knowledge system. When teaching, teachers should make clear the teaching aims, requirements, and difficulties, master the logic structure of knowledge, analyze the relationship among the key knowledge, difficulties and basic knowledge of the teaching contents, and follow the cognitive learning rules "from easy to difficult, from shallow to deep, from emotional and rational, and from the known to unknown". Only by this way, could the teachers give prominence to the most basic and the easiest contents of the entire knowledge system and put the "exactness" on the specific cognitive aims, ability aims, and thoughts education aims. Let us take the Unit Four of the current new edition English book one of junior high school as an example. This unit aims to teach the expression of numbers in English and their use in life. After doing analysis, the contents of this unit will be used in Unit 6, Unit 9,

Unit 12, Unit 12 of book one as well as the numeric and multiple in book 2 and 3, which indicates that the contents of this unit are the key and basic part for students to master the number knowledge in junior high school. The existing cognitive level of students is just at the translation of numerals, one, two and three. Therefore, if finding the starting point of the teaching material contents and the current cognitive structure of students, we could define that the aims of this class are: firstly, cognitive aim, which is to master the spelling and usage; secondly, the ability aim, which is to show students the knowledge by way of real objects, real scenes and pictures so that students could actively participate in learning activities and students' abilities in comprehending, analyzing, and deducting knowledge and in observation, memory and imagination are developed; thirdly, thought education aim, which requires to cultivate students to have strong communication awareness and mutual help behaviors through group activities, to cultivate students' strong participation awareness through group activities, to cultivate students' cooperation spirit and dedication spirit through role playing and games By this way, students could experience the normal mood of failure and success, accumulate intelligence, and overcome difficulties so as to promote the unification of their knowledge, feeling, awareness and behavior.

To teach exactly the teaching materials, teachers need to comprehensively and appropriately master the teaching aims of each class. Not only should there be requirements on knowledge, but also requirements on ability. Not only should there be requirements on intelligence education, but also requirements on thought education according to teaching contents. The teaching should not only comply with teaching outlines, but also comply with the actual conditions of students so that teachers could teach in accordance of students' aptitude. Besides, teachers need to, according to the inner relations among knowledge, find the connecting point and growth point of new and old knowledge, create the best problem scenarios, make full use of students' existing knowledge, and conduct breakthrough teaching activities based on students' cognitive level so as to improve classroom teaching's effect.

3.2.2 To express clearly the teaching methods and to promote development of students' thinking ability

The understanding and mastering of any knowledge is realized through thinking. Hence, to master the correct thinking ways and methods is the key to promote students' intelligence skills. The formation of correct thinking abilities of students is commonly influenced by teachers' teaching methods. Teachers should express clearly their teaching methods and optimize teaching methods. In each class, the teaching is the comprehensive application of multi-teaching methods. No matter which teaching method the teachers mainly use or which teaching method is applied, all should be based on teaching materials and the actual situations of students as well as the special conditions of each teacher. Generally speaking, in classroom teaching, teachers should choose the teacher methods that conduce to activating students' enthusiasm in cognitive activities as well as students' development ability. Teachers should attach emphasis on activating students' learning motivation, follow cognitive rules, enlighten students to reason, take into consideration of individuals as well as the general and teach students in accordance of their aptitude.

3.2.3 To teach learning methods and to promote students' ability in self-teaching and self-learning

The key part of making education is to teach students the learning methods and strategies and is the nature leaping process for learners from learning to master to mastering learning. Cognitive learning theories also emphasize that learning has aim, schedule and strategies. Teachers, while considering how to teach students, should also consider how to instruct students to learn so that they could not only master the knowledge but also the learning methods. Foreign language is not only a simple teaching of language knowledge. Actually, it is a subtle cross-cultural communication process through language learning. Teachers should aim at teaching students to apply the existing knowledge and experience to resolve English language problems, to learn to think and to learn to learn. For example, in listening teaching, teachers should get clear what to listen, the general meaning, the detailed information, or the language expression. Teachers should make clear the aims and the focus. Also, teachers should tell students how to judge and analyze the language materials, how to distribute their attention, and whether to ignore contents that are irrelevant to the current tasks. Besides getting students to understand what they have listened, such classroom teaching process aims to teach students the methods and skills of listening.

3.2.4 To speak clearly the teaching procedures and improve classroom teaching efficiency

The acquisition of new knowledge is a positive acceptance process, is the assimilation process of new and old knowledge, and is the process that the potential meanings of new knowledge are realized. Chinese students start to learn English after they have mastered mother language to certain level. To realize the unifying of students' existing knowledge and experience with the newly learned knowledge structure, teachers must have clear teaching thoughts and layering class structure for each class so that teachers could make the new language knowledge clearly shown through teaching procedures. In classroom teaching, teachers exactly master teaching aims, optimize teaching methods, correctly mentor students' learning methods, clearly conduct teaching procedures, and promote students to rapidly students' cognition level on their learning activities and methods. Students' ability in self-observation, self-monitor and self-evaluation are also improved so as to reach the basic aims of foreign language making education.

## 4. Summary

Based on the features of China's foreign language learners, we should take into consideration of the actual situation of China's foreign language teaching, and scientifically explore the language process, psychology process, education process, learning rules of learners in learning foreign languages so as to find out the most appropriate foreign language teaching mode and improve Chinese students' foreign language learning efficiency. Only under the direction of such thoughts and concepts, could we let our research study truly exert its functions. By this way, China's foreign language teaching is based on scientific basis of second language acquisition researches so that we could resolve as soon as possible the difficulties Chinese foreign language learners are confronted with.

## References

Ellis, Rod. (1994). *The Study of Second Language Acquisition*. Oxford: Oxford University Press.

Liu, Changjiang. (1999). The main conflicts and countermeasures in college English teaching. Nanjing: Jiangsu Foreign Language Teaching and Research Press.

Yang, Lianrui & Zhang, Delu. (2007). *Second Language Acquisition and Foreign Language Teaching in China*. Shanghai: Shanghai Foreign Language Education Press.

International Education Studies
www.ccsenet.org/journal.html
Vol. 2, No. 1
February 2009

# Succession Planning in Malaysian Institution of Higher Education

Zaini Abdullah
UiTM International Centre
Universiti Teknologi MARA, 40 450 Shah Alam, Selangor, MALAYSIA
Tel: 60-3-5544-4936 E-mail: zabadu@salam.uitm.edu.my

Siti Akmar Abu Samah
UiTM International Centre
Universiti Teknologi MARA 40 450 Shah Alam, Selangor, MALAYSIA
Tel: 60-3-5544-4935 E-mail: sitiakma@salam.uitm.edu.my

Kamaruzaman Jusoff (Corresponding author)
Yale University
Yale Tropical Resources Institute,
370 Prospect St, New Haven, CT 06511-2104, USA.
Tel: 203-676-7761 E-mail: jusoff.kamaruzaman@yale.edu

Posiah Mohd Isa
i-LEC, Universiti Teknologi MARA 40 450 Shah Alam, Selangor, MALAYSIA
Tel: 60-3-5544-2608 E-mail: posiah@salam.uitm.edu.my

*The research is funded by Higher Education Leadership Academy (AKEPT), Ministry of Higher Education (MOHE), Malaysia ( Sponsoring information)*

**Abstract**

Succession planning has not been a distinct initiative undertaken by educational organisation in their strategic planning. The former has been clearly established in several high profile profit organisations to ensure smooth transition of leadership in their respective department. From several literatures, proponents of strategic planning have called for non-profit organisations to seriously consider succession planning as an indispensable initiative. This is because it promotes a clear vision of shared values, personnel efficiency and effectiveness and institutional credibility. Therefore, it has to be undertaken by the educational organisation as it promotes positive outlook within. Subsequently, it acts to provide motivational booster for the workers as in talent pooling, customers' satisfaction due to institutional effectiveness and the organisation competent management at large. This paper explores the importance of succession planning on the sustainability of the educational organisation. It also attempts to put into perspective how succession planning transcends these effects on the performance of academicians, students and the organisation stability.

**Keywords:** Succession planning, Strategic Talent pool, Sustainability, Educational organisation

## 1. Introduction

Succession planning is a means of identifying critical management positions. It may start at the levels of project manager, supervisor and extending up to the highest position in the organisation (Rothwell, 2005). It also describes management position to provide maximum flexibility in lateral management moves and to ensure that as individuals achieve greater seniority, their management skills will broaden and become more generalised in relation to total organisational objectives rather than to purely departmental objectives. In this paper the discussion centres on the

succession planning in a non-profit organisation which focuses on public educational organisation in which personnel development should create effectiveness and efficiency and enhance institutional credibility.

**2. Succession planning in an educational organisation**

Although succession planning has spelt many affirmative returns to organisations, several reviews have indicated that this corporate initiative lacks in its planning, implementing and managing. Due to these setbacks, this initiative, all too often revered by many successful organisations, may not be too popular by educational organisation. However, several literature have indicated hopes that this initiative can be a significant step in planning for effective pool of talented academicians for the purpose of managerial duties execution in the educational sector. Clunies (2007) reiterates that although it is difficult to implement in academia, he is hopeful that this initiative can begin with plans that are simple and tailored to the need of the educational organisation. His article quoted works of Eastman (1995) which display three elements of concern; the purpose of the initiative, who will this initiative serve and the desired outcomes. It may be a common initiative practised in high profit organisations such as Nokia and GE (Groves, 2007)..

Other works have indicated that succession planning can be carried out in higher education for effective human resource development. Although Rothwell (2005) focuses on profit organisation, he underlines the importance of succession planning as an effort for individual development that should include any job category. He seems to believe that in any case of staff shortage, it would bring disaster or chaos to the performance of the organisation for that particular time. Hence, he urges the need to extend succession planning not only at management ranks, but also throughout the empowered workforce. As this paper concerns the non-profit organisation, it is pertinent to note that succession planning is as important in both types of organisation. This is evident in Chambers *et al* (1998) as they maintain that succession planning is an important way to sustain the staff availability. With the increase of competition nowadays, both profit and non-profit organisations are competing to attract and retain talents.

Non-profit organisations are on the verge of what most experts use the term brain drain syndrome, as many talents go to profit organisation because they provide feasible career path and attractive salary and other attractive and lucrative benefits. This challenge has been the effect of the difficulties in constructing a comprehensive succession planning caused by the shortage in talents inside the organisation and high level of turnover phenomenon. Being one of the several factors observed, is the issue of globalization in which there is an increase in uncertainty in the econoy that affects the profit organisation, though not so much of non-profit organisation, but the situation may subsequently arises in the latter. In such scenario, employees have become anxious about their job security that they start to think and search the organisation that can provide positive assertions. The increasing trend of turnover sometimes is worsened by the lack of adequate programme to groom the existing talent.

Clunies (2007) believes that higher education has historically been slow to adopt many corporate management processes. He therefore has a reasonable doubt for the readiness of the institution to employ succession planning or any executive development programme because of dramatic cultural differences between the boardroom and the campus. Rosse & Levine (2003) support this argument by stating the complex and bureaucratic procedures for hiring compared with many profit organisations or business corporations. Nonetheless, this does not mean that institution of higher education lack strong corporate values. Carey *et al* (2000) reiterate that there are parallel values between higher education with business corporation. On the contrary of what most experts believe, institution of higher education has several values that depict its potential to succession planning. These comparative values between the business corporation and institution of higher education are shown in the Table 1 below.

**<<Table 1. Comparative values of core principles in succession planning between business corporation and institution of higher education>>**

**3. The significant impact of succession planning in institution of higher education**

In support for the earlier argument, succession planning although seldom heard of in non-profit organisation, can be promoted in institution of higher education through the core values of the principles displayed in the table above. The table indicates that there is hope for such corporate based initiative being driven in institution of higher education. Wolfred (2008) states that even in the most developed countries, succession planning which is part of the strategic leader development programme is seldom heard of especially at university level. This may be caused, as he states, by the bloated bureaucracy or lack of such management training in the institution. Although succession planning is usually associated with large corporation, it is also important that it becomes an initiative in every organisation. That being said, a good succession planning can reduce the risk of educational disorganisation, as far as appointing the rightful candidate to hold academic manager positions is concerned. This usually happens at the end of tenure, on long absence or appointment vacancy. Hence, succession planning helps to ensure the sustainability of an organisation (Rothwell, 2005).

The subsequent discussion focuses on the expectations required of academic managers and hence display the impact of succession planning if it is adopted in institution of higher education. Effective managerial skills of academic managers

are essential as they create strong relationships between and within organisations involving the providers and customers (Deem, 2007; and Newman 2000) skills comprising theories, techniques and behavioural guidelines, if are effectively applied, will enhance the manager's practice. In the education set up, academic managers are those responsible to the dean of faculty for matters pertaining to the management, organising and delivering of duties for teaching, and the administration of research in the faculty. However, apart from having the teaching role himself, academic manager specific job specification will be agreed upon with the dean of faculty from time to time and the duties may commensurate with the changing needs of the faculty.

Within the faculty, academic managers are required to manage the process of curriculum review which involves looking through the courses offered by the faculty. These include the mentoring duties on to the curriculum which involves course content, methods of delivery and assessment and most importantly the documentation of these matters, either manually or electronically, the duty also negotiation of these developments through the faculty and the university processes. This will include the development of links with other faculties in the University and, perhaps, with other universities with a view to the provision of collaborative courses.

Academic manager at his faculty level has to manage the process leading up to the faculty regularised teaching quality assessments. This includes preparing self-assessment programme, making recommendations for improvement, preparing and compiling of documentation, liaising with staff of the faculty academic office, ensuring detailed arrangements for assessment visits are made, meeting with assessors and also preparing for the process of accreditation of the faculty courses by the relevant professional bodies. These job specifications are essential requirements of academic manager which warrants for managerial skills. Delivering the knowledge on managerial skills will require the teaching from leaders in a systematic best practice and this is commonly developed through mentoring relationships. Research on mentoring has evidenced that employees with mentors are much more likely to experience a range of positive outcomes (Groves, 2007; Lankua & Scandura, 2002).

For more precise duties, in the faculty, academic manager needs to assist with management procedures related to research activities. The duties will depend on other loads, but might at times include help with production of documents for the Research Assessment exercises and the faculty annual research report. Among others also include drafting publicity about the faculty and its courses for inclusion in the University's undergraduate and postgraduate prospectuses and other similar publications, including electronic information sources. The managerial skills of academic managers have to be complemented by knowledge on attending and reporting to faculty committee meetings, and participating in several additional faculty committees related to management of teaching and research or external liaison.

Academic managers in the university have duties that involve them in the membership of various committees within the faculty as well as the university. They keep a very close liaison with other officers within and outside the faculty, in the faculty and the university, and at the same time assist in the promotion of the activities conducted by the faculty elsewhere in the University and to external agencies (Coxhead, 2007). Hence, the better way is to train academic managers in a systematic pooling of potentials and prospects with development programme to ensure smooth transition of leadership and execution of duties.

Although it is commonly practised in corporate organisation, good succession planning will systematically help prospective academic managers to streamline their managerial skills to ensure effectiveness and smooth running of the institutions, for new leadership roles as the need arises or when one's term has ended (Boettcher & Craven, 2008). There is a need for selection criteria for these talents to be readily 'groomed' for managerial position in the academic institution. The establishment of the succession plan and related models help to nurture and strengthen the high performance culture in institutions of higher education via professional work force that exhibits self personality and professional personality, possession of competency and vital values towards sustainable achievement of their future. The key strategy of the succession plan is to mould and harness the talent of professional work force at academic managerial level to fill in strategic positions. It also aids in the career path and laid foundation of guidance necessary for the accomplishment of tasks and duties of the future.

## 4. Conclusion

Several literature have stated that whether these initiatives are termed as succession planning and management, building bench strength, or talent management, it is clearly indicated that, that such a deliberate and systematic identification, engagement and retention of potential leaders and talented performers, and the achievement of targeted results display compelling evidence that this focused attention produces positive performance of the academics in educational organisation. However, the proponents of succession planning have also cautioned that succession plans, whether it is in a corporate or higher education should not function as an isolated system but rather as an integral component of the overall human resources planning process.

## References

Boettcher, S. and Craven, A. (2008). Succession Planning for Higher education CIOS What Why How, UT Health Scince Center San Antonio.

Carey, D. C., Ogden, D., & Roland, J. A. (2000). *CEO Succession.* Oxford University Press: New York.

Chambers, E.G., Foulton, M., Handfield-Jones, H. Hankin, S.M., & Michaels, E.G. (1998). *The War of Talent. In J. M. Hiltrop (Ed.)*. (1999). The Quest for the Best: Human Resoruces Practices to Attract and Retain Talent. European Management Journal . 17(4): 422-430.

Clunies, J.P. (2007). Benchmarking Succession Planning and Executive Development in Higher Education: Is the Academy Ready Now to Employ these Corporate Paradigms? *Academic Leadership The Online Journal* Vol.2 Issue 4 February 13, 2007 .

Coxhead, P. (2007). University of Birmingham Academic Manager Job Description Computer Science taken from http://www.cs.bham.ac.uk/~pxc/pers/jobspec.html 9 August 2002 rretrieved on 4 July 2008.

Deem, R. (2007). "Managing Contemporary UK Universities – Manager-Academics and New Managerialism" Academic Leadership – *The Online Journal* Vol. 1 No.3.

Eastman, L.J. (1995). Succession Planning: An Annotated Bibliography and Summary of Commonly Reported Organisational Practices, North Carolina: centre for Creative Leadership, Greensboro, NC.

Groves, Kevin S. (2007). Intergrating leadership development and succession planning best practices, *Journal of Management Development* Vol.26, No.3, pp 239-260 Emerald Group Publishing Ltd.

Lankua, M.J. & Scandura, T.A. (2002) "An investigation of personal learning in mentoring relationships: contents, antecedents and consequences " *Academy of Management Journal.* 45(4): 779-90.

Newman, K.L. (2000). "Organisational Transformation During Institutional Upheaval" *Academy of Management Review.* 25 (3): 602-619.

Rosse, J. G. & Levin, R. A. (2003). Academic Administrator's Guide to Hiring-Between the Lines. Jossey-Bass: San Francisco.

Rothwell, W. J. (2005). Effective Succession Planning: Ensuring Continuity and Building Talent from Within 3rd Edition. American Management Association (AMACOM).

Wolfred, T. (2008). Building Leaderful Organisations: Succession Planning for Nonprofits. The Anne E. Casey Foundation: Baltimore, Maryland.

Table 1. Comparative values of core principles in succession planning between business corporation and institution of higher education

| No. | Business Corporation | Institution of Higher Education |
|---|---|---|
| 1. | They have strong, involved boards | They have strong, involved trustees |
| 2. | They continually expose their top management to the board | They continually expose their vice-president/vice chancellor to the trustees |
| 3. | They encourage next generation CEO's to gain exposure to outside board service, to the media, and to the investment community | They encourage next generation president/vice chancellor to gain exposure to outside community, to the media, and to the alumni membership |
| 4. | They form executive committees or operating committees to facilitate the development of several executives who are aware of the challenges, business plans and strategies across the entire organization | They form executive committees or operating committees to facilitate the development of several administrators who are aware of the challenges, business plans and strategies across the entire institution |
| 5. | They pay their directors increasingly instock and require the directors to make a personal investment in the company | They require the trustees to make a personal commitment to the institution |
| 6. | They periodically calibrate likely internal candidates for CEO against comparable outside leaders | They periodically calibrate likely internal candidates for president/vice chancellor against comparable outside leaders |

International Education Studies
www.ccsenet.org/journal.html
Vol. 2, No. 1
February 2009

# A Study on Multiple Intelligences Theory and English Language Teaching

Yuan Kong
Foreign Language Stafff Room
Jining Medical College
Rizhao University City, Shandong 276826, China
E-mail: kongy_1116@163.com

**Abstract**

Dr. Howard Gardner's Multiple intelligences (MI) theory touched off a wave of educational innovation not only in the United States but throughout. It offers English language teachers a richly diversified way of understanding and categorizing human cognitive abilities, and combinations of abilities, heightening our awareness of what makes learning possible and effective for individual students. This paper aims at the application of ML theory to English language teaching (ELT).

**Keywords:** ML theory, ELT, Application

## 1. Introduction

With the advent of "humanism" in the 60s of the 20th century, the conventional, authoritative teacher-centered instruction has given way to the learner-centered mode of instruction. Educators started paying attention to the impact that learners' affective factors (e.g., their feelings, emotions, tension, anxiety, frustration, needs, interests, motivation, and confidence, etc.) may bring in the process of learning. Then we have witnessed the birth and maturing of some innovative ELT approaches, methods, and techniques during the 70s to the 80s, such as The Silent Way, Community Language Learning, Total Physical Response (TPR), Suggestopedia, The Natural Approach, Communicative Approach, cooperative learning, interactive learning, whole language learning, task-based learning. In the 90s, Dr. Howard Gardner (1983, 1993 and 1995), a distinguished American cognitive psychologist, suggested from his research findings that human cognitive competence actually is pluralistic, rather than unitary, in design. His multiple intelligences (MI) theory touched off a wave of educational innovation not only in the United States but throughout the world. Educators recognize the diversity of the learners in their learning styles, learning potentials, etc. and appreciate the development of learning strategies on the part of the learners.

## 2. Multiple Intelligences Theory

In the past, intelligence was a fixed, static entity at birth which was defined operationally as the ability to answer items on IQ tests. Even since the publication of his Frames of Mind, Dr. Howard Gardner (1983) has postulated an alternative definition of intelligence based on a radically different view of intelligence. According to him, an intelligence entails the ability to solve problems or fashion products that are of consequence in a particular cultural setting or community (1993, p.15). There are many, not just one, different but autonomous intelligence capacities that result in many different ways of knowing, understanding, and learning about our world. As Gardner (1993, p.12) states:

It is of the utmost importance that we recognize and nurture all of the varied of human intelligences, and all of the combination of intelligence. We are all so different largely because we all have different combinations of intelligences. If we recognize this, I think we will have at least a better chance of dealing appropriately with the many problems that we face in the world.

In order to make a clear distinction between intelligence with its biological origin and a talent/skill, Gardner asserts that intelligence must satisfy all or a majority of the following criteria, namely brain damage studies, exceptional individuals, developmental history, evolutionary history, psychometric findings, psychological tasks, core operations, and symbol system (Christison, 1998). Up to the present, he has proposed a schema of eight intelligences and suggests that there are probably many others that we have not yet been able to test (Gardner, 1995). A summary of Gardner's eight intelligences is given as follow:

### *2.1 Verbal/Linguistic Intelligence*

Verbal/Linguistic Intelligence is the ability to use language effectively and creatively both orally and in writing. This

intelligence can be seen in such people as poets, playwrights, storytellers, novelists, public speakers, and comedians.

*2.2 Logical/Mathematical Intelligence*

Logical/Mathematical Intelligence is the ability to use numbers effectively, to recognize abstract patterns, to discern relationships and to reason well. The intelligence can be seen in such people as scientists, computer programmers, accountant, lawyers, bankers, and, of course, mathematicians.

The logical/mathematical and verbal/linguistic intelligences form the basis for most systems of education, as well as for all forms of currently existing standardized testing programs.

*2.3 Visual/Spatial Intelligence*

Visual/Spatial Intelligence involves the ability to sense form, space, color, line, and shape including the ability to graphically represent visual or spatial ideas. This intelligence can be seen in such people as architects, graphic artists, cartographers, industrial design draftspersons, and, of course, visual artists (painters and sculptors).

*2.4 Bodily/Kinesthetic Intelligence*

Bodily/Kinesthetic Intelligence is the ability to use one's body to express oneself and to solve problems. This intelligence can be seen in such people as actors, athletes, mimes, dancers, and inventors.

*2.5 Musical/Rhythmic Intelligence*

Musical/Rhythmic Intelligence involves the ability to recognize tonal patterns and a sensibility to rhythm, pitch, melody, etc. This intelligence can be seen in advertising professionals (those who write catchy jungles to sell a product), performance musicians, rock musicians, dance bands and composers.

*2.6 Interpersonal Intelligence*

Interpersonal Intelligence involves the ability to understand people's moods, feelings, motivations and intentions. It includes the ability to work cooperatively with others in a group and to communicate, verbally and nonverbally, with other people. This form of intelligence is usually highly developed in such people as counselors, teachers, therapists, politicians, and religions leaders.

*2.7 Intrapersonal Intelligence*

Intrapersonal Intelligence involves the ability to understand the internal aspects of the self and to practice self-discipline. This intelligence can be seen in such people as philosophers, psychiatrists, spiritual counselors, and cognitive pattern researchers.

*2.8 Naturalist Intelligence*

Naturalist Intelligence involves the ability to recognize and classify plants, minerals, and animals, including rocks, grass, and all variety of flora and fauna. It also includes the ability to recognize cultural artifacts like cars, sneakers, etc. The intelligence can be seen in such people as farmers, hunters, zookeepers, gardeners, cooks, veterinarians, nature guide, and forest rangers.

**3. The Application of MI Theory to English Language Teaching (ELT)**

It seemed to us that ever since the arising of the learner-centered instruction, every ELT method/technique with its specific emphasis has been developed to meet students' different needs, or interests (somewhat as Gardner's intention of developing and/or using different kinds of "intelligences"). The Silent Way, for example, emphasizes the development of students' inner thinking (intrapersonal intelligence); Total Physical Response, however, emphasizes language learning through physical action (bodily/kinesthetic intelligence); Suggestopedia, on the other hand, emphasizes the use of music (musical intelligence) to facilitate language cognition; both the Communicative Approach and cooperative learning emphasize the importance of interpersonal relationship (interpersonal intelligence) to language learning; and the whole language learning not only emphasizes the wholeness and reality of language (verbal/linguistic intelligence) but also believe the coordination of bodily/kinesthetic, interpersonal, and intrapersonal intelligences to promote language learning.

The announcement of Gardner's MI theory acknowledges a broader intellectual spectrum in every leaner. The English language teachers today are better aware of the fact that students bring with them specific strengths, unique learning styles, and different learning potentials. The theory of multiple intelligence offers us a way to examine and form our best teaching techniques and strategies in light of human differences. We can teach our students to be more intelligent in more ways, and on more levels than we ever dreamed.

With the reference of Christison (1996, p.10-11), I list four steps to show how MI theory applies to ELT.

The first step is to identify the activities frequently used in our classes and categorize them to each particular type of intelligence. Through literature review (Lazear, 1999 & 1993, Christison, 1990, 1996 & 1998, Haggerty, 1995, Li's

translation of Armstrong, 1994 and Campbells & Dickinson, 1993) and my teaching and observation, I came up with the list below, which is by no means exhaustive, for your reference.

● Verbal/Linguistic Intelligence

A Vocabulary & Grammar Learning -- learning new words and grammatical points and practicing using them accurately in regular communication

A Listening -- listening to tapes of stories, dialogues, and lectures, etc.

A Formal and Informal Speaking -- making verbal presentation to others, making conversations, having discussions and debates, etc.

A Humor or Jokes -- creating puns, limericks, and telling jokes on topics of study

A Impromptu Speaking -- instantly speaking on a randomly drawn topic

A Storytelling -- telling stories about any topic one is studying

A Reading -- silent reading, oral reading, and group/choral/chain reading for comprehension

A Writing -- doing written exercises, note-taking, summary/report writing, and journal/log/diary keeping to keep track of one's own thoughts and ideas

A Creative Writing -- writing original pieces (e.g., stories, essays, poems, novels, etc.)

● Logical/Mathematical Intelligence

A Logic Pattern Games -- creating riddles or puzzles that challenge students to find a hidden rationale or pattern

A Logical/Sequential Presentation -- inventing point-by-point logical explanations for items or making systematic presentation of subject matter

A Number Sequences/Patterns -- investigating numerical facts or gathering and analyzing statistics on a topic

A Problem Solving -- listing appropriate procedures for problem solving situations

A Forming Relationships -- creating meaningful connections between different ideas

A Syllogisms -- making "if…, then…" logical deductions about a topic

● Visual/Spatial Intelligence

A Visual Aids Using/Making -- using flash cards, pictures, paintings, charts, collages, graphs, grids, diagrams, flowcharts, slides, sculptures and video/film-viewing, etc. to facilitate learning and encouraging students to make the visual aids by themselves

A Active Imagination -- finding connection between visual designs (or pattern) and prior experiences (or knowledge)

A Mind Mapping -- creating or arranging visual mapping activities (e.g. word maze, visual webs of written information)

A Environment Arranging/Decorating -- encouraging students to decorate bulletin boards, and arranging learning corner (e.g. English reading corner) to achieve the effect of peripheral learning

● Bodily/Kinesthetic Intelligence

A Physical Actions -- arranging and doing TPR and hands-on activities

A Body Language -- "embodying" meaning, interpretation, or understanding of an idea in physical movement

A Role Playing/Mime -- performing skits or characters to show understanding of topics of study

A Dramatic Enactment -- creating a mini-drama that shows the dynamic interplay of various topics of study

A Sports Games -- creating a contest or game based on specific knowledge about a topic of study

A Field Trips -- arranging trips to gain firsthand knowledge away from the classroom

● Musical/Rhythmic Intelligence

A Music/Song Listening -- listening to rhythmic patterns, recorded music, or songs

A Singing/Humming -- creating songs for a class, a team, a topic of study or finding existing songs that complement a topic

A Musical Instruments Playing -- employing musical instruments to produce sounds for a lesson (e.g., background accompaniment, enhancement for the teaching)

A Music Composition/Creation -- composing and creating music for the sound effect of a play performance or for the enhancement of teaching

A Jazz Chants/Rapping -- producing or using rhythmic patterns, such as jazz chants, or raps to help communicate, or to remember certain words, sentence structures, concepts, ideas, or processes

A Vocal Sounds/Tones -- producing sounds with one's vocal cords to illustrate the meaning of a word, or a concept (e.g., hiccup, gasp, etc.)

● Interpersonal Intelligence

A Person to Person Communication -- focusing on how teachers and students relate to each other and how to improve their relating

A Giving and Receiving Feedback -- offering input on one's performance or about one's opinions; and accepting another's input or reaction to one's performance/ opinions

A Cooperative Learning Strategies -- using structured teamworks for topic learning and/or practicing peer learning

A Pair Works and Group Projects -- investigating and discussing a topic problem with a partner or with others in teams

A Jigsaw Puzzle/Strip Story -- dividing a picture or a story into distinct segments so that students can learn from each other on the process of putting it back to its original form

● Intrapersonal Intelligence

A Independent Studies/Projects -- encouraging students to work independently for goal-setting, process-planning, self-assessing, and homework choosing

A Journals/Logs/Diaries keeping -- working with reflection tools, such as reflective journals, thinking logs, learning diaries, etc.

A Focusing/Concentration Skills -- learning the ability to focus one's mind on a single idea or task

A Thinking Strategies -- learning what thinking patterns to use for what task

● Naturalist Intelligence

A Nature Encounters/Field Trips -- going outside for firsthand experiences in nature and/or bringing nature in the classroom via videos, objects, animals, plants, etc.

A Species Classification -- working with classification matrices to understand characteristics of natural objects

A Sensory Stimulation Exercises -- exposing the senses to nature's sounds, smells, tastes, touches, and sights

A Hands-On Labs -- performing experiments or activities that use objects from the natural world
A Nature World Simulations -- re-creating or representing nature in some form (e.g. photographs, drawings, etc.)

After the suggested "menus" (as Campbell, 1997 named it) for each category have been worked out, the next step is how to choose "appropriate dishes" for each "meal". Step two is, therefore, to make plans by selecting appropriate classroom activities/tasks, taking the following factors into consideration: students' needs, strengths, levels, learning styles, learning strategies, learning potentials, the nature of the subject matter, the teacher's personal teaching rationales, his/her multiple intelligence profile, and teaching styles, etc. Step three is to use ELT Multiple Intelligences weekly/monthly checklist (Appendix A) to keep track of different activities/tasks conducted in the class. We, of course, need not to include activities for developing all the eight multiple intelligences within each lesson; we may, however, follow the step four: to expand our classroom activities for the neglected intelligences by way of examining and analyzing our checklists for a period of time.

**4. A Referential Lesson Plan**

In order to help the English language teachers gain a better understanding about how MI theory applies to classroom teaching, I sketched a lesson plan on the topic titled "Customs Vary with Culture" selected from Mosaic One: A Content-Based Reading, a textbook used in my Freshman English Course, for reference.

Time Limitation: 3 consecutive periods

Student Level: Freshmen from the Dept. of Nursing

Class Size: 35 students

Teaching Method(s): Whole language learning & task-based learning

*4.1 1st period*

Classroom Activities Approximate Time Intelligence(s)

● Giving background knowledge about the article and its author. 5 mins. Verbal/Linguistic(through lecture)

● Brainstorming on the priming questions, e.g., What purpose do you think the author had for writing this article? And/or, What does the title imply to you? 10 mins. Verbal/Linguistic(through informal speaking)Intrapersonal, and

Interpersonal

● Listening to the taped article to grasp the main ideas. 5 mins. Verbal/Linguistic(through listening)

● Silent reading and oral reading for comprehension through the strategy of "topic sentence" detecting from each paragraph. 20 mins. Verbal/Linguistic(through reading and reading strategies)

● Vocabulary learning through the strategy of guessing meaning from context or form. 10 mins. Verbal/Linguistic(through vocabulary and vocabulary learning strategies)

*4.2 2nd period*

Classroom Activities Approximate Time Intelligence(s)

● Group discussing on the organization of each paragraph (e.g., by deductively expanding, inductively generalizing, etc.) and reviewing its main idea(s), too. 15 mins. Verbal/Linguistic,(through discussion)Interpersonal, andLogical/Mathematical

● Doing exercises listed at the back of the article either orally or in writing by working in groups and/or individually. 25 mins. Verbal/Linguistic(through speaking & writing) and Interpersonal

● Commenting on the concepts/ideas one agrees or disagrees in the article, and giving his/her reasons. 10 mins. Verbal/Linguistic(through oral presentation) andIntrapersonal

*4.3 3rd period*

With the reference of activities listed at the back of the article, I design five different tasks to be completed, (10 minutes for the performance/presentation of each task). Students can choose which task to work on either by joining a group or working independently.

Task-1 (work in group)

Look at the two drawings, concerning the customs of hand-shaking and social distance. Discuss in group and report the similarities and differences that may exist between the East and the West, or make a verbal debate against each other. (Visual/Spatial, Interpersonal, Logical, and Verbal/Linguistic Intelligences.)

Task-2 (work in group or individually)

Find a song concerning cultural differences or a folk song from a particular culture and enjoy listening and singing it with necessary explanation of its lyrics. (Musical/Rhythmic and Verbal/Linguistic Intelligences.)

Task-3 (work in group)
Write a skit based on a culture shock anecdote and performing it. (Verbal/Linguistic, Bodily/Kinesthetic and/or Visual/spatial, and/or Musical/Rhythmic Intelligences.)

Task-4 (work in group)

Discuss in small group a problem or an embarrassing situation you may confront with due to cultural conflicts, and come up a solution by drawing a flowchart to show its procedure. (Logical/Mathematics & Visual/Spatial Intelligences.)

Task-5 (work in group or individually)

Search for some unique words, or body language developed in a culture due to its particular natural environment, e.g., geographic location, climate, etc. (Verbal/Linguistic and Naturalist Intelligences.)

**5. The Assessment of MI-Inspired Teaching**

Testing represents a singular act that is characteristic of teacher-centered classrooms. Assessment, on the other hand, is a complex process distinctive of student-centered classrooms. Testing is intended to determine what students have learned though it generally fails the job. Assessment is integrated with learning and instruction and is intended to stimulate further learning.

The core spirit of MI theory is opposed to the uniform view of schooling and the formal testing (standardized tests). Gardner (1993) holds the view that assessment is an essential component of an MI education. It is particularly important to use multiple modes of assessment that will allow students to show their strengths and perform optimally. Many testing professionals nowadays share the belief that authentic assessment, which emphasizes assessing what students know (knowledge) and what students do (performance) from different perspectives so as to provide a complete picture of students' abilities, efforts and progress during the learning process.

In short, we need diverse forms of product and/or process-based, individualized-based, contextualized-based, performance-based and ongoing-based assessment which include paper-and-pencil tests, portfolios, journals/logs, projects, exhibits, performances, and displays, etc.(Lazear, 1999) with feedback gained not only from teachers and parents but also from students themselves and their peers, to reflect and reinforce MI-inspired instruction. A copy of

Multiple Intelligence Assessment Menu (Lazear, 1999: 105) is attached in Appendix D for reference.

**6. Conclusion**

MI theory offers us, English language teachers, a richly diversified way of understanding and categorizing human cognitive abilities, and combinations of abilities, heightening our awareness of what makes learning possible and effective for individual students. There are several ways which may facilitate the implementation of MI-inspired teaching in our classroom:

● Examine our intellectual profiles and find out our own teaching styles through a multiple intelligence inventory (Appendix B).

● Understand the intellectual profiles of our students through students-generated inventory (Appendix C).

● Consider specific teaching approaches and methods that appeal to particular intelligences or combinations of intelligences.

● Plan a variety of activities from different resources (including the use of internet, too) for specific lessons or classes with multiple intelligence theory in mind (e.g. focus on diversity, learning process, and the transferring of learning to life beyond the classroom, etc.).

● Provide students with different learning strategies necessary for lifelong learners.

● Put emphasis on multiple forms of assessment rather than traditional standardized testing only.

Following the above-mentioned ways, we can achieve, for sure, a better effect in our MI-inspired ELT classrooms.

**References**

Campbell, L., Campbell, B. & Dickinson, D. (1993). *Teaching and Learning through Multiple Intelligences*. New York: Plume/Penguin.

Campbell, L. (1997). "How Teachers Interpret MI Theory." *Educational Leadership*, 55(1): 15-19.

Chao, T. C. (1999). "Designing an Effective Reading/Writing MI Whole Language Workshop: A Lesson Plan for LEP Learner." *The Proceedings of the Sixteenth Conference on English Teaching and Learning*. 525-533. Taipei: The Crane Publishing Co.

Chao, T. C. (2000). "Authentic Assessment in the EFL School Context: An MI-Based Model." *The Proceedings of the Seventeenth Conference on English Teaching and Learning*. 486-496. Taipei: The Crane Publishing Co.

Christison, Mary Ann. (1990). "Cooperative Learning in the EFL Classroom." *English Teaching Forum*. Oct.: 6-9.

Christison, Mary Ann. (1996). "Teaching and learning language through multiple intelligences." *TESOL Journal*, 6(1): 10-14.

Christison, Mary Ann. (1998). "Applying Multiple Intelligences Theory in Preservice and Inservice TEFL Education Programs." *English Teaching Forum*, April-June: 3-13.

Gardner, H. (1983). *Frames of Mind: The Theory of Multiple Intelligences*. New York: Basic Books.

Gardner, H. (1993). *Multiple Intelligences: The Theory in practice*. New York: Basic Books.

Gardner, H. (1995). "Are There Additional Intelligences? The Case for the Naturalist Intelligence." *Howard Project Zero*. Cambridge, MA: President and Fellows of Howard College.

Haggerty, Brian A. (1995). *Nurturing Intelligences: A Guide to Multiple Intelligences Theory and Teaching*. Addison-Wesley Publishing company.

Larsen-Freeman, Diane. (2000). *Techniques and Principles in Language Teaching.* (2nd ed.). Oxford University Press.

Lazear, David. (1999). *Multiple Intelligence Approaches to Assessment*. Zephyr Press.

Lazear, David. (1999). *Eight ways of Teaching: The Artistry of Eight Ways of Teaching with Multiple Intelligences*. ( 3rd ed.). Skylight Training & Publishing Inc.

Richards, J. C. & T. S. Rodgers. (1986). *Approaches and Methods in Language Teaching*. Cambridge University Press.

International Education Studies
www.ccsenet.org/journal.html
Vol. 2, No. 1
February 2009

# Improvement of Faculty's Qualities in Medical Colleges and the Construction of a "Five-in-one" Cultivation System under the Pattern of PBL

Qin Chen, Hang Li, Fancai Zeng, Xiaorong Zeng, Lige Zheng & Xiang Li
luzhou Medical College
Luzhou 646000, China
Tel: 86-830-316-2279 E-mail: zwxin626@163.com

**Abstract**

The instructional pattern of Problem-based Learning, which requires teachers to be "organizers, guides and cooperators" of their students' learning, is now becoming a trend in the development of medical education around the world. In order to be competent in all the above mentioned roles, teachers need to be equipped with corresponding qualities. In this article, basic qualities under the ideal PBL conditions are summarized from relevant literatures and teachers' practical ability was also understood through analysis of requirements. Then the difference between the ideals and reality was discovered, also a question data base was set up accordingly as the starting point to train teachers and seek a solution to intrigue them to implement PBL. Thus, a teachers' training system of "Five in One", the integration of requirement analysis, objectives setting, methods selection, content design and quality assurance, was constructed.

**Keywords:** PBL, Medical colleges, Teachers' training

PBL, a study style based on questions, was pioneered and used at McMaster University Canada, by Mr. Barrows, Professor of Neurology in America. It emphasizes analyzing and working out problems by applying knowledge and aims at learners' construction of abundant and flexible foundations of knowledge, their developing effective problem-solving abilities, their development of both autonomic and lifetime- learning abilities as well as becoming effective cooperators and finally cultivating the internal motive for study. It is now recognized as one of the excellent teaching methods to promote students' critical thinking and to analyze and solve problems[1].

The pattern of problem-based learning has taken prominence and accumulated some experience in China, however it has not been spread substantively across the whole country yet. It might be because of the following problems: (1) inadequate knowledge; (2) insufficient resources such as insufficient collection of books in the library; poor-use of internet resources; lack of new material aimed at PBL; deficient experimental equipment; inadequate professional trainers[1-7]; (3) teachers' Inadequate abilities of PBL instructional mode;(4)difficulty for students to adopt and difficulty of quality assessment. Accordingly, this article focuses on the quality and requirement of medical college teachers under the pattern of PBL and the establishment of the "five in one" teacher training system based on existing problems and teaching practice of our school, in order to improve the instructional ability of teacher on the method of PBL .

## 1. The Necessity of Implementing PBL and training teachers accordingly

### *1.1 The Need to Adapt to the Reformation of International Medical Education*

Edinburgh Declaration, passed at the Edinburgh Conference of 1988 by World Federation of Medical Education (WFME), and Global Minimum Essential Requirements in Medical Education, passed in April of 2002 by Institute for International Medical Education (IIME), have both pointed out the objectives for medical education is to create trained doctors to possess not only excellent qualities and professional ethics, but also a great deal of abilities of both raising and solving clinical problems, especially problem- solving ability. The goals for contemporary medical students are clearly defined by all these international standards in international use. Practice has proved that problem-based learning can accomplish these objectives far better than the traditional teaching-oriented learning.

*1.2 The Need to Adapt to the Requirements for Teachers' Basic Qualities*

In the PBL pattern, the teacher's role has changed from traditional instructor to "promoters and guides", therefore, teachers should be highly capable of: Comprehending previously-learned experience and thinking of students; Creating a context to provide a link between the new and old knowledge; Designing teaching procedures or designing study situations; applying freely modern information technology; developing learners' multi-cognition and self–adjustment abilities; having effective communication and management of conflicts; having acute observation as well as excellent self-knowledge and evaluation; guiding students to learn and work with others; and arousing students' interests to study in an exploratory way.

*1.3* From above, we know that PBL is different from the traditional instructional pattern and has a higher demand of teachers. However, since teachers are basically products of the latter pattern, and compared with their counterparts from other kinds of college, most medical teachers begin teaching upon gradation without receiving any professional training, hence, they must have the corresponding qualities by means of cultivation and training. According to Marx's theory, "Educators should be the first to be educated", this is one of the problems for contemporary application of PBL. How to systematically train teachers at medical colleges and improve their teaching abilities is of great significance both theoretically and practically [2].

**2. The Construction of a "Five-in-one" Cultivation System**

The practice in our college proves that the construction of "Five in One" system is an important means to improving the qualities of teachers, which connotes a cultivation system for teachers with the collaboration of systematic methods, as well as requirement analysis, objectives setting, methods selection, content design and quality assurance. The content is as follows:

*2.1 The System of Requirement Analysis*

Demand is a driving force for non-stop study and progress. Only Aiming for the objectives, which are requested specifically, are approved and improved by highly teachers.

Firstly, to target the group of students in the PBL pattern, a model of "3.5+1+0.5" for clinical cultivation at our college has been adopted; that is, three and a half years for their elementary courses, clinical theory lessons as well as those on probation, one year for their clinical practice and the last half for clinical Forums and Lectures back to school. This mode offers a suitable environment for our application of PBL in the advanced period; our college therefore decided to employ the pattern of PBL in the clinical Forums and Lectures and has acquired favorable experience to a fair extent.

Secondly, to analyze teachers' basic qualities for PBL. By Analyzing the implementation situation, existing problems, ideal conditions and the difference between the actualities and reality in a variety ways such as classroom observation, interviews arranging, organization analysis, questionnaire surveys and teaching contests, solution to problem and assessment of PBL application are put forward.

*2.2 Objectives System for Cultivation*

The objective is to cultivate teachers' basic abilities in accordance with PBL's requirements, to solve their problems with PBL application so as to promote their competence in PBL-applied teaching and finally to boost the development of colleges. According to an analysis of the requirements and supported by systematical methods, It has been determined as an effective measure to ensure positive results.

*2.3 Methods ---- To Form a 3-level Cultivation Model of "Noted Teachers- Mainstay Teachers-Young Teachers"*

Noted teachers were sent out to places both domestically and abroad to receive systematic training of PBL in a batch-wise way. Then they trained all the other teachers, especially the mainstays, after they came back to their colleges with excellent results. Likewise, the core teachers would cultivate the young teachers, thus a 3-level pattern is formed. During the procedure, teachers from all levels collaborate and discuss together; and with the leadership of noted teachers, the trained teachers experience the process of PBL from the students' point of view to create a favorable atmosphere for young teachers and hence accelerate their development and also ensure PBL's smooth application. Three concrete ways can be taken, as shown in Figure 1.

2.3.1 The first level is to build a problem data base for PBL teachers training. The so-called "problem data base" mainly refers to a form to supply problem resources to the facilitation of PBL cultivation. A problem data base, including questions from several fields, is defined clearly from analysis of the practice of teachers from the 3-level. There are corresponding theories in each field of problems and several highly influential ones are chosen to design the plan of cultivation.

2.3.2 Under the leadership of construction of PBL teachers, and based on the seeking for a solution to the real problems of applying PBL, a special fund was established for teaching innovation in order to set up several general research projects in accordance with specific medical subjects. Each general project is followed by a few sub-projects. Noted

teachers are the overall leaders and mainstay teachers are responsible for the sub-projects .In addition, all the young teachers are group members, thus a powerful team of PBL research is formed. Each member has his concrete assignment to ensure the implementation of each project. The teachers' professional abilities are strengthened through actions and their ideas would be changed to fully demonstrate their specialties and enhance their spirit of collaboration, as well as, to improve their abilities to reform and research.

2.3.3 PBL Cultivation for Teachers is Developed under Internet Circumstance with the Carrier of Information Technology

2.3.3.1 To Build PBL Internet Classrooms

PBL Internet Classrooms are a platform to support Internet education based on PBL theories, computer and communication technology. In such a virtual environment, both teachers and students can carry out all kinds of teaching activities as freely as in a real classroom. Noted teachers—mainstay teachers—young teachers form a learning community in virtual space, and students' activities are no longer restrained to the traditional classroom. Instead, they are in a learning group with a teacher's guidance, help, cooperation and communication. This platform strengthens communication among teachers from all levels and results in timely appraisal.

2.3.3.2 A Bank of PBL Classroom Teaching Cases Established by Using an Network Monitor System

Practical experience is an important resource for their training, so content and material can be theoretical but it must be closely combined with practice. Through the Network Monitor System, the classroom teaching by teachers especially renowned ones, are videotaped to pick up typical cases for the construction of a quintessential resources data base. The classroom video mirrors real situations for problems and enables teachers to objectively evaluate their teaching effect, to find out the difference between ideals and reality so as to find a solution. It also provides important resources for training improvement; thereby, entitling the evaluation of training to get real information and drawing a correct conclusion from it.

*2.4 Content of System*

Based on the basic qualities required for PBL, teachers' training was mainly targeted in four aspects: cultivation of ideas and concepts; cultivation of knowledge including noumenal, situational and practical knowledge; training Skills; and training attitude.

*2.5 System of Quality Assurance*

Our college established an organization of intra-control as a priority, extra-control as guidance, and a mechanism of management; set up an administration team with the leadership of the president, a PBL teachers' training team orientated towards noted and mainstay teachers; built an institution for special fund for training and also for reward or punishment; and constructed a result evaluation mechanism for both long-term and short-term.

**3. Consideration/Reflection**

*3.1 Result of "Five in One" PBL training*

The system of "Five in One" overcame the deficiency of traditional teachers' training and promoted teachers' research ability, Young teachers were therefore prepared for research and teaching reform. It also innovated the teachers' training pattern at medical colleges, improved teachers' capability of implementing PBL, boosted their capacity of problem solving and lifetime studying.

*3.2 Deficiency*

3.2.1 The quality of problems designed needs improvement

Whether teachers can design appropriate problems is a prerequisite to context creating. In our practice, we found teachers were sometimes unable to do so because the quality of problems lies in their command of knowledge and its structure, and their grasp and instruction of students' mode of thinking, which is demanding for teachers.

3.2.2 Teachers' under-dedication

PBL requires teachers to devote more energy and time and the workload would be heavy, so it would take them some time to accept this mentally.

3.2.3 Orientation to exploration.

The PBL teachers' training system at medical colleges is entrusted with a major mission. It is our direction to work hard; hereafter, we will set up a question database of high quality, we hire teachers with enthusiasm for applying PBL with all measures taken, and we will explore school-based in service training.

**References**

Admin, Carol EdD. (2003). A Comparison of Critical Thinking in Groups of Third-year Medical Students in Text, Video,

and Virtual PBL Case Modalities, *Acad Med*., 78:204-211.

Aldred MJAldred SE. (1998). Problem-based learning: the good, the bad, and the ugly. J Dent Educ, Sep, 62(9): 650-655.

Huda NBrula AQ. (1999). An introductory course on study skills forming a bridge between traditional and problem-based learning. J Pak Med Assoc 1999 Feb, 49(2): 27-30.

Problem-based learning, especially in the context of large classes http://www.chemengmcmaster.ca /pbl/pbl.htm.

Problem-based learning, http://www.c2t2.cal/lo/pbl.html.

Technologic Systemic Educational Reform, http://www.tecweb.org/eddevvl.

Wood, Diana F. (2003). Problem based learning: Clinical review: ABC of learning and teaching in medicine, *British Medical Journal* , 326 (7348): 328-330.

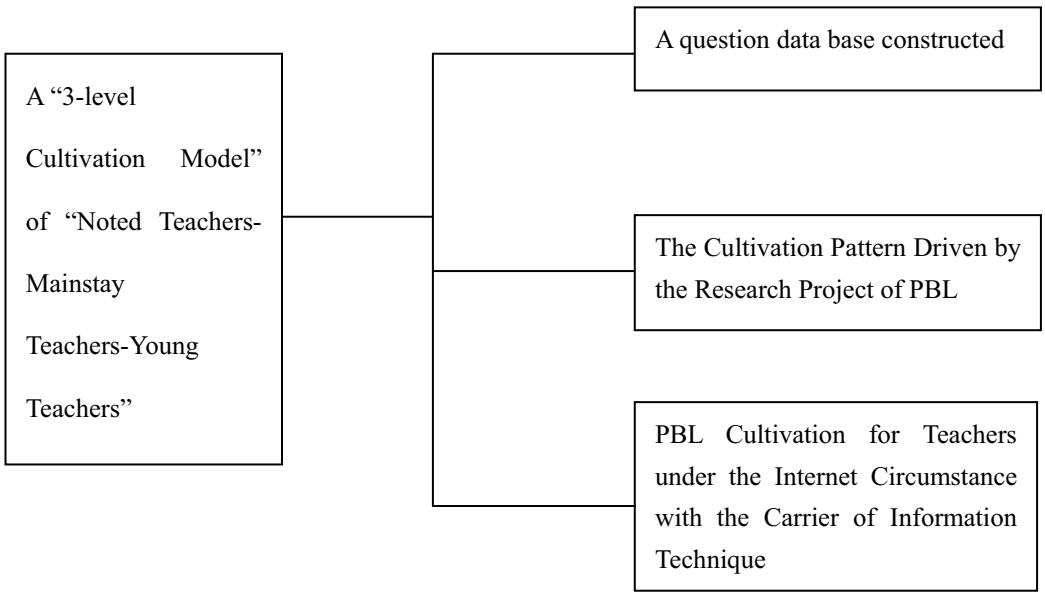


Figure 1. A 3-level Cultivation Model

International Education Studies
www.ccsenet.org/journal.html
Vol. 2, No. 1
February 2009

# The Life Satisfaction of Academic and Non-Academic Staff in a Malaysian Higher Education Institution

Kamaruzaman Jusoff (Corresponding author)
Yale's School of Forestry and Environmental Studies
Yale University, New Haven CT 06511-2104, USA.
Tel: 203-432-1384 E-mail: jusoff.kamaruzaman@yale.edu

Zaliha Hj. Hussein
Faculty of Administrative Science and Policy Studies
MARA University of Technology, Peti Surat 187, 08400 Merbok, Kedah, Malaysia.
Tel : 60-19-411-2424 E-mail : drzaliha@kedah.uitm.edu.my

SoonYew, Ju
Faculty of Administrative Science and Policy Studies
MARA University of Technology, Sura Hujung, 23000 Dungun, Terengganu, Malaysia.
Tel: 60-19-982-9784 E-mail: syju337@tganu.uitm.edu.my; jusoonyew@yahoo.com

Mohd Salleh Hj. Din
Entrepreneurship Development Institute
University Utara Malaysia, 06010 Sintok, UUM, Kedah, Malaysia.
Tel: 60-4-924-1801 E-mail: salleh@uum.edu.my

**Abstract**

This study was conducted in Universiti Teknologi MARA (UiTM) Penang, Malaysia in April 2005. The objectives of the study were to examine the life satisfaction of the academic and non-academic staff. Findings revealed that some demographic variables had significant difference in life satisfaction. This study could provide meaningful information to the top management to design intervention programs to improve life satisfaction among the UiTM staff. However, since the above findings were from a case study of life satisfaction of UiTM Penang staff hence one needs to exercise caution in generalizing to the other institutions of higher education settings.

**Keywords:** Life satisfaction, Higher education institution, Academia

## 1. Introduction

Life satisfaction is rarely a widely researched topic. Similarly, very few research studies have been carried out in the area of life satisfaction, particularly in UiTM Penang. Therefore, this study was undertaken to examine the level of life satisfaction among the academic and non-academic staff in UiTM Penang. By attempting to address this specific problem at the institutions of higher education, this study could positively contribute towards the overall improvement of the university. Research on the staff of the institutions of higher education is becoming more and more important because researchers have examined the link between life satisfaction and job satisfaction (Kong, Ju, Maziah and Hj. Din, 2006) and the relationship among job satisfaction, life satisfaction and turnover intention.

Spector (1997) stated that life satisfaction refers to a person's feelings about life in general. Diener, Emmons, Larsen and Griffin (1985) define life satisfaction as a global evaluation by the person of his or her life and it is a cognitive and judgmental process. Thus, within this process, individuals ascertain their level of satisfaction by comparing their

circumstances to their expectations. Life satisfaction has been researched in many contexts other than its relationship to job satisfaction and other work-related attitudes and behavior. For example, researchers have studied topics such as satisfaction with life and psychometrics properties in an adolescent sample (Neto, 1993) and student life satisfaction (Gilman & Huebner, 2003; Sam, 2001), among others. The main thrust of the present study, however, is work-related consequences which correlate with life satisfaction.

A people's satisfaction with life could be influenced by many factors. Some researchers focus on a global assessment (Judge & Watanabe, 1993), while other researchers concentrate on the various facets of life satisfaction. For example, Tang, Luna-Arocas and Whiteside (2003) tried to examine the relationship among money, income and life satisfaction. The variables used in their research included money ethic scale (budget, evil, equity, success, and motivator), self-reported income, demographic variables and life satisfaction. Other aspects of life could also influence life satisfaction, for instance, family life, social life and job life. In relation to this, Sekiguchi's and Kato's (2003) research divided life into three categories (family life, working life and social life) to investigate how these three were associated with the individuals' whole life satisfaction levels. Their research finding indicates that the general life satisfaction of Japanese women was high because of their good relationship with family but they were worried about health and the effects of aging for themselves and their families.

However, gender effect on life satisfaction varies from one research to another. Zhang's and Leung's (2002) prior research found that gender was not associated with general life satisfaction but was negatively associated with life domain satisfaction. This indicated that the male respondents were more satisfied with their lives than their female counterparts.

## 2. Methodology

This study evaluated the life satisfaction and selected demographic variables (category, age, gender, and years of service) among the UiTM Penang academic and non-academic staff from March-April 2005. During this period, the total population consisted of 157 academic staff and 177 non-academic staff (Department of Administration, UiTM Penang, 2005). However, staff who are currently furthering their studies and have taken non-paid leave were excluded from this study. Until the end of April 2005, 199 respondents (77 academic and 122 non-academic staff) had returned their questionnaires and found useable. Hence, analysis was based on 199 questionnaires which represented a response rate of 59.60 per cent.

### *2.1 Instrumentation*

The research instruments consisted of two parts. The dependent variable was the life satisfaction, and the independent variables were demographic variables. The demographic variables included category of staff, age, gender and years of service of staff. Category of staff using the nominal scale which had two options: academic staff and non academic staff. Age data in the ordinal scale comprised the following four categories: (i) 25 years old and below, (ii) 26-35 years old (iii) 36-45 years old and (iv) 46 years old and above. Gender data using the nominal scale consisted of two options: male and female. There were three categories for the years of service variable: (i) less than 10 years, (ii) 11-20 years and (iii) more than 20 years. The questionnaire was bilingual, both in Bahasa Malaysia and English.

People's life satisfaction could be measured on various aspects, for instance, from the family satisfaction, friends' satisfaction, community satisfaction, health aspects, amongst others. For instance, Burke (1999) studied on the work and life satisfactions and psychological well being of female MBA graduates of a university in Canada in late 1996. In his study, the respondents' life satisfaction was according to three constructs, namely "family satisfaction", "friends' satisfaction", and "community satisfaction". This questionnaire contained 14 items which were adapted from Kofodimos (1995). However, the reliability of the items was not reported.

On the other hand, Diener et al., (1985) developed the Satisfaction with Life Scale (SWLS) to fulfill the need for a multi-item scale to measure life satisfaction as a cognitive-judgmental process. As discussed by Diener et al., (1985), life satisfaction stems from a judgment process by an individual and therefore they defined the life satisfaction as a global assessment by an individual about his or her life. A series of validation studies conducted by Diener et al., (1985), demonstrated that the scale was a single factor, multi-item assessment of global life satisfaction that showed good internal consistency and reliability. The SWLS has demonstrated internal consistency and reliability with a coefficient of .87 and a two-month test-retest coefficient alpha of .85 (Diener et al., 1985). This scale has been used extensively (Neto, 1993; Landry, 2000). For instance, Neto's (1993) research used this instrument to measure the psychometrics properties in an adolescent sample, where the internal consistency coefficient was 0.78. Landry's (2000) study showed that the coefficient alpha for SWLS was .87. Due to all the above reasons, this questionnaire was used in this study. To measure life satisfaction of the staff, five items from the SWLS were used. A 7 point Likert scale was used to record the responses. Possible responses ranged from 1 (strongly disagree) to 7 (strongly agree). The range of possible scores is from minimal satisfaction with life (5) to very high satisfaction with life (35).

The collected data were analyzed using Statistical Package for Social Science (SPSS) Version 12 with the following tests: (i) the descriptive data of staff ; (ii) the life satisfaction is measured using the mean values differences, if there is a significant, further analysis on mean values differences will be conducted to substantiate the findings.

*2.2 Reliability Analysis*

The Cronbach Alpha reliability test was carried out to ensure the reliability of the instrument. The coefficient reliability for life satisfaction was at .8196. According to Nunnaly (1978) a reliability coefficient of .70 and above is high.

**3. Results**

*3.1 Demographic characteristics*

In this study, four demographic variables (category, age, gender and years of service) of UiTM Penang staff are used as independent variables to investigate their relationships with life satisfaction. Table 1 – Table 4 illustrates the means, frequencies and percentages for UiTM Penang staff, as summarized below:

(i) Table 1 displays the distribution of the Penang staff category: academic was 38.7% (n=77) and non-academic staff was 61.3% (n=122).

(ii) Table 2 shows the distribution of age group among the Penang staff: 25 and below was 15.6% (n=31), 26 - 35 years old was 36.7% (n=73), 36 – 45 years old was 32.2% (n=64) and 46 and above was 15.6% (n=31).

(iii) Table 3 displays the gender composition of the Penang staff in the following group: male was 56.3% (n=112) and female was 43.7% (n=87).

(iv) Table 4 indicates the years of service of Penang staff: less than 10 years was 79.4% (n=158), 11–20 years was 12.6% (n=25) and more than 20 years was 8.0% (n=16).

*3.2 Research questions and hypotheses testing*

In this study, the significant level of null hypotheses testing value was set at 0.05. Thus, any null hypotheses testing value that is above 0.05 ($p>0.05$) cannot be rejected.

*3.2.1 Research question 1: What is the level of life satisfaction of the UiTM Penang staff?*

The finding suggested that the mean value for life satisfaction of the UiTM Penang staff was 4.7417 (Table 5). Since the mean values was closer to the maximum point (likert scale 1-7), the finding suggested that the staff at UiTM Penang were moderately satisfied with their life.

*3.2.2 Research question 2: Were the staff's demographic variables (category, age, gender, and years of service) related to the life satisfaction level of UiTM Penang staff?*

Null Hypothesis 2 (Ho2):

There were no differences between the life satisfaction level of UiTM Penang staff and the selected demographic variables (category, age, gender and years of service).

Null Hypothesis 2a (Ho2a):

Ho2a: There was no difference in the life satisfaction level between the category of academic and non-academic staff of UiTM Penang.

To test the null Hypothesis 2a (Ho2a), a independent samples t-test was conducted to evaluate the difference between the categories on the life satisfaction of UiTM Penang staff as shown in Table 6.

Significant differences were not found on the life satisfaction between the category of academic and non-academic Penang staff. The level of significant level is at $p=0.159$. Thus the null hypothesis could not be rejected.

Null Hypothesis 2b (Ho2b):

Ho2b: There was no difference in the life satisfaction level of UiTM Penang staff based on their age.

To test the above null hypothesis 2b (Ho2b), the one-way ANOVA was conducted to evaluate the differences between age of the Penang staff and the life satisfaction as shown in tables 7 and 8.

Table 8 presented the result of the one-way ANOVA analysis between the life satisfaction and age of the Penang staff. The level of significant level is at $p=0.001$. Thus the null hypothesis was rejected. Finding indicated that group of staff in the age of 46 and above indicates higher mean values (mean=5.3806) as compared to others (Table 7 and Figure 1).

Null Hypothesis 2c (Ho2c):

Ho2c: There was no difference in the life satisfaction level between male and female staff of UiTM Penang.

To test the null Hypothesis 2c (Ho2c), a independent samples t-test was conducted to evaluate the difference between gender for the life satisfaction level of UiTM Penang staff as shown in Table 9.

Significant differences were not found on the life satisfaction between the male and female Penang staff. The level of significant level is at p=0.223. Thus the null hypothesis could not be rejected.

Null Hypothesis 2d (Ho2d):

Ho2d: There is no difference between the life satisfaction level according to the years of service of the UiTM Penang staff.

To test the null hypothesis 2d (Ho2d), the one-way ANOVA was conducted to evaluate the differences between years of service of the Penang staff and life satisfaction level as shown in tables 10 and 11.

Table 11 presents the result of the one-way ANOVA analysis between life satisfaction and years of service of UiTM Penang staff. The level of significant level is at p=0.031. Thus the null hypothesis was rejected. The finding suggested that the group of staff who served more than 20 years enjoyed higher mean values (mean=5.3125) as compared to others (Table 10 and Figure 2).

## 4. Conclusion

This case study was carried out to investigate the overall life satisfaction level of UiTM Penang staff. In relation to that, there were two research questions. A few important findings pertaining to the research objectives are also summarized and discussed:

Research Question 1: What is the level of life satisfaction of the UiTM Penang staff? Findings suggested that the UiTM Penang staff were moderately satisfied with their life.

Research Question 2: Were the staff's demographic variables (category, age, gender, and years of service) related to the life satisfaction level of UiTM Penang staff? Finding showed that for UiTM Penang staff, there were significant differences between demographic variables (age and years of service) and life satisfaction. However there was no significant difference in life satisfaction according to the category of staff and gender.

The implications of these findings to the university's top management would be to improve the level of life satisfaction among its staff, as numerous researches have suggested that there are relationships between life satisfaction, job satisfaction and intention to leave the organization (Landry, 2000; Ghiselli, La Lopa & Bai, 2001). Therefore, future researches should expand the scope of this study to find out if there are other possible factors that influence life satisfaction, for instance the relationship between job satisfaction and life satisfaction (Kong, Ju, Maziah & Hj. Din, 2006) and the relationship between job satisfaction, life satisfaction and turnover intention among employees in UiTM and other institutions of higher education in Malaysia.

## References

Burke, R. J. (1999). Workholism among women managers: Work and life satisfactions and psychological well-being. *Equal Opportunities International*, 18(7), 25-35.

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment*, 49(1), 71-75.

Ghiselli, R. F., La Lopa, J. M., & Bai, B. (2001). Job satisfaction, life satisfaction, and turnover intent: Among food-service managers. *Cornell Hotel and Restaurant Administration Quarterly*, 42(2), 28-37.

Gilman, R., & Huebner, S. (2003). A review of life satisfaction research with children and adolescents. *School Psychology Quarterly*, 18(2), 192.

Judge, T. A., & Watanable, S. (1993). Another look at the job satisfaction-life satisfaction relationship. *Journal of Applied Psychology*, 78, 939-948.

Kofodimos, J. (1995). *Balancing act*. San Francisco: Jossey-Bass.

Kong, L. K., Ju, S. Y., Maziah Onn., & Hj. Din, M. S. (2006). The academic staff's job and life satisfaction: A case study on Mara University of Technology, Perlis. *In proceeding of the South East Asian Association for Institutional Research (SEEAIR) 2006 conference*. 5 – 7 September, Awana Porto Malai Resort, Langkawi, Malaysia.

Landry, M. B. (2000). The effects of life satisfaction and job satisfaction on reference librarians and their work. *Reference & User Services Quarterly*, 40(2), 166-177.

Neto, F. (1993). The satisfaction with life scale: Psychometrics properties in an adolescent sample. *Journal of Youth and Adolescence*, 22(2), 125-134.

Nunnaly, J. C. (1978). *Psychometric theory*. New York: McGraw-Hill.

Sam, D. L. (2001). Satisfaction with life among international students: An exploratory study. *Social Indicators Research*, 53(3), 315.

Sekiguchi, K. & Kato, K. (2003). Job satisfaction and job satisfaction levels of female graduates of a Japanese University. *Proceedings of the 47th Annual Meeting of the International Society for the Systems Science*, at Hersonissos.

Spector, P. E. (1997). *Job satisfaction: Application, assessment, causes and consequences*. Thousand Oaks, CA: SAGE Publication.

Tang, T. L. P., Luna-Arocas, R., & Whiteside, H. D. (2003). Money ethic endorsement, self-reported income, and life satisfaction: University faculty in the US and Spain. *Personnel Review*, 32(6), 756-773.

Zhang, L. W., & Leung, J. P. (2002). Moderating effects of gender and age on the relationship between self-esteem and life satisfaction in mainland Chinese. *International Journal of Psychology*, 37(2), 83-91.

Table 1. Staff by Category

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Academic | 77 | 38.7 | 38.7 | 38.7 |
| | Non-Academic | 122 | 61.3 | 61.3 | 100.0 |
| | Total | 199 | 100.0 | 100.0 | |

Table 2. Staff by Age Groups

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | 25 and below | 31 | 15.6 | 15.6 | 15.6 |
| | 26 – 35 | 73 | 36.7 | 36.7 | 52.3 |
| | 36 – 45 | 64 | 32.2 | 32.2 | 84.4 |
| | 46 and above | 31 | 15.6 | 15.6 | 100.0 |
| | Total | 199 | 100.0 | 100.0 | |

Table 3. Staff by Gender

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Male | 112 | 56.3 | 56.3 | 56.3 |
| | Female | 87 | 43.7 | 43.7 | 100.0 |
| | Total | 199 | 100.0 | 100.0 | |

Table 4. Staff by Years of Service

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Less than 10 years | 158 | 79.4 | 79.4 | 79.4 |
| | 11-20 years | 25 | 12.6 | 12.6 | 92.0 |
| | More than 20 years | 16 | 8.0 | 8.0 | 100.0 |
| | Total | 199 | 100.0 | 100.0 | |

Table 5. Mean and Standard Deviation for Life Satisfaction of UiTM Penang Staff

| | UiTM Penang Staff | | |
|---|---|---|---|
| | N | Mean | SD |
| Life Satisfaction | 199 | 4.7417 | 1.04457 |

Table 6. Mean and Standard Deviation for the Life Satisfaction that Compare Academic and Non-Academic Penang Staff

| | Academic | | | Non-Academic | | | | |
|---|---|---|---|---|---|---|---|---|
| | N | Mean | SD | N | Mean | SD | t | p |
| Life Satisfaction | 77 | 4.6104 | 1.05725 | 122 | 4.8246 | 1.03223 | -1.412 | .159 |

* Indicated statistical significance.

Table 7. Descriptive Statistics for the Life Satisfaction that compares Age of the Penang Staff

Life Satisfaction

| | N | Mean | Std. Dev. | Std. Error | 95% Confidence Interval for Mean | | Min. | Max. |
|---|---|---|---|---|---|---|---|---|
| | | | | | Lower Bound | Upper Bound | | |
| 25 and below | 31 | 4.4065 | 1.08010 | .19399 | 4.0103 | 4.8026 | 2.00 | 6.40 |
| 26 – 35 | 73 | 4.5918 | 1.05643 | .12365 | 4.3453 | 4.8383 | 1.80 | 7.00 |
| 36 – 45 | 64 | 4.7656 | .95123 | .11890 | 4.5280 | 5.0032 | 1.80 | 6.60 |
| 46 and above | 31 | 5.3806 | .92859 | .16678 | 5.0400 | 5.7213 | 3.40 | 7.00 |
| Total | 199 | 4.7417 | 1.04457 | .07405 | 4.5957 | 4.8877 | 1.80 | 7.00 |

Table 8. One-Way ANOVA Analysis between Life Satisfaction (dependent variable) and Age (independent variable) of the Penang Staff

Life Satisfaction

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 17.817 | 3 | 5.939 | 5.842 | .001 |
| Within Groups | 198.227 | 195 | 1.017 | | |
| Total | 216.044 | 198 | | | |

Table 9. Mean and Standard Deviation for Life Satisfaction that Compare Male and Female Penang Staff

| | Male | | | Female | | | | |
|---|---|---|---|---|---|---|---|---|
| | N | Mean | SD | N | Mean | SD | t | p |
| Life Satisfaction | 112 | 4.8214 | 1.06046 | 87 | 4.6391 | 1.02064 | 1.223 | .223 |

* Indicated statistical significance.

Table 10. Descriptive Statistics for Life Satisfaction that compares Years of Service of the Penang Staff Life Satisfaction

| | N | Mean | Std. Dev. | Std. Error | 95% Confidence Interval for Mean | | Min. | Max. |
|---|---|---|---|---|---|---|---|---|
| | | | | | Lower Bound | Upper Bound | | |
| Less than 10 years | 158 | 4.6519 | 1.08872 | .08661 | 4.4808 | 4.8230 | 1.80 | 7.00 |
| 11 – 20 years | 25 | 4.9440 | .75613 | .15123 | 4.6319 | 5.2561 | 3.40 | 6.20 |
| More than 20 years | 16 | 5.3125 | .76234 | .19059 | 4.9063 | 5.7187 | 3.60 | 6.40 |
| Total | 199 | 4.7417 | 1.04457 | .07405 | 4.5957 | 4.8877 | 1.80 | 7.00 |

Table 11. One-Way ANOVA Analysis between Life Satisfaction and Years of Service of the Penang Staff Life Satisfaction

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Between Groups | 7.510 | 2 | 3.755 | 3.529 | .031 |
| Within Groups | 208.534 | 196 | 1.064 | | |
| Total | 216.044 | 198 | | | |

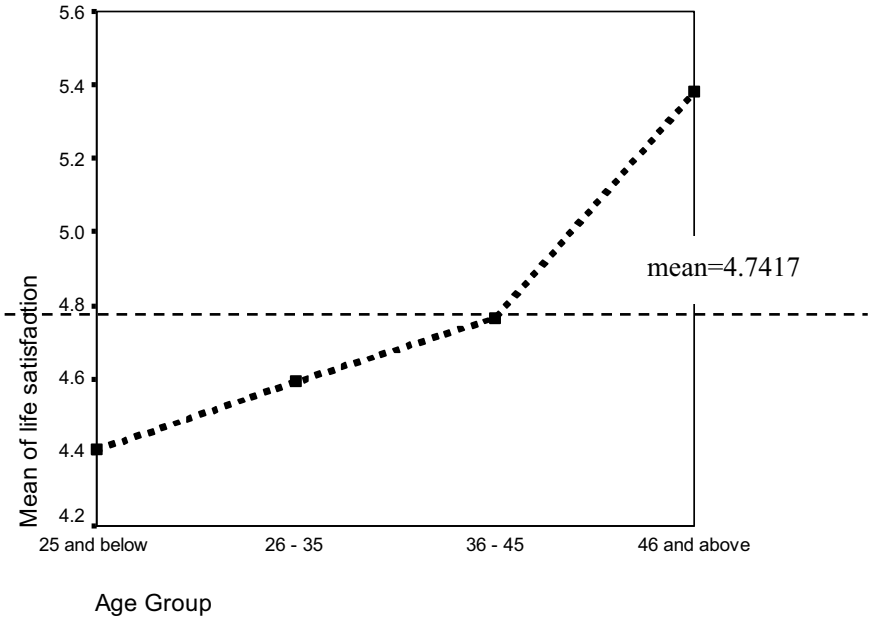


Figure 1. Mean for Life Satisfaction Level (Age Group)

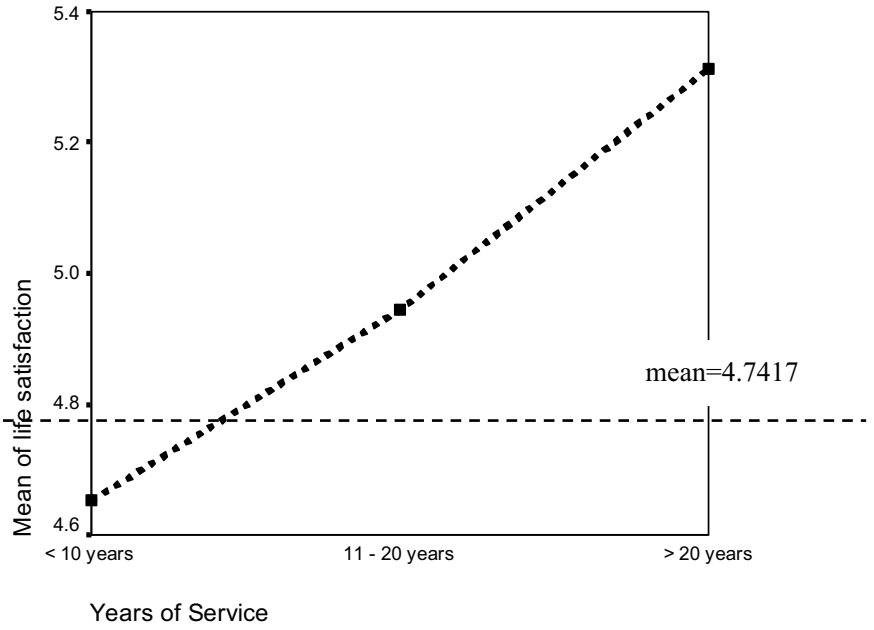


Figure 2. Mean for Life Satisfaction Level (Years of Service)

International Education Studies
www.ccsenet.org/journal.html
Vol. 2, No. 1
February 2009

# Employment Obtaining and Business Starting

Jian Lan
Department of Mechanical and Electrical Engineering
Beijing Polytechnic College
No.368, Shimen Road, Shijing Shan District
Beijing 100042, China
Tel: 86-10-5151-1049 E-mail: lanhuahua414@126.com

**Abstract**

The implementation of business starting education in higher vocational colleges is of important and realistic meanings for cultivating advanced technology application-type talents and for releasing the employment obtaining pressure of higher vocational students. Based on the analysis on the employment situation of higher vocational graduates, this paper explores the thoughts and methods for higher vocational colleges to implement business starting education.

**Keywords:** Higher vocational colleges, Employment obtaining, Business starting education

## 1. The connotations of business starting education

Business starting education refers to the education that aims at developing and improving business starting capacities of students and cultivating students' capacity of the awareness, spirit, quality, and knowledge needed in business starting activities. This education actually aims at educating students to become business starting persons thought setting up business starting awareness, cultivating business starting spirit and quality, teaching business starting knowledge and forming business starting capacity (Li, 2007). To put it in other ways, the essential of business starting education is a type of comprehensive education mode, which cultivates students' business starting awareness, business starting spirit, business starting quality, business starting knowledge and business starting capacity. Business staring education improves students' ability to find job opportunity themselves and cultivating talents for the society who have comprehensive capacities, including innovation ability, risk taking ability, healthy psychology, independent working ability, collaboration and cooperation ability, social communication and management ability (Guo, 2007).

## 2. The current employment situation of higher vocational graduates in China

### *2.1 Universities enlarge enrollment in successive years, pricking up employment pressure*

With the continuous reform and development of China's education, higher education has transformed from talent education to common education, which is mainly shown in the large scale enrollment extension of universities in 1999. According to rough statistics, in 1960s, the annual national student enrollment remained at 150 thousands. However, after entering the 21st century, the students enrollment scales extends rapidly and the annual students enrollment reaches 4500 thousands. After the students enrollment enlargement, graduates increase every year, resulting in hardship for students to obtain employment (Guo, 2007).

### *2.2 Traditional value concept influences the employment of higher vocational graduates*

Due to the traditional concept, the majority of students, including their parents, hope to engage in administration and management after graduation and become "white collar" and would not like to engage in technology work and to become "blue collar". Besides, for a long time, China's education structure lacks for scientific nature. China's education emphasizes theory, but not practice and emphasizes universities, but not vocational colleges, resulting in the severe unbalance of supply and demand of social talents. The current social demand is that for one aspect, the supply for social administration field exceeds demand. Some talents could not find jobs. For another aspect, the demand of technology field is higher than the supply. Some posts could not find proper talents. The reason for such situation is that graduates from universities scramble for administration posts and would not like to work on technology posts. Most students of higher vocational colleges and their parents also have such intention. They would rather "discard' their majors and squeeze into administration field. For these reasons, technology posts lack for talents and many students fight for social administration posts.

### *2.3 Compared with university graduates, higher vocational graduates have no superiority*

Different from universities which aim at cultivating knowledge and theory type students, higher vocational colleges aim

at cultivating technology talents who have special skills and are ready to work. Therefore, there is no problem for higher vocational graduates to work on professional technology posts. However, the current situation is that many units and companies, due to long-formed value concept, still prefer university graduates. They would rather to employ university graduates who do not have professional skills or who have weak professional skills and then provide training to them than to employee vocational students who have professional skills. In addition, many vocational graduates seek to find jobs beyond their ability, resulting in their unemployment and the hardship for the development of vocational colleges. If to survive and develop in the environment where there are many universities, higher vocational colleges must face objective reality, exert their advantage according to their features, and combine job-selection with business starting education so as to enlarge the employment channel of their graduates.

## 3. Comparison between employment obtaining education and business starting education

Employment obtaining education takes students' employment as the basic aim and help students to master certain cultural knowledge and won skillful professional ability and necessary common skills as well as some other major skills and be bale to work in certain occupational posts. Such education form could date back to the days after planned economy period and opening up and reform when the jobs of all graduates were to be appointed by the state. This traditional employment obtaining education, together with the lagging back of educational system reform, shows more and more obvious defects (Xu, 2007). For example, in traditional employment obtaining education mode, college students study certain major and skills for engaging in the future occupation. Employment becomes their only aim for receiving education. We could say that college students study for employment. If so, college students are not active in positioning their occupation fate. In addition, the major and skills of college students are limited. Generally speaking, the course design of their specialty has strong parochialism. It is mainly show in that the course contents are repeated and old. Hence, the makings of students are single. Besides their specialties, their do not know other knowledge. But what the market economy demands are the compound talents, or multi-skill talents at the least. Students receiving employment obtaining education could be not adjusted to the social demands.

Although employment obtaining education has some defects, we could not say that we do not need employment obtaining education. What we should focus is how to perfect employment education reform and at the same time, how to bring in business starting education to complement the defects of employment obtaining education. Compared with traditional employment obtaining education, business starting education does not directly help students to find posts. Rather, it emphasizes to teach students to search for or create work posts. To implement business starting education is good for promoting the employment of higher vocational graduate (Yan, 2007). The advantages it has include: it is good for cultivating the personality, innovative thinking, business starting making and capacity. On site base, school sponsored factory and school-enterprise units provide students with stage to test their knowledge and capacity and to show their ability and could also help students to understand the characteristics of the industry, organizational structure and operation methods, increase their industry knowledge and master certain business starting process and promote students to generate business starting awareness and passion and fix business starting aim. It is also good for cultivating students to have tough working style and spirit. Through practice, students could feel the hardship in business starting. In their own business starting process, they could create a world that belongs to themselves. It is also helpful to cultivate the healthy business starting psychology of students. Through business starting education, students could be cultivated to think independently, to make decisions for themselves, to be good at communication and cooperation so that students could have a positive mood to treat their work and life pressure and could have healthy business starting psychology, promote self-adjustment, and keep good psychology so as to adjust to the changing society.

In all, higher vocational colleges shall, according to their actual situation, reasonably set up and start employment obtaining education and business starting education at the same time and make use of their advantage. Based on traditional employment obtaining education, schools shall boldly start business starting education, to supplement the two kinds of education modes.

## 4. How higher vocational colleges implement business starting education

### *4.1 Seize the chance and boldly develop business starting education*

Although the business starting education of China starts late and is in the period of trying and exploring, the development of it is rather rapid and it has accumulated certain experience. Considering the experience of developed countries, we could know that to start business starting education on students is a necessary choice for China's higher education. Seeing from professional education, compared with common universities, higher vocational colleges are more tend to skill cultivation, which makes a solid foundation for higher vocational schools to start business starting education. What is more, the business starting education of China is not fixed. Universities could, according to their actual conditions, explore their thoughts and find a most suitable way. Therefore, higher vocational colleges shall seize the change and boldly develop business starting education, update education concept, reform education methods, and change education mode so as to build brand, create feature, build fame and find a position in the reform development tide.

*4.2 Set up scientific and reasonable business starting education course system*

In China, although some universities have set up business starting education, the course system is not mature. But higher vocational colleges do. However, generally, higher vocational colleges have practice base and cooperation enterprises of long term relationship. They should make use of this advantage to create a series of course system. This course system shall focus on cultivating the business starting spirit and ability of students and set up teaching actives according to this focus, including enterprise management, risk investment, business starting financial basis and market investigation methods. At the same time, schools should teach students knowledge on finance, financing, tax, marketing, and business affairs and invite successful persons to give lectures and forums. Different from traditional theory education, business starting education shall enlarge the percentage that experiments, practice and social practice account for and encourage students to go out of classes and to touch and feel the society. Through the many out-of-class activities and social practices, we could enhance students' ability to obtain knowledge and think about problems. By this way, we could cultivate students into the compound talents who have wide vision, are active in innovation and dare to practice.

*4.3 Found a teaching team for business starting education*

Whether business starting education could be smoothly developed and popularized in China, professional teachers are important. At present, most of teachers of universities that start business starting education only have theory teaching experience and have no or lack for practice experience. Because they do not have business starting experience, what they teach is mostly theoretical knowledge and is not practice knowledge. It is easy to put business starting education into a form education. Universities could retain their schoolfellows that have successfully started business, social business starting models, enterprisers and experts who have experience in business starting to come to schools and give lectures on business starting and spread business starting concepts. At the same time, schools should also actively encourage their teachers to go to enterprises and experience themselves business starting process and accumulate their business starting experience. Also, schools could also form business starting leagues and invite professionals to become guide teachers. We could start to simulate business starting practice among students through activities.

In all, business starting education is a brand new education way. It is also a systematic project that involves the entire society and needs the support from society, government, schools, enterprises and families. In the social environment, the governments shall make preferential policies for business starting education and open green channel so as to help it to develop. Schools shall continuously explore the methods for business starting education, form scientific and reasonable course system, build a special teaching team, finally set up teachers base so as to optimize and reasonable share resources. Enterprises shall exert important functions in the practice state of business starting education. They shall not only provide excellent teachers, but all provide practice site for students. Families shall also need to support business starting education. For one hand, they should change their concepts. For another concept, they shall provide support for students. Besides, we could also actively learn the advanced experience and outcomes from foreign countries. By these ways, we could explore a road for the development of business starting education that suits China's situation.

**References**

Guo, Yankun. (2007). Discussion on business starting education in higher vocational colleges. *Commercial Economy.* (8):118-119.

Li, Xia. (2007). A probe into the business starting education of higher vocational students. *Scientific and Technological Information.* (28):173.

Xu, Wei. (2007). Thoughts on the transition of higher vocational colleges from employment obtaining education to business starting education. *The Road of Growth.* (2):1.

Yan, Xuan & Cao, Huaxia. (2007). Thoughts on the implementation of business starting education in higher vocational colleges. *Shanxi Higher School Social Science Paper.* (19)8:97-99.

International Education Studies
www.ccsenet.org/journal.html
Vol. 2, No. 1
February 2009

# China's Commitments in Education Services and Their Impact

Jian Xu
Intensive Language Training Centre
Sichuan University
24 Nanyiduan, Yihuanlu, Chengdu 610065, China
E-mail: xujian88@hotmail.com

**Abstract**

International trade in educational services has grown substantially over the past decades. Now it is a billion dollar industry including recruitment of international students, establishment of university campuses abroad, franchised provision and on line education. WTO requires each member nation to make its own schedule of commitments in education services, and to explain its limitations on market access and national treatment as well as other limitations. In the schedules of commitments, commitments are split into two sections: First, "horizontal" commitments which stipulate limitations that apply to all of the sectors included in the schedule; these often refer to a particular mode of supply, notably commercial presence and the presence of natural persons. Any evaluation of sector-specific commitments must therefore take the horizontal entries into account. Second, specific commitments which apply to trade in services in a particular sector or subsector are listed. This paper examines China's commitments in education services under the General Agreement on Trade in Services (GATS). It provides rough pictures about the impact of China's commitments on its education services.

**Keywords:** Educational services, Horizontal commitments, Specific commitments

## 1. China's commitments in education services are mainly as follows

### *1.1 Horizontal commitments*

#### 1.1.1 Definition of joint ventures

In China, foreign invested enterprises include wholly foreign-owned enterprises and joint venture enterprises. There are two types of joint venture enterprises: equity joint ventures and contractual joint ventures. And Sino-foreign joint ventures in education services are defined as contractual joint ventures.

#### 1.1.2 Representative offices and branches

Representative offices of foreign education service enterprises are permitted to be established in China, provided that they do not engage in any profit-making activities. And the establishment of branches by foreign education service enterprises is unbound.

#### 1.1.3 The use of land

The use of land by enterprises and individuals for the purpose of education services is limited to fifty years. This is the maximum years that Sino-foreign joint ventures in education services can have, equivalent to the treatment of China's domestic institutions in education services. The land in the People's Republic of China is State-owned. Before the establishment of Sino-foreign joint ventures in education services, the land use rights must be obtained. This is the basic requirement for foreign capitals to establish joint ventures in education services in China.

#### 1.1.4 Entry of personnel

Managers, executives and specialists defined as senior employees of a foreign education service corporation that has established a representative office in China, temporarily moving as intra-corporate transferees, shall be permitted entry for an initial stay of three years. Education services salespersons who are not based in China and receiving no remuneration from a source located within China, and who are engaged in activities related to representing a education service supplier for the purpose of negation for the sale of services of that supplier where such sales are not directly made to the general public and the salesperson is not engaged in supplying the service, shall be granted entry for up to ninety days.

### *1.2 Specific commitments*

#### 1.2.1 Scope of education services

Compulsory education and special education (such as military, police, political education and party school education,

etc.) are not included in education services.

1.2.2 Cross-border supply

Market access and national treatment for cross-border supply of education services are unbound. Thus China is left to decide by itself the extent of permitting education services like remote education and correspondence education, etc. to be rendered to Chinese people by foreign suppliers of education services.

1.2.3 Consumption abroad

There are no limitations on market access and national treatment for consumption abroad. So there are no restrictions on Chinese people's access to foreign education services.

1.2.4 Commercial presence

There are some limitations on market access for commercial presence. Foreign suppliers of education services are not permitted to establish wholly-owned schools or other kinds of educational institutions within the territory of China. They can establish joint schools with Chinese counter-part, with foreign majority ownership permitted. Limitations on national treatment for commercial presence are unbound.

1.2.5 Presence of natural persons

Limitations on market access for presence of natural persons are unbound except as indicated in horizontal commitments. And foreign individuals may enter into China to provide education services when invited or employed by Chinese schools and other education institutions. These individual must have a Bachelor's degree or above, and an appropriate professional title or certificate, with two years' or more related experiences.

China's commitments in education services took effect on 11$^{th}$ December 2001without any transition period and geographical limitation. However, since China reserves the approval power for foreign enterprises' access to relevant business, those commitments will not be implemented until relevant laws and regulations are officially promulgated. China also reserves the right to fix or guide the prices of education services by the government.

## 2. The impact of China's commitments in education services

China's commitments in education services upon its entry into WTO will have a major impact on its domestic education services. While facing many challenges, China's education service industry has also gained a rare opportunity to expand the absorption and introduction of foreign educational resources, and to speed up its development. Under the rules of WTO, foreign suppliers of education services are allowed to enter into China's education market, and China's education service institutions can also go out into the international education market to participate in the competition. Comprehensive and scientific analysis of the impact of China's commitments in education services will help us seize the opportunity and make the initiative. Judging from the commitments in education services made by China, we can see that the main impact is on the four modes of supply of education services—"Cross-border Supply, Consumption Abroad, Commercial Presence and Presence of Natural Persons".

### *2.1 Cross-border supply*

With respect to cross-border supply, many education materials from foreign suppliers of education services will enter China's education market, including various types of teaching books, audio-video teaching and learning materials, teaching equipment and computer teaching software. This will have a strong impact on China's textbook publishing industry, audio-video publishing industry, teaching equipment manufacturing enterprises and the software industry. They will have to face the direct competition from foreign education services. At present, China's education market has been awash with foreign teaching and learning materials, advanced foreign audio-visual equipment and laboratory equipment, which should arouse our attention. On the other hand, although theoretically speaking China can decide by itself the extent of permitting education services like remote education and correspondence education, etc. to be rendered to Chinese people by foreign suppliers of education services because China's has made no commitments on market access and national treatment for cross-border supply, the control and management of foreign education service suppliers who manage to supply Chinese students with education services through computer networks or long-distance education is still a serious problem facing China's education authorities at different levels. This is because that with the rapid development of information technology, it is very easy for foreign suppliers of education services to provide distance education services across borders.

### *2.2 Consumption abroad*

With respect to consumption abroad, China has no limitations on market access and national treatment. This means that foreign suppliers of education services will strengthen their contention for China's education market, trying to attract more Chinese students to their countries to receive education services. Since 1999, education service suppliers from the United Kingdom, Australia, New Zealand, Canada, the Netherlands and other countries have held education exhibitions in China's metropolises like Beijing, Shanghai, Guangzhou, Shenzhen, Xi'an, Shenyang, Dalian, Wuhan,

Qingdao, Chengdu and other cities, attracting a large number of Chinese students and their parents. This has played a very good promotional role. There are no limits from Chinese government on Chinese citizens' going abroad to study, as long as they conform to the legal procedure, so there will be more Chinese citizens studying abroad. In 2007, there were more than 150,000 Chinese people studying abroad, of whom 30,008 Chinese students obtained U.S.visas. According to statistics, each Chinese student spends on average $30,000 in the United States each year. Therefore, in 2007, Chinese students studying in the United States spent 1.14 billion U.S dollars in this country.

On one hand, massive Chinese students' studying abroad has made China suffer from loss of talents and outflow of capital and has had a great impact on China's education services. To China, this is a real tough challenge. On the other hand, China's suppliers of education services can also enter into international education market to participate in the competition and recruit overseas students. Any foreigners can come to China to receive education services so long as he or she meets the admission standards of China's education service institutions and does not violate the relevant laws of China. In the past, only a few Chinese universities and colleges were authorized by China's Ministry of Education to provide education services to foreign students. Now China' government has committed to lift restrictions on cross-border consumption. The number of Chinese universities and colleges that can recruit foreign students is growing very fast. At the end of December 2006, there were a total of 162,695 foreign students from 184 countries studying in 519 universities, colleges and research institutions in China. The situation is believed to appear soon that various Chinese suppliers of education services compete with one another to snatch foreign students.

*2.3 Commercial presence*

With respect to commercial presence, on market access, China doesn't allow foreign suppliers of education services to establish wholly-owned schools or other kinds of educational institutions within the territory of China. However, foreign suppliers of education services can establish joint schools with Chinese counter-part, with foreign majority ownership permitted. Limitations on national treatment for commercial presence are unbound. They can set up joint schools with Chinese education service institutions either through introduction of foreign educational resources or in the form of capital investment. But limitations on national treatment for commercial presence in China are unbound. With the rapid development of Chinese economy, national demand for education is increasing steadily. A lot of foreign suppliers of education services have entered China, trying to seize China's education market. In March 2003, "Regulations on Sino-foreign joint schools" was officially promulgated by Chinese government, further regulating the activities of Sino-foreign joint schools. As early as in 2004, there had been 165 Sino-foreign joint schools that could award foreign degrees. At present, there have been 1300 Sino-foreign joint schools and programmes. Some overseas examination bodies are also showing strong interest in China's education market. In1982, TOEFL test and GRE test entered China. Afterwards, Japanese Language Proficiency Test (JPT), Business English Certificate Examination (BEC), International English Language Test System (IELTS), and Test of English for International Communication (TOEIC) have swarmed into China. In addition, in recent years, some foreign multinational companies have entered China in form of vocational training. These institutions are very competitive in terms of software and hardware. And because of their international background, they are very attractive to Chinese students in the age of economic globalization. Chinese suppliers of education services will have to face the tough competition and challenge from these foreign education service institutions.

*2.4 Presence of natural person*

With respect to presence of natural person, China has made no commitments on market access. Only at the invitation of Chinese universities and other suppliers of education services, can foreign individuals enter into China as a natural person to provide education services. And this will not have a serious impact on China's domestic education services. These foreign individuals will help China train a large number of high-level professionals, and will play a positive and facilitating role in improving the quality of China's education services, thus help China develop education services. In the future, there will be a substantial increase in the international flow of individuals among the suppliers of education services of both China and foreign countries. And the exchange between Chinese education service institutions and foreign education service institutions will also increase, so Chinese education service institutions will become more and more internationalized. On one hand, this will help Chinese education service institutions employ more talented personnels. On the other hand, the present employees of Chinese education service institutions will have to face a higher demand on their personal qualities.

**End:**

In short, Horizontal commitments are the basic commitments which apply to all sectors of education services. Specific commitments are further commitments based on the horizontal commitments with respect to specific sectors of education services. They are also the clarification of the specific commitments made with respect to the fore-mentioned four modes of supply of education services. GATS uses affirmative way to make commitments. Therefore, only the commitments which are listed in the schedules of commitments need to be carried out. In the sectors of education services with respect to which a WTO member nation has not made any commitments, this member nation can decide

independently whether to impose any limitations or not. With China's entry into WTO, and because China has made commitments in education services, China's education market has been open to the outside world. This will inevitably cause the optimal allocation of educational resources, as China's market economy has gradually been established and perfected, bringing with it a unprecedented development to China's education services. On the other hand, China's suppliers of education services can also enter into international education market to participate in the competition and recruit overseas students. Any foreigners can come to China to receive education services so long as he or she meets the admission standards of China's education service institutions and does not violate the relevant laws of China. As long as we clearly see and timely seize the opportunities, China's education services will get a rapid development.

**References**

"MEMBER INFORMATION China and the WTO, 2008, [Online] available: http://www.wto.org/english/the WTO_e/countries_e/china_e.htm (September 15th 2008).

"A Record High--The number of Chinese studying abroad has surpassed 150,000 in 2007", 2008, [Online] available http://news.xinhuanet.com/politics/2008-03/01/content_7697897.htm (March 1st 2008).

"2006 The Number of Foreign Students Studying in China Has Reached a Record High", 2007, [online] available at: http://www.csc.edu.cn/gb/readarticle/readarticle.asp?articleid=2560 (June 4th 2007).

Liu, Wei. (2006). "Look Ahead into Sino-Foreign Joint Schools under the Background of Globalization". *Education in China,* February 5, 2006.

International Education Studies
www.ccsenet.org/journal.html
Vol. 2, No. 1
February 2009

# Effective Poster Teaching Strategy towards Risk in Studying Fraud

Rozainun Haji Abdul Aziz
Faculty of Accountancy
Universiti Teknologi MARA
40450 Shah Alam, Selangor. Malaysia
Tel: 60-19-221 5760 E-mail: rozainun@salam.uitm.edu.my

Kamaruzaman Jusoff (Corresponding author)
Yale University, School of Forestry & Environmental Studies
205 Prospect St, New Haven, CT 06511-2104, USA
Tel: 203-676-7761 E-mail: jusoff.kamaruzaman@yale.edu

**Abstract**

The aim of this paper is to present an alternative method and strategy in teaching and learning for the higher institution of learning. Poster presentation is an approach to introduce and deliver a lecture to create a different mood enticed by the visuals given. This poster presents a new approach of creativity as a method of teaching and learning in a classroom. The course sampled was risk management. The whole idea is to make the teaching presentation interesting by using visuals i.e. an instructive poster. Each 'point' on the poster means a thousand words. The presentation shows how risk management is encompassed by knowledge, understanding and controls of forensic accounting and financial criminology. It is self-explanatory and acts as an animation in itself. Risk management is seen to be an umbrella, shielding away entities from the unpredictable environment and weather i.e. malpractices, corporate failures and frauds which are now rampant across the world. A formal education and an academic qualification are now a necessity to combat these hitches. This is accomplished by exposing the 'gate of thumbs' as labeled and arranged under the umbrella, signifying a study of forensic accounting and financial criminology through various courses. Research is then undertaken to express and instigate feasible topic as a test of further understanding. As shown on the poster, 'with a command of English to report, if '…it takes a thief…' then in this study, it takes one function to deter fraud, i.e. risk management; and three levels to hook fraud, namely forensic accounting, varied courses related plus a level of research work.

**Keywords:** Poster presentation, Risk management, Fraud, Energy

## 1. Introduction

Risk 'is defined here as uncertainty concerning the occurrence of a loss' (Rejda, 2008). In managing risk, organizations and entities including individuals should capitalize on generating potentials to bring greater income each year. However, they should monitor and lessen the risk of losses. In this paper, the subject matter stems from a macro-picture of the consequence of Enron case in 2001, i.e. fraud and the aftermath. While fraud is a form of deception that is committed for personal gain, in his/her capacity of a trusted employee in an organisation. It is also a crime and a violation of the law and regarded as an occupational hazard. To date, fraud cases are rampant though controls and governance are in place with past examples of Enron in 2001, Transmile in 2006, and Tat Sang in 2001, to name a few. The issue of red flags and whistle-blowing is debated in forensic literature in the wake of minimising if not resolving fraud cases.

Today's corporate scenario, despite regulations and commissions set in place, fraud is still inevitable. The scene of financial scandals and mini spates of Enron's seem to be rampant, a growing phenomenon across the world. Academicians owe the responsibility to educate and mould students to perform with ethical standards and integrity when they serve the practice. Yet, this is still not good enough. The way we convey and deliver our lectures influence how students (or audience) gauge our messages and facts to them. The traditional method of chalk and board, also with the students sitting back and listening to the teachers in front has paved way to new and improved method of teaching and learning (Newbrey & Baltezore, 2006). The use of poster presentation on the areas that a student must know, are

now geared towards creating an impact. By using visuals through a poster presentation, the pictures, the colours, the wordings, the layout and the art of presenting will give more impact in alerting the students encouragingly. Akister *et al.* (2000) encouraged innovation in teaching and learning. Creativity in poster is another key point that must be noted as stressed by Martin (1996). 'Photos, research artifacts, quotes, graphical objects and clip art' are among those visuals that are thought having an impact to bring interest to the audience and participants. Denzine (1999) believed that a 'poster session…allows for audience participation and interactive conversation'. The level of confidence is also lifted as they see and depict the potential in them to show photographically thus displaying the creativity part in them. When one sees everything on a 'piece of land', which is clear and directed, the passion and understanding develop differently far better than reading and flipping through the pages of a textbook and articles.

Posters have since been used as educational strategy in several studies. According to Denzine (1999), poster session allows participation by the audience by communicating with one another. The poster can be used to develop vital research literacy skills and this in turn serves the future professional education. In addition, the extent to which a poster is used as a teaching resource can create an impact to students in a class. Poster presentations will also encourage an interactive discussion. This will induce a conducive learning environment that will make the students feel at ease to participate naturally in a 'verbal dialogue' as they see the pictures and animation moved by the poster itself. Hence, this leads to an alternative way for the students to get together and learn from one another. It is in this way that they learn about each other's work. Therefore, a shared and a more conducive learning environment are created. What are important to be presented on the poster is the key points of the area to learn. An outline to guide in developing a poster will need a careful study of content and knowledge of the audience needs. Sisak (1997), who felt like a salesperson attempting hard to 'sell' something to her students, found poster presentation as a strategic learning technique for the students. She in turn, asked her students to do a poster presentation themselves. The results showed that students were more enthusiastic and understood better with this approach. He insisted that the poster be supported with a reference list to facilitate sourcing for further information by audience and participants. Since risk is an important element at work, at the learning level, we approach a different method to make the students realize the significance of identifying and managing risks in practice. Risk management is "a scientific approach to the problem of pure risk, which results to either a 'loss' or 'no loss' (Vaughan, 1997). This is crucial to an organization as business continuity and growth endure operations.

The purpose of risk management in our study is to identify and deal with fraud. Risk management can be classified into pre-loss objectives and post-loss objectives. The former involves preparing for potential losses in the most cost-effective way, console any worry and meet any legal requirements (safety devices and protection). Post-loss objectives incorporate continued existence of a business, keep running the business, stabilize earnings and maintain growth of the business (Fraser & Henry, 2007). The aim of this paper is therefore to present an alternative method and strategy in teaching and learning for the higher institution of learning. Poster presentation is an approach that can be used to deliver a lecture to create a different mood enticed by the visuals given. We use 'risk management' to explain the mechanism of the presentation. This topic is important to our forensic students in understanding fraud and implementing techniques to combat risks, particularly to business and government departments. Students should understand the predicament of not managing risks in practice; total loss, sudden loss, catastrophes, sufferings and operation halts, to name a few. Risk is not just about threats and dangers at work, but it includes jeopardy with health and safety, work environment, employees' welfare and organizational issues as a whole. In risk management, a system is in place to control and monitor activities and checkpoints; this range from the workplace to employees and procedures to hierarchy of management; In other words, 100% check and everything about the organization. The paper shows how risk management is encompassed by knowledge, understanding and controls of forensic accounting and financial criminology. There are three important elements in managing risks, namely knowledge with skills, mechanism of control and monitoring, and last but not least, the human.

## 2. Methodology

The poster presentation was based on the literature search considering Anderson's theory (Anderson, 1990) and Ridley's concept analysis (Ridley, 1997) as an interactive teaching tool. The methodology of this type of teaching and learning is presented via a poster as given in Figure1. The poster is presented as a test to two groups of master's degree students and an ad-hoc interview approach is adopted to get immediate response and reaction from them. The students are made to feel at ease as they are the ones undergoing the course and sitting for the exams. So, understanding and appreciating the objective of the poster are crucial and they should be willing to share their views, after explaining that the instructor is interested to improve the poster. As the students' reflection is required, their subjective judgment and valuation as well opinions were expresses since they are important in the analysis and assessment of effectiveness of the poster (Yin, 2004). The background of the respondents into age, working experience and industry they are attached to be also established. We take on board suggestions by Martin (1996) suggestions to be creative and artistic in presenting the visuals were taken into considerations. Colours Newbrey & Baltizore (2006) were used to distract viewers from drifting away and not being able to concentrate in class. Graphics were applied to inter-relate the visual

items so that the right messages were sent to the students so that they too uncover facts. A suggestion in setting the layout so that the poster tells us the story in a self-mind-mapping approach by Tileston (2007) were adhered to. Rockwell and Record's pointers (Rockwell, 2007) who conveyed concerns with 'low-achieving students' and' learners with diverse needs' were considered while teaching materials to make best use of instructions were prepared. In this case, one of the teaching materials is the poster. Hence the poster should reach out and facilitate this type of group too. The learning and teaching strategies reported by Kameenui & Camine (1998) should reflect on 'age groups, content areas, students' socioeconomic status, cultural backgrounds, and the presence or absence of disabilities'. Academic growth and advancement materializes from 'accessing prior knowledge, clearly defining major concepts, carefully integrating content across and within disciplines, providing mediated scaffolding, explicitly teaching conspicuous strategies and engaging students in judicious review'. These considerations are also taken while the poster in Figure 1 was designed. It can be seen that the simple poster shows an umbrella shielding the management from a climate of hazards, i.e. the umbrella of risk management. Then, a 'risk management program' is required in any corporate company and even in any government organization (Redja, 2008). The weather from above the umbrella symbolizes the turbulence in the environment that will influence the organization. The environment is symbolic in that surrounding an organization are external and internal factors such as politics, culture, economic situation, market reaction, i.e. the 'weather' in the poster, that will have a bearing onto the organisation's operations. These factors might have positive and/or negative implications depending on the reaction of management and should be analysed perhaps using SWOT analysis. At this stage, since the focus is on fraud, management should pull in factors influencing the occurrence of fraud and profiling fraudsters by studying past cases, law, guidelines, standards and other theoretical in place by the master's degree.

**<<Figure 1 – A poster presentation of "A visual reflection towards risk in studying fraud">>**

In the process of acquiring knowledge about risk management, various courses were taken by the students which include law, auditing, investigations, taxation, accounting, to name a few were all listed and line-up under the umbrella. With all these knowledge, students were equipped to live up to practice needs in confronting risks, fraud and company in distress. It is to believed that this 3 levels are required to 'hook fraud' and 1 effective function to deter fraud.

The poster was tested and evaluated on students in two classes; the intention of this study was just to get the students first impression of the poster presentation aimed at assessing effectiveness of poster at a glance. This poster was presented twice in a class of 27 students and then 13 students in the semester of June – November 2007. These students were pursuing for a masters degree 'Master in Forensic Accounting and Financial Criminology' at the Faculty of Accountancy, Universiti Teknologi MARA, Shah Alam. The class was based on the number of students who registered for this course for the current semester. The demographic background of the students subjected to the poster presentation was later described.

## 3. Results and discussion

There were a total of 40 students that were put to test on the first day of class; 18 female while 25 male. Majority has working experience, most of them taking the masters program part-time, while 13 are full-time students. Their age ranges between 23 – 50 years old. A handful of them have experienced work related to forensic, technical and investigative in nature which the program and risk management course are appropriate for them. Majority are with the government sector whilst the rest are with the corporate; these include IRB, ACA, Insolvency department, AG's office, insurance company, investigations company, customs, regulators, central bank, GLC's and own practice firm. Majority of the students have at least 5-10 years of working experience.

The students' reflection indicates that the poster is interesting and captures their attention to look further and learn with impact, a finding that concurs with that reported by Denzine (1999) and Sisak (1997). Creativity is reflected and found to be impressive by the students. It has been discovered that students prefer some interaction rather than listening only, this is line with a study by Chute *et al.* (1983). The poster is also a form of communication between the instructor and the students which is in line with a recommendation by Newbrey and Baltezore (2006) for style and quality of the presentation in order to make an impact to the students. The students could expand their thoughts and explain the rationale and principles after the poster was presented. They are able to reflect and relate to the references and articles used in class. The poster presentation also spilled over some ideas to the students to make laminated bookmarks based on the poster; hence, keep them reminded as they use them to mark in their books. The poster maximizes the visuals possible to achieve its potential. Though guidance encourages the beginning of the explanation of the poster, students could relate to the visuals better afterwards. The students could also practice mind-map, not just with issues that we cover in class for risk management but they could also apply this accordingly onto their other courses. The message grasped from the visuals seems to be received better.

An alternative strategy to teaching and learning in a class, the poster serves the purpose of explaining the macro-level of understanding risk management so that students understand the idea that should go beyond classroom onto practice. The message is deep in that students will be able to see from the picture the rationale of learning and going through the

various courses prepared for them in order to understand risk management as a whole. The poster has also led teaching and learning into watching movies of Enron and catch me if you can in order to understand the criminal minds and feel the consequences collected by the these movies. Students also suggested watching an ASTRO Program on Channel 732 on criminal investigations (CI). In addition, this shows were observed and reflected onto the poster and further manages to discuss issues in better perspectives. The courses provided in the program as seen from the poster, are comprehensive but still integrity, honesty and religion do have a big influence. These qualities with the 'energy', a keyword provided at the end of our abstract, is realised through the active participation of the both the instructor and the students to give ideas during discussions. This would make learning and teaching more encouraging and interesting, thereafter effective.

This study and the result of the poster presentation in class, face several limitations. As highlighted by Denzine (1999), it was found out that it is not that easy to gauge poster presentation while at the same time do verbal dialogue with the audience. Body language, eye contact and controlling the audience also influence this learning strategy. A level of creativity is needed to paint the thousand words in just a few visuals. Practice might do it but a snapshot to summarise all that is presented on a poster can be quite difficult. A direct comment might not be well received if the poster is not presented appropriately. Some readers might misunderstood and interpret wrongly so they too need to be involved in making posters. Nevertheless, reading on their part is also crucial before they can easily understand the poster. Therefore, a compromise and negotiation should take place between the instructor and the students which may not be easy to trade off.

## 4. Conclusions

It can be seen from the above that teaching and learning strategies can be further explored to make them more interesting to the students. Alternatives along the lines of art, creativity, visuals, photographs and even sound would definitely make a difference to attract the attention of the students and make presentations more impressive. Using the various literature which presented issues in poster presentations have given light for the poster to advance and be applied onto fraternity, one that is social science and the other one that is accounting-based and forensic, in nature. It can be clearly seen that there are various debates from the literature about poster presentation and now an assessment can be deduced as to how it supports the delivery of lecture to Universiti Teknologi MARA accounting students. The exercise will help students and instructors develop skills that go beyond sitting behind the desk, writing notes and participate in a discussion group; but rather rise up to making learning and teaching more interesting at the onset. More advantages is evident in presenting posters and the debate given in most literature cited earlier can be cross-referenced. This paper contributes to application of poster presentation onto another discipline, and that other disciplines should also take up this new alternative teaching and learning strategy. It is now timely that instructors are more proactive and that they should explore the possibility of extending and innovating from their current method of teaching and learning. As redemption on the part of the students, it is hoped they are also inspired to use and create posters on their own, as warranted by various literature

It is recommended in the future that poster presentation be applied onto every lecture, especially on the introduction day of a lecture so that students can grasp the whole picture, i.e. the macro level, of the program as a whole. If the poster is made visible in class, students are reminded 'photographically'. While it is significant for instructors to present effective lecture, students should be given the opportunity to also learn effectively too from the poster presentation.

## References

Akister, J., Bannon, A., & Mullencer-Lock, H. (2000). Poster presentations in social work education assessment: A case study. Innovations in Education and Training International, 37(3): 229. Retrieved October 17, 2007, from ProQuest Education Journals database. (Document ID: 62272365).

Anderson, J, R. (1990). Cognitive Psychology and its implications. 3rd Edition. New York.

Chute, D.L. & Bank, B. (1983). Clin. Psychopharmacol. 10(2): 99-100.

Denzine, G.M (1999). An example of innovative teaching: Preparing graduate students for poster presentations. Journal of College Student Development, 40(1): 91. Retrieved October 17, 2007, from ProQuest Education Journals database. (Document ID: 38144790).

Fraser. I. & Henry, W. (2007) Embedding risk management: structures and approaches. *Managerial Auditing Journal.* 22 (24): 392-409.

Kameenui, E. J., & D. W. Camine, (1998). Effective teaching strategies that accommodate diverse learners. Upper Saddle River, NJ: Prentice Hall.

Martin, D.W. (1996). Doing experimental research. 4th edition. New York: Brooks/Cole.

Newbrey, M.G & J.M Baltezore (2006). Poster Presentations: Conceptualizing, Constructing & Critiquing The American Biology Teacher. Washington: Nov/Dec Vol. 68, Iss. 9; pg. 550, 5 pgs.

Rejda, G. E. (2008). *Principles of Risk Management and Insurance*. 10th Edition. Pearson. Addison Wesley. Pearson International Edition.

Ridley, R. T. (1997). Interactive Teaching: A Concept Analysis. *Journal of Nursing Education.* Thorofare: May 2007. 46(5): 203-204.

Rockwell, S. (2007). Kappa Delta Pi Record. Working Smarter, Not Harder: Reaching the Tough to Teach. Indianapolis: Fall 2007. 44 (1): 8-13.

Sisak, M.E. (1997). Poster sessions as a learning technique. Journal of Chemical Education, 74(9), 1065-1067. Retrieved October 17, 2007, from ProQuest Education Journals database. (Document ID: 13973310).

Tileston, D. W. 2007. Teaching strategies for active learning: Five essentials for your teaching plan. Thousand Oaks, CA: Corwin Press.

Yin, R. K (2004). *Qualitative Method and Case Study.* Sage publications. U.S.A.

Vaughan, E. J. (1997). *Risk Management,* John Wiley & Sons, U.S.A.

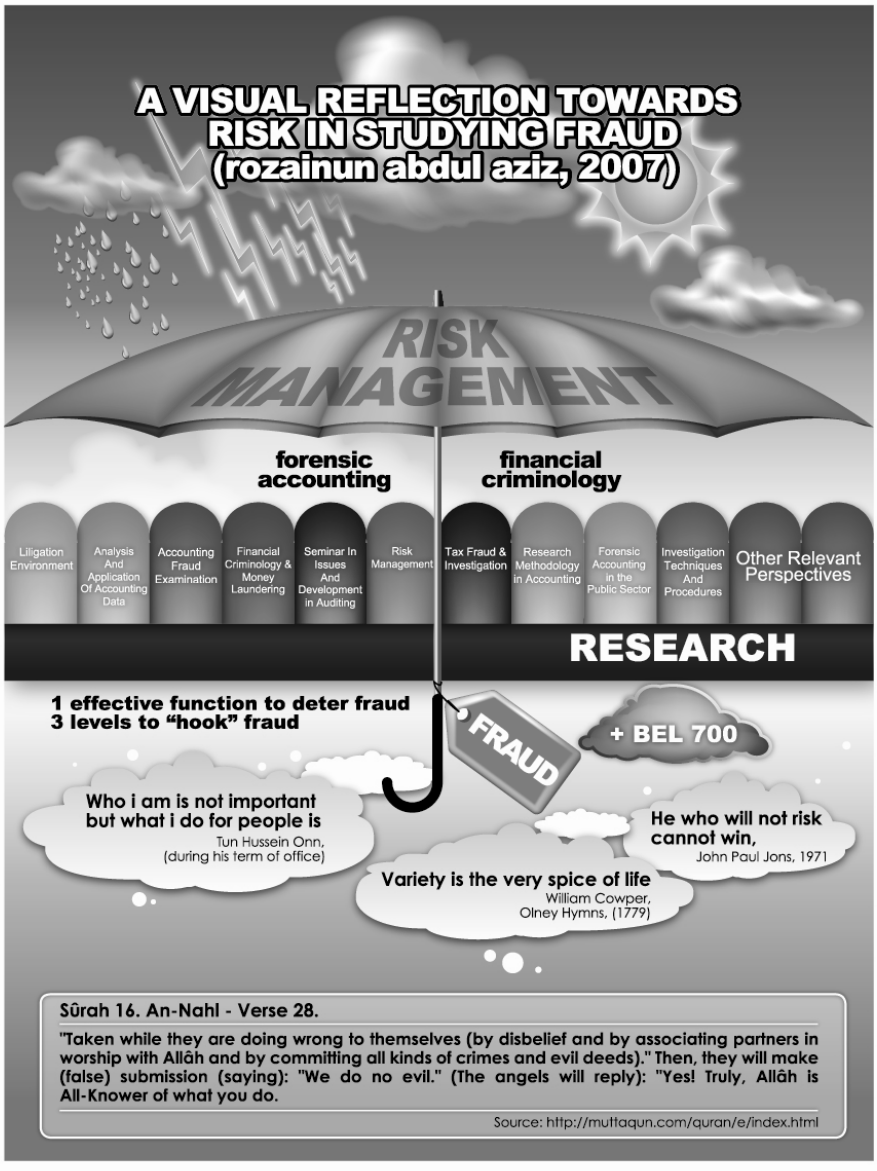


Figure 1.

International Education Studies
www.ccsenet.org/journal.html
Vol. 2, No. 1
February 2009

# A Contrastive Study of Cultural Diversity of Learning Styles between China and the United States

Hong Jian
Language and Literature Department
Xishuangbanna Vocational & Technical Institute
Jinghong 666100, China
Tel: 86-691-662-0089 E-mail: ruthy123@126. com

**Abstract**

This paper makes a contrastive study of learning styles between China and the U.S. from five aspects and recognizes that the differences are due to the influence of cultural diversity such as individualism and collectivism, Confucianism, utilitarianism and pragmatism etc.

**Keywords:** Learning styles, Cultural diversity, Differences, Influence

## 1. Introduction

How we learn is influenced by culture. As cultures are different, it's natural to expect differences in the styles of learning in different countries. According to Bennet's (1996) definition, "A learning style is a particular way that an individual receives and processes information." Another definition is cited from the paper "knowing and learning" in a book called *Interpreting Cultural Differences* (Mclaren, 1998: 158), "Learning style is the way in which human beings concentrate on, absorb, process and retain new and difficult information." What's more, most people learn in a variety of ways. The most common ways for any individual will depend on the culture. So here the writer will make a contrastive study of the cultural diversity of learning styles between China and the U.S. respectively.

## 2. A Contrastive study of learning styles between China and the U.S.

### *2.1 'Field-dependent' v.s 'field-independent'*

Chinese culture as a high-context, traditional, collectivistic society is field-dependent. In such culture any interaction resulting in discord means one or all lose 'face', so individuals have a more global perspective their surroundings; they are more dependent to the social field. That is why Chinese students prefer to work with others, seek guidance from the teacher, and receive rewards based on group relations. In contrast, the United States as a low-context, highly industrialized, individualistic society is predominantly field-independent, the students in it "tend to more analytical and more comfortably focus on impersonal, abstract aspects of stimuli in the environment (Gollnik & Chinn, 1994)". So the students in the U.S. prefer to work independently, are task oriented, and prefer rewards based on individual competition.

### *2.2 Teacher-centered v.s. students-centered*

In Chinese classroom teaching should be clearly structured, and information-packed. Some of students even consider discussion as a waste of precious time that ought to be used by the teacher to deliver intellectual treasures to the students. It's a typical teacher-oriented mode. The teacher mostly dominates the class and generalizes the key points of the content according to the concrete curriculum standards and requirements of examinations related to specific fields and levels of the students. By contrast, In American classrooms, experiential learning, problem solving, case studies, and participatory teaching methods are practiced. "Students learn how to solve problems and reach conclusion by trail and error. They practice over and over, expecting and accepting mistakes, until they become skilled"(cited in Di,2002:181). In the university, a typical strategy of American teachers is to lecture on some aspects of their course subject but expect other aspects to be covered by the assigned readings. Chinese students are not used to this kind of assignment.

### *2.3 Indirect communication v.s. direct communication*

Culture influences the degree to which communication in the classroom is direct or indirect. Chinese willingly accept the role of the attentive listeners, the students are not used to making comments or asking questions in class. They won't volunteer when they obviously know the answer. It's very common for them to keep quiet and never ask the teacher questions in class, let alone interrupt with an opinion, but as soon as the class ends, they will cluster the teacher's desk

to ask their questions one after one. They would also offer their suggestions about the lesson at this time. Whereas, American students usually enjoy the act of speaking and assume the role of the speakers. The teachers generally hope to encourage informal discussions and debates in their classes. Furthermore, critical thinking, judgmental questioning, and active initiation of discussion are expected from students in the American school system. Independence and participatory learning is much more encouraged in classes.

"The uneasiness that Chinese often experience in public speaking not only is due to a lack of training and practice but also is a result of heightened concern for relational outcomes" (Gao & Ting-Toomey, 1998:83). In ancient China, *The Analects of Confucius* give us the first two approved attitudes for students' submission to authority-parents, elders and superiors and submission to the mores of society. One of the famous saying of Confucius is "Let the emperor be an emperor, the subject a subject, the father a father, and the son a son." The basic rule is "Honor the hierarchy first, your vision for truth second". The superior must always be accorded face, so one first agrees with what he or (occasionally) she has said. Only then is difference voiced, if possible through a third party, and in private"( cited in Mclaren,1998:166).

*2.4 Theory-oriented v.s. problem-oriented*

In China, the transmission of knowledge is oriented more toward theory than toward practice or application, so memorization of details and facts is important. As Chinese students in a conformist educational system, they are happier with memorizing and reproducing information than with problem-oriented and more active teaching strategies. They expect lecturers to teach them everything they expected to know. They have little desire to discover for themselves. In contrast, in the United States, the emphasis is on knowing where to finds facts and how to use them creatively. Teachers reward those who ask questions.

*2.5 Synthetic thinking v.s. analytical thinking*

It is said that Chinese students more often employ synthetic thinking patterns. They tend to synthesize elements into a unit, with the emphasis on the "whole". In addition, "Stewart (cited in Hu, 2004:464) notices that the Chinese do not analyze a topic divisively by breaking it down into parts and their thinking is based upon concrete conceptions weighted with judgment and lacking the precision and abstraction of Western concept." He concludes, "The Chinese are more likely to think by means of analogies and to make greater use of metaphors and similes. In contrast, Americans' view is that knowledge, a product of thought, is an understanding of cause and effect, the result of thought which is linear, logical and analytic. "They tend to analyze and dissect things into elements in order to understand them properly. Their emphasis is upon the parts rather than upon the whole of things" (Zhang, 2003:77).

**3. Recognizing the influence of cultural diversity**

*3.1 The influence of collectivism and individualism*

Chinese culture is believed to be collectivism-oriented where the basic unit of the society is the family (collective), not the individual. Each person is part of a group; children learn to think in terms of "we", so it sometimes referred to as a collective or "we" culture (Zhang, 2003:53-54). Off all the American value, individualism is probably the most basic. Benjanmin Frankinlin epitomized early American individualism in his writings and suggested "God helps those who help themselves" (cited in Di, 2002:78). In individualist cultures, from birth onwards, children are encouraged to have wants and views of their own and to express them. If they disagree with parents or teachers they say so and from the disagreement a solution is reached. Because children learn to think in terms of "I", some people refer to the American culture as "I" culture, as individuals are emphasized.

A significant difference exists in educational situations in individualist and collectivist cultures. The pursuit of individual rights and interests is considered utterly legitimate. Self-actualization and the maximal realization of individual potential are supreme aims in life. Collectivistic cultures, in contrast, require that individuals fit into the group. A key belief of people in collectivistic cultures is that the smallest unit of survival is the collective .In many situations people in collectivist cultures have internalized the norms of their collectives so completely that there is no such things as a condition between group goals and personal goals. The children in collectivist homes and schools are expected to take their opinions from others, and to go along with what is best for the other reward for excellence goes to the group and responsibility for performance is owned to the group. Even the choice of study and occupation is a group decision rather than a personal one. Interdependence is always important and go-between is relied upon. The relationship matters more than success.

*3.2 The influence of the educational system*

Most cultures that have formed educational systems teach much the same content, but educational differences can be found in what a culture emphasizes and how the content is taught. In Chinese educational objectives, political-functional orientation is prominent. At present, because the education system is exam-oriented the exam results play a key role in evaluating the academic achievements for students. People over-emphasize the students' scores

ignoring "learning by doing" and over-emphasize theory rather practice. Now China has acknowledged that quality-oriented education is a universal purpose of education and is undertaking a transformation to the proper ways for the younger generation.

The American educational system is based on the idea that as many people as possible should have access to as much education as possible. Free public schools supported by taxes were established in the early days of the 20th century, with each state responsible for organizing its own educational system. All American states have compulsory attendance laws that require young to attend school until a specified age from 16-18. Generally speaking, the goal of American educational system is to teach children how to learn and to help them reach their maximum potential.

*3.3 The influence of the Confucianism*

Confucius was one of the greatest philosophers and educators in ancient China and his philosophy has been called Confucianism. "Humanity" is the core of the Confucianism which had great influence on Chinese society one generation after another. *"The whole of his educational process aimed at the production of the way-a mode of life which reflects and expresses the virtue and harmony that humanity is the natural moral of man. It's the nature character of man, without this quality, a man is not a real man. So he taught people to love each other, to help each other, then to behave properly. These contain the secrets of a harmonious and peaceful state"* (Hu, 2006:284). As an educator, Confucius had summarized much precious educational experience from long-year teaching career, such as "insatiable desire to learn, tireless in teaching", "setting a good example for students", "teaching without distinction", "Reading without thinking results in bewilder man; thinking without reading results in peril", "Knowing something is not as good as liking something, liking something is not as good as taking pleasure in something" and so on. These teaching ideas of Confucius play a significant role in guiding out teaching nowadays. Chinese proverb "Give a man a fish and you feed him for a day. Teach a man to fish and you feed him for a lifetime" shows us the significance of the Confucius' enlightening reflection.

*3.4 The influence of the utilitarianism and pragmatism*

The Americans; definition of success is largely one of acquiring wealth and a high material standard of living. Therefore, Americans have valued education for its monetary value. On the other hand, in helping to educate a student for adult work and adult life American schools strive, above all, to be practical. "John Dewey's philosophy, which states that the only worthwhile knowledge is knowledge that can be used, has a great effect on American educators. They don't want to teach useless facts which will quickly be forgotten; they want to teach attitudes and skills which will help produce useful, responsible, happy adults."(Luo, 1997:98) Dewey also influenced teaching techniques. He believed "Education is life" and stressed, "children as educational enter" Education must be meaningful and children learn best by doing, thus science is taught largely through student experimentation.

## 4. Conclusion

As famous saying goes like that "Every coin has two sides". Cross (cited in Mclaren, 1998:172), in discussing individual differences rather than cultural differences, plainly states," No particular learning style is in itself superior to another". Due to cultural diversity, Americans evaluate individualist culture and emphasizes the pragmatism of the knowledge, but to some extent, the result of teaching and learning styles lead to lack of systematical knowledge, In contrast, owing to the deep-rooted influence of Confucianism for thousands of years. Harmony, unity, and hierarchy are important considerations for Chinese students in the process of learning. Its teaching put more emphasis on transmission of systematical knowledge, ignoring the cultivation of creativity and innovation.

As we all know "Rome wasn't built in a day". Actually, in China we have taken some treasures to promote teaching methods and strategies in teaching reforms and have made some progress in them. The teachers are feeling their ways to carry out the essence of the qualified-oriented education in China. They are trying to transfer from teacher-centered mode to students-centered mode in teaching process. They should positively guide their students in choosing appropriate learning styles. Moreover, since "All roads lead to Rome", we can't follow suit totally and the reforms of learning styles in China can be carried out in the improving educational system by learning strong points from others but rejecting their weakness and integrate both academic and practice for children.

## References

Bennet, Milton J. (1986). "Towards Ethno-relativism: A Developmental Model for Intercultural Sensitivity." In *Cross Cultural Orientation: New Conceptualizations and Application,* edited by R. Michael.Lanham, MD: University Press of America.

Di, Y.H. (2002). *American Culture.* Jilin Science & Technology Press. pp166-183.

Gao, G. and Ting-Toomey, S**. (**1998). *Communicating effectively with the Chinese.* SAGE Publications. pp69-85.

Gollnik, D.M and Chinn, P.C.. (1994). Multicultural Education in a Pluralistic Society. New York: Macmillan.

Hu, D.Y. (2004). The Implications of Individualist and Collectivist Perception China's EFLT. *International Journal of Diversity in organizations, Communities and Nations,* 4: 464.

Hu, D.Y. ( 2006). Tracking Some Educational Issues of China and the United States. In Hu, D.Y.(Eds.) **,** *the Exploration of Modern Teaching Theories and Methods in China's EFLT.* Yunnan National Press .p284.

Luo, X.M. (1997). *Images of British and American Culture and Society.* Central China Science &Technology University Press.

McLaren, M. (1998). *Interpreting Cultural differences,* London, Peter Francis Publisher. pp158-183.

Zhang , A.L. (2003). *Intercultural Communication.* Chongqing University Press.

International Education Studies
www.ccsenet.org/journal.html
Vol. 2, No. 1
February 2009

# Determinants of Preferred Financial Digital Format by New Zealand Accounting Practitioners

Erlane K. Ghani
Faculty of Accountancy, Universiti Teknologi Mara
40450, Shah Alam, Selangor. Malaysia
Tel: 60-3-5544-4973 E-mail: erlanekg@yahoo.com

Kamaruzaman Jusoff (Corresponding author)
Yale University, Center for Earth Observation
Environment Science Center
21 Sachem St, New Haven, CT 06511, USA
Tel: 203-432-1384 E-mail: jusoff.kamaruzaman@yale.edu

**Abstract**

An extensive literature has emerged in the past decade that examined financial reporting in a digital environment. This study extends this literature by examining the factors that may influence the preference of a digital presentation format. Using questionnaire design, this study examines whether public accounting practitioners' work experience and familiarity with a presentation format influence their preferred presentation format. The results show that work experience is not an important determinant of users' preferred presentation format. The results also show familiarity of two presentation formats; Portable Document Format (PDF) and Extensible Business Reporting Language (XBRL) do not influence users' preferred presentation formats but familiarity with Hypertext Mark-up Language (HTML) is an important determinant of preference towards HTML. These findings indicate that perhaps more promotion could be undertaken to increase users' awareness and understanding towards the presentation formats in the digital reporting environment.

**Keywords:** Digital presentation format, Preference, Work experience, Familiarity with presentation format, PDF, XBRL, HTML

## 1. Introduction

Accounting preparers use presentation format to disseminate accounting information because presentation format is impervious to many human information processing limitations (Stock and Watson, 1984; Frownfelter-Lohrke, 1998). The role of presentation format as an aid for decision-makers has been supported in a variety of tasks such as to influence affective responses (Rose, 2002) or to improve reporting transparency (Hodge et al., 2004). Presentation format is particularly beneficial in an environment where decision tasks involve large amounts of information requiring extensive cognitive effort. In such environments, demands on information integration are indeed high and decision quality typically reduces because decision-makers are prone to becoming overwhelmed with processing demands, and therefore make wrong judgments (Hwang and Lin, 1999). However, studies in the information systems literature have shown that there is a tendency for users not to rely on a technology (such as presentation format) even though that technology may have a higher capability to assist users in their tasks (Rose, 2002). This literature has identified few factors that could affect users' preference and subsequent reliance on a technology (Brown and Eining, 1996). Users' work experience, familiarity with a technology, confidence and users' personal characteristics are factors that may affect preference of a technology (Arkes et al., 1986; Ashton, 1991; Brown and Eining, 1996, Whitecotton, 1996). Two factors are examined in this study: work experience and familiarity with presentation format. These two factors are chosen as they represent extrinsic factors that can determine by users' extrinsic response.

The importance of users' work experience on preferred/reliance on a technology has been examined in various studies (e.g Arkes et al., 1986; Kachelmeier and Messier, 1990; Abdolmohammadi, 1992; Whitecotton, 1996). The results are mixed. A few studies found that work experience affects preference on a technology. Others do not. For example,

Whitecotton (1996) studied the effect of working experience on preference on a technology and found work experience to have no effect. Other studies found more experienced users would prefer reliance on a technology compared to less experienced users (Kachelmeier and Messier, 1990; Abdolmohammadi, 1992). Other studies have suggested that familiarity with a technology also affects users' preferred/reliance (Note 1) on a technology (Mackay and Elam, 1992; Wilson and Zigur, 1999). These studies suggest that users prefer to use a technology that they are most familiar with as this would ease the completion of a task. This is consistent with the behavioural decision literature which suggests that the performance of users with a higher level knowledge will be obstructed when relying on a technology which they are not familiar with (Arkes et al., 1986). On the other hand, users with a moderate level of knowledge would not be affected with the unfamiliarity of using a particular technology since they would still need to go through a more detailed process compared to the professional users (Vera Munoz et al., 2002). Wilson and Zigurs (1999), on the other hand, found that task performance was not affected by participants' familiarity of presentation format. However, most of these studies linked users' familiarity with presentation format and the presentation format on their task performance, leaving the examination of users' familiarity of presentation format and their preferred presentation format unexplored.

A body of literature has examined the interaction of work experience and familiarity with a presentation format on decision performance. The studies in this literature provide mixed findings. Few studies found that users' with high working experience would improve performance when they are familiar with the technology that they rely on. For example: Mackay and Elam (1992) and Mackay et al. (1992) found that a high level of working experience results in better performance when accompanied by a high level of familiarity with the technology. However, Arkes et al.'s (1986) found a contrasting result. They found that participants with more knowledge but less familiarity with a technology performed worse when relying on the technology than participants with a moderate level of knowledge. However, there is a sparse of studies that have examined the interaction of users' work experience and familiarity of presentation format on their preferred presentation format. The area of digital reporting has been extensively researched in the past decade (Lymer and Tallberg, 1997; Ashbaugh et al, 1999; Lymer, 1999; Anderson, 2000; Oyelere et al, 2003; Smith, 2003; Fisher et al., 2004; Hodge and Pronk, 2006). This literature identifies a number of issues involving various parties such as the policy makers, preparers, auditors and system designers (Ashbaugh et al, 1999; Craven and Marston, 1999; Deller et al., 1999; Anderson, 2000; Allam and Lymer, 2003; Oyelere et al., 2003; Fisher et al., 2004; Laswad et al., 2005). More recently, the digital reporting literature have includes studies focusing on users' perspectives (Hodge, 2001; Beattie and Pratt, 2003; Hodge et al., 2004; Hodge and Pronk, 2006; Ghani et al, 2007; 2008). These studies examined users' information needs, preference and decision making perspectives. These studies have also diversifies their research interest by examining digital presentation formats. Presentation format is examined because it is seen as a technology that can assist users to process large quantities of data and to perform the decision task more efficiently and effectively (Libby and Lewis, 1982; Maines, 1995; Rohrmann, 1986). Studies in the presentation format literature have suggested that presentation format has a direct impact on users' performance (Bricker and Nehmer, 1995; Hard and Vanecek, 1991; Ramarapu et al., 1997; Frownfelter-Lohrke, 1998; Hodge, 2001; Dull et al., 2003; Hodge et al., 2004). However, it is arguable that the effect of presentation format on users' performance can only be materialised only if the users prefer to use the presentation format in performing their investment decision task. Within the digital reporting literature, there is a dearth of studies that examine the link between factors that influence preference and digital presentation formats. Beattie and Pratt (2001; 2003) found that users' preferences for a specific presentation format differ. They examined users' preferences for five types of presentation formats; Portable Document Format (PDF), Hypertext Mark-Up Language (HTML), Extensible Business Reporting Language (XBRL), Spreadsheet and Word processed. They found distinct differences between the preferred formats for different groups; expert users preferred spreadsheet format whereas novice users' preferred HTML closely followed by Word-processed and Spreadsheet format. Similar results were shown in Hodge and Pronk (2006) where they found novice users preferred HTML but expert users preferred PDF.

Ghani et al. (2007) examined the link between users' perception of presentation formats and their actual performance. They further examined whether perception of presentation formats influence their preferred presentation format. Their study show that users have similar perceptions among the presentation formats (PDF, HTML and XBRL) and that their perceptions may not necessary be similar to their actual performance. Although their study also found that perceptions influence preferred presentation format, their study did not examine the link between other factors such as work experience and familiarity with presentation format and preferred digital presentation format. This gap in knowledge provides the motivation and opportunity for the study reported in this paper. Therefore, this study aims to examine the influence of users' work experience and familiarity with a presentation format on the preference of a presentation format for investment decision purpose. The remainder of this paper is structured as follows. The next section provides the method use in this study. The results and discussion are presented in section 3. The last section presents the conclusion.

## 2. Methods

### *2.1 Framework*

Figure 1 illustrates the framework that underpins this study. The framework posits that work experience and familiarity with presentation format could influence users' preference of a presentation format. The framework also posits that the

interaction of work experience and familiarity with a presentation format influence preference on presentation format. Prior studies have focused on the link between preference and digital presentation format using questionnaire or experimental setting (Beattie and Pratt, 2001; 2003; Hodge and Pronk, 2006; Ghani et al., 2007). However, factors concerning users' work experience and familiarity with presentation format and their link to preferred presentation format have been under-researched.

<INSERT FIGURE 1 ABOUT HERE>

Studies in the psychology and information systems literatures suggest that users' characteristics such as work experience could affect the preferred/reliance of a technology (Kalchelmeier and Messiar, 1990; Abdolmohammadi et al., 1992; Brown and Eining, 1996). For example; Kalchelmeier and Messier (1990) found that more experienced users bring added skills to their interactions with a technology and therefore, increase their reliance on the presentation format. On the other hand, Whitecotton (1996) found that work experience does not affect reliance on a technology. This study attempts to re-examine this issue by linking work experience with preferred digital presentation format. Therefore, work experience is the first independent variable. Studies have also suggested that familiarity with a technology may influence the preference/reliance of a technology (Arkes et al., 1986; Mackay and Elam, 1990; Mackay et al. 1992; Vera-Munoz et al., 2002). These studies suggest that familiarity with a technology impacts on decision quality since greater familiarity with the technology leads to higher decision accuracy and lower cognitive effort. Thereby, encouraging users to be rely on the technology. Therefore, familiarity with a presentation format is the second independent variable.

The digital reporting literature has recently expanded its scope to include presentation format (Beattie and Pratt, 2001; Hodge, 2001; Beattie and Pratt, 2003; Hodge et al., 2004; Hodge and Pronk, 2006; Ghani et al., 2007; 2008). Hodge and Pronk (2006) attempted to link users' preferences for presentation formats by examining whether novice and professional investors prefer the same presentation format in accessing their online quarterly financial statement. The study's methodology involved providing participants with two presentation formats, PDF and HTML, and requesting participants to search for information which was supposedly relevant to their investment decision task. They found professional users preferred PDF while novice users preferred HTML. This study includes another alternative for users, XBRL. Therefore, digital presentation formats (PDF, HTML and XBRL) is the dependent variable.

*2.2 Hypotheses*

Studies in the information systems literature have shown that work experience could influence users' preference of a technology. This literature further suggests that users' who have more work experience would bring added skills with the technology (Abdolmohammadi, 1992; Brown and Eining, 1996). However, another body of literature shows that work experience is not a contributing factor to preference of a technology (Kalcelmeier and Messiar, 1990; Whitecotton, 1996). In the digital reporting literature, no studies have yet to examine whether work experience influence preference of a presentation format. Therefore, the following hypothesis is developed:

*H1: Work experience does not influence preference of a presentation format.*

Studies in the decision aid literature have also suggested that familiarity with a presentation format would increase preference of a technology. The studies in this literature found that users' who are familiar with a technology would increase their performance and therefore, increase their preference and hence, preference to that presentation format (Mackay and Elam, 1992; Mackay et al., 1992; Brown and Eining, 1996; Whitecotton, 1996). However, such study has not been examined in the digital reporting literature concerning digital presentation format. Therefore, the following hypothesis is developed:

*H2: Familiarity with a presentation format does not influence preference on a presentation format.*

The interaction of work experience and familiarity with a technology has also been examined in prior studies (Mackay and Elam, 1992; Mackay et al., 1992). These studies found that the interaction of these two variables would lead to better performance in terms of efficiency and effectiveness of knowledge use. High experienced users would have better performance when accompanied with high level of familiarity with a technology (Mackay and Elam, 1992; Mackay et al., 1992). On the other hand, other studies have shown that high experienced users performed worse than moderate experienced users when being given a technology to work with. Mackay et al. (1992) show that the interaction of high work experience and less familiarity with a technology would result in reduced performance. However, the interaction of these two variables has not been examined in the presentation format and digital reporting literature. This study attempts to link work experience and familiarity with a presentation format to preference of a presentation format. Therefore, the following hypothesis is developed:

*H3: The interaction of work experience and familiarity with a presentation format do not influence preference on a presentation format.*

*2.3 Research design and data collection.*

This study focuses on users' preferred presentation formats in a digital reporting environment for investment decision purpose. Specifically, this study looks into whether users' work experience and familiarity with a presentation format influences their preference of a presentation format. Additionally, this study examines whether the interaction of users' work experience and familiarity with a presentation format influences their preference of presentation format. This study examines these issues by way of a questionnaire design.

Sixty two New Zealand public accounting practitioners volunteered to response in this study. Public accountants are chosen as the research subjects as they perform a broad range of accounting, auditing, tax, and consulting activities for their clients (Vera-Munoz et al, 2002). One of their services is likely to assist and advise clients in investment decisions. Accounting practitioners also have a thorough knowledge and understanding of account preparation.

The data collection method involves the creation of financial information placed into three digital formats: PDF, HTML and XBRL. These presentation formats are chosen because of their availability to account preparers in the dissemination of financial performance and position. The conversion of the financial statements to XBRL is made using Microsoft Excel. This is similar to the model XBRL financial statement developed by XBRL-NZ. The translated financial statements are then uploaded to a webpage. This webpage is downloaded to a Compact Disc (CD).

A questionnaire is then developed to seek information from the respondents. Demographic information on each respondent includes age, gender, and experience is requested. Participants are also requested to provide an indication of their familiarity with each presentation format based on a 7-point scale and their preference for a specific presentation format (PDF, HTML or XBRL).

The respondents are provided with an envelope, an instruction page and an information sheet describing the three presentation formats (PDF, HTML and XBRL) used in this study. In the envelope contains a CD and a questionnaire sheet. On the instruction page, the participants are asked to view and have a try on all three presentation formats, PDF, HTML and XBRL in the context of investment decision task before they start the questionnaire. Upon completion on viewing all presentation formats, the participants are required to complete the questionnaire which consists of demographic information and their preferred presentation format.

## 3. Results and discussion

*3.1 Descriptive statistics*

The main demographic attributes of participants are comprised of years of accounting experience, their familiarity with the presentation formats, and their preferred presentation format in making investment decisions. These have been examined using categorical scales and are presented in Table 1. The purpose of examining subjects' demographics is to obtain a general overview of the participants before testing the hypotheses developed in this study. The table is divided into three panels: work experience, familiarity with presentation format and preference for presentation formats.

<INSERT TABLE 1 ABOUT HERE>

As shown in panel A, Table 1, the participants have substantial relevant work experience. More than half of the participants have in excess of 10 years' accounting experience, including 22% of the participants with more than 20 years' accounting experience.

A significant proportion of the participants were familiar with PDF (83%) compared with 51% and 8% of participants who were familiar with HTML and XBRL, respectively. This is not surprising as PDF has been in popular use as a reporting format for longer than HTML and XBRL (Baldwin et al., 2004). The small number of participants who were familiar with XBRL may be attributed to its more recent emergence as a digital reporting technology (Baldwin et al., 2004) (Note 2).

Participants were asked for their preferred presentation formats. Panel C, Table 1 provides the descriptive statistics of preferred presentation formats. Thirty five percent of the participants chose HTML, 33% chose PDF and 30% chose XBRL to perform investment decision task.

*3.2 Work experience and preferred presentation format*

This section presents the result of testing hypothesis 1. Hypothesis 1 states that work experience does not influence preference of a presentation format. This hypothesis was tested using a Chi-square correlation test to determine the association between work experience and preferred presentation format.

<INSERT TABLE 2 ABOUT HERE>

Panel A, Table 2 presents the descriptive statistic for respondents' work experience and preferred presentation format. The results show that in general, 71.5 percent respondents who have more than 10 years of working experience prefer PDF compared to HTML and XBRL. Specifically, 33 percent of respondents who have 11 to 15 years and more than 20

years of working experience prefer PDF. On the other hand, in general, slightly more respondents who have working experience of less than 10 years would prefer HTML (63.6 percent) or XBRL (52.5 percent) respectively.

Panel B, Table 2 presents the results of association between users' work experience and preferred presentation format. The results show no significant association ($r$=0.172) between work experience and preferred presentation format. The results indicate that users' work experience does not influence their preferred presentation format. Therefore, hypothesis 1 is accepted.

*3.3 Familiarity with preferred presentation format and preferred presentation format*

This section presents the result of testing hypothesis 2. Hypothesis 2 states that familiarity with a presentation format does not influence preference of a presentation format. This hypothesis was tested using a Chi-square correlation test to determine the association between familiarity of each presentation format and preferred presentation format.

Panel A, Table 3 presents the descriptive statistics of users' familiarity with PDF and their preferred presentation format. The results show that out of the 52 respondents, who are familiar with PDF, 18 of the respondents prefer PDF, 19 respondents prefer HTML and 15 respondents prefer XBRL. A small number of respondents who are not familiar with PDF opted to prefer HTML (13.5 percent) and XBRL (10.5 percent) compared to PDF (9.5 percent). Panel B of Table 3 show no significant association between users' familiarity with PDF and their preferred presentation format ($r$=0.897).

<INSERT TABLE 3 ABOUT HERE>

Panel A, Table 4 presents the descriptive statistics of users' familiarity with HTML and their preferred presentation format. The results show that slightly more than half of the respondents are familiar with HTML (32 respondents). Out of the 32 respondents, who are familiar with HTML, 10 of the respondents prefer PDF and 17 respondents prefer HTML. Only 5 respondents who are familiar with HTML prefer XBRL. Those respondents who are not familiar with HTML prefer to use XBRL (42.2 percent) or PDF (33.2 percent). Panel B of Table 4 show a significant association between users' familiarity with HTML and their preferred presentation format ($r$=0.036).

<INSERT TABLE 4 ABOUT HERE>

Panel A, Table 5 presents the descriptive statistics of users' familiarity with XBRL and their preferred presentation format. The results show that most of the respondents are not familiar with XBRL. Twenty of the participants who are not familiar with XBRL opted to prefer PDF and 18 respondents prefer HTML. Surprisingly, 17 respondents prefer to use XBRL despite their unfamiliarity with this format. On the other hand, 4 respondents who are familiar with XBRL prefer to use HTML. The results in panel B, Table 5 show that users' familiarity with XBRL does not influence their preferred presentation format ($r$=0.585). Therefore hypothesis 2 is accepted for familiarity of PDF and XBRL but not for familiarity with HTML.

<INSERT TABLE 5 ABOUT HERE>

*3.4 Work experience and familiarity with presentation format and preferred presentation format*

This section presents the result of testing hypothesis 3. Hypothesis 3 states that the interaction of work experience and familiarity with presentation format do not influence preference of a presentation format. This hypothesis was tested using Multinomial Logistic regression.

<INSERT TABLE 6 ABOUT HERE>

Table 6 presents the results of the interaction of work experience with familiarity with each of the presentation format, namely, PDF, HTML and XBRL on preferred presentation format. The results show no significant association between these two variables and preferred presentation format. The results indicate that users' work experience and familiarity of a presentation format would not influence their preference of a presentation format. Therefore, hypothesis 3 is accepted.

**4. Conclusion**

This study examines whether work experience, familiarity with presentation format and the interaction between these two variables could influence users' preferred presentation format. The results show that work experience is not an important determinant to preferred presentation format. The finding is consistent with WHitecotton (1996). The results of this study, however, are similar to Beattie and Pratt (2003) and Hodge and Pronk (2006) where users with more working experience prefer to use PDF whereas those with less working experience prefer to use HTML or XBRL. One possible reason to could be because the younger generation of public accountants are more likely to be exposed to information technology facilities.

The results also show that no significant association could be found on the familiarity of presentation format (PDF and XBRL) on preferred presentation format. However, users who are familiar with HTML would likely influence their preferred presentation format. Specifically, users who are familiar with PDF, does not necessary indicate that they would eventually prefer PDF. The results in this study show that more than half of the respondents who are familiar with PDF opted to use other presentation format. On the other hand, respondents who are not familiar with XBRL

prefer not to rely on this format. One possible reason could be because they are not confident enough to rely on this format. Another reason could be because they are more content to rely on a format such as PDF which has been in the market for longer period of time compared to other formats (Baldwin et al., 2004). The resistant to change could also be another reason (Ebbeson and Konechi, 1980). The results in this study show that these respondents prefer HTML. In contrast, users who are familiar with HTML prefer the same format to perform investment decision task. This indicates that features of HTML that provides similarity to a hard-copy version of financial reports and their hyper-linking format boost users' preference in using this format.

There are some limitations in this study. This study uses public accounting practitioners. Although they represent one of the major uses of financial information, the experience and decision contexts in the study may not be consistent with their experiences. Further, their use of analytical techniques is not necessarily similar to the techniques used by other users. The number of respondents in this study is also relatively small. However, because of the different constraints (time and resources), this study has to limit the sample and number of respondents. Perhaps future research could expand the number and use other types of users in order to enhance understanding of other users such as financial analysts and investment brokers.

Secondly, this study chose 3 presentation formats: PDF, HTML and XBRL. These presentation formats were chosen because of their availability in disseminating financial information. There may be other presentation formats that could be included in future research.

This study's findings provide some insights to preparers on the selection of presentation formats for presenting their corporate reports to users and their implications for users. In particular, when preparers are deciding which presentation format to adopt, user related information such as whether work experience or familiarity with presentation format and their importance to presentation format would be useful. It is essential to create more awareness of the presentation formats available in the digital reporting environment to decision-makers. Users may also equip themselves with more skills, training and knowledge on the potential benefits of digital presentation formats in order for them to fully understand the potentials of the digital presentation formats have to offer.

**References**

Abdolmohammadi, M. (1992). "Decision aids for error quantifications in attribute sampling: Circumvention, efficiency and experience effects", Advances in Accounting 10, pp 1-17.

Abdolmohammadi, M, Harris, J & Smith, K. (2002). "Government financial reporting on the internet: The potential revolutionary effects of XBRL", Journal of Government Financial Management, Summer, pp 25-31.

Allam, A & Lymer, A. (2003). "Development in Internet Financial Reporting: Review and Analysis across Five Developed Countries", International Journal of Digital Accounting Research, 3(6).

Anderson. (2000). "Spice up the Story – A Survey of Narrative Reporting in Annual Reports", Arthur Anderson.

Arkes, H.R, Dawes, R.M & Christensen, C. (1986). "Factors influencing the use of a decision rule in a probabilistic task", Organisational Behavior and Human Decision Processing 37, pp 93-110.

Ashbaugh, H, Johnstone, K.M & Warfield, T.D (1999). "Corporate reporting on the internet", Accounting Horizons, 13(3), pp 241-257.

Ashton, A. H. (1991) "Experience and error frequency knowledge as potential determinants of audit professionalise" The Accounting Review (April), pp 218-239.

Baldwin, A.A, Brown, C.E & Trinkle, B.S. (2004). "XBRL: The Future of Financial Reporting – A Research Challenge", Paper under review at the Journal of Emerging Technologies in Accounting.

Beattie, V & Pratt, K. (2001). "Business Reporting: Harnessing the Power of the Internet for Users", Institute of Chartered Accountants of Scotland, Edinburgh.

Beattie, V. & Pratt, K. (2003). "Issues concerning web-based business reporting: an analysis of the views of interested parties". The British Accounting Review 35(2), pp 155-187.

Bricker, R & Nehmer, R. (1995). "Information presentation format, degree of information processing and decision quality", Advances in Accounting Information Systems 3, pp 3-29.

Brown, D & Eining, M.M. (1996). "The Role of Decision Aids in Accounting: A Synthesis of Prior Research", Advances in Accounting Information Systems (4), pp 305-332.

Craven, D.M & Marston C.L. (1999). "Financial Reporting on the Internet by leading UK Companies", European Accounting Review, 8(2), pp 321-333.

Deller, D; Stubenrath, M & Weber, C. (1999). "A Survey on the use of the Internet for Investor Relations in the USA, UK and Germany", European Accounting Review, 8(2), pp 289-301.

Dull, R.B; Graham, A.W & Baldwin, A.A (2003). "Web-based Financial Statements: Hyperlinks to Footnotes and their Effect on Decisions" International Journal of Accounting Information Systems, 4, pp 185-203.

Ebbesen, E.B. & Konecni, V.J .(1980). "On the external validity of decision-making research: What do we know about decisions in the real world?" In T.S. Wallsten (Ed.) Cognitive Processes in Choice and Decision Behavior. Hillsdale NJ L. Erlbaum Associates, pp 21-45.

Fisher, R; Oyelere, P & Laswad, F. (2004). "Corporate Reporting on the Internet: Audit Issues and Content Analysis of Practices", Managerial Auditing Journal, 19(3), pp 412-439

Frownfelter-Lohrke, C. (1998). "The effects of differing presentations of general purpose financial statements on users' decisions', Journal of Information Systems, 12(2), pp 99-107

Ghani, E.K; Laswad, F & Tooley, S. (2007). "Users' perceived usefulness and ease of use of digital presentation formats", Paper presented at the APIRA 2007 Conference, July.

Ghani, E.K; Laswad, F & Tooley, S. (2008). "Do digital reporting formats assist professional users in overcoming functional fixation in recognition vs. disclosure?" Paper presented at the BAA 2008 Conference, Blackpool, April.

Hard, N.J & Vanecek, M.T. (1991). "The implications of tasks and format on the use of financial information", Journal of Information Systems (Fall), pp 35-49

Hodge, F. (2001). "Hyperlinking un-audited information to audited financial statements: Effects on investor judgments", The Accounting Review 76(10), pp 675-691.

Hodge, F.D; Kennedy, J.J & Maines, L.A. (2004). "Does search facilitating technology improve the transparency of financial reporting?", The Accounting Review 79 (3), pp 687-703.

Hodge, F & Pronk, M, "The impact of expertise and investment familiarity on investors' use of online financial reporting information", Journal of Accounting, Auditing and Finance: 267-292.

Hwang, M.L & Lin, J.W. (1999). "Information dimension, information overload and decision quality", Journal of Information Science, 25 (3), pp 213-218.

Stock, D & Watson, C.J (1984). "Human judgment accuracy, multidimensional graphics and human versus models", Journal of Accounting Research (Spring), pp 192-206.

Kalcelmeier, S & Messiar, W.F. (1990) ."An investigation of the influence of a non-statistical decision aid on auditor sample size decisions", The Accounting Review 65, pp 209-226.

Laswad, F. Fisher, R. & Oyelere, P (2005). "Determinants of voluntary internal financial reporting by local government authorities" Journal of Accounting and Public Policy, 24, pp 101-121.

Libby, R & Lewis, B.L (1982). "Human information processing research in accounting: The start of the art in 1982", Accounting, Organizations and Society 7(3), pp 231-285.

Lymer, A (1999), "The Internet and the Future of Corporate Reporting in Europe", European Accounting Review, 8(2), pp 289-301.

Lymer, A & Tallberg, A. (1997), "Corporate Reporting and the Internet – A Survey and Commentary on the use of the WWW in Corporate Reporting in the UK and Finland", Paper Presented at EAA'97, Graz, Austria.

Mackay, J.M & Elam, J.J. (1982). "A comparative study of how professionals and novices use a decision aid to solve problems in complex knowledge domains", Information Systems Research (June), pp 150-172

Mackay, J.M; Barr, S.H & Kletke, M.G. (1992). "An empirical investigation on the effects of decision aids on problem solving processes", Decision Sciences 23, pp 648-672.

Maines, L.A. (1995). "Judgment and decision making research in financial accounting: a review and analysis', Judgment and Decision Making Research in Accounting and Auditing, Cambridge University Press, pp 77-131.

Oyelere, P; Laswad, F & Fisher, R. (2003). "Determinants of Internet Financial Reporting by New Zealand Companies", Journal of International Financial Management and Accounting, 14(1), pp 26-59.

Ramarapu, N.K; Frolick, M.N; Wilkes, R.B & Wetherbe, J.C. (1997). "The emergence of hypertext and problem solving: An experimental investigation of assessing and using information from linear versus nonlinear systems", Decision Sciences, 28(4), pp 825-849.

Rohrmann, B. (1986). "Evaluating the usefulness of decision aids: A methodological perspective". In B. Brehmen, H. Jungermann, P Lourens, and G. Sevon (Eds.), New Directions in Research on Decision Making, Amsterdam: North-Holland., pp 363-381.

Rose, J.M. (2002). "The effects of multimedia-induced affective states on recall and decision making by individual investors", International Journal of Accounting Information Systems, 2, pp 22-40.

Smith, B. (2003). "Financial Reporting on the Internet: A Question of Integrity", Paper presented at the 4th International Conference for the British Accounting Association Special Interest Group in Corporate Governance. December.

Vera-Munoz, S.C, Kinney Jr, W.R & Bonner, S.E. (2002). "The effects of domain experience and task presentation format on accountants' information relevance assurance", The Accounting Review, 76(3), pp 405-429.

Whitecotton, S.M. (1996). "The effects of experience and confidence on decision aid reliance: A causal model", Behavioral Research in Accounting 8, pp 966-979.

Wilson, E. V. & Zigurs, I. (1999). "Decisional guidance and end user display choices", Accounting, Management and Information Technologies, 9, pp 49-75.

**Notes**

Note 1. In the context of this study, preference and reliance are the same as arguably users' preference of a technology would subsequently lead them to rely on the technology.

Note 2. The participants who were familiar with XBRL had some exposure with XBRL either from becoming members of XBRL-NZ, conferences or involvement with a pilot study performed by XBRL-NZ. The pilot study involved 12 listed companies and was completed in 2005.

Table 1. Participants' demographic attributes, familiarity and preferences

Panel A: Level of Accounting Experience

| Experience | Number of subjects | Percent |
|---|---|---|
| Less than 5 years | 15 | 24.2 |
| 5 to 10 years | 15 | 24.2 |
| 11 to 15 years | 12 | 19.4 |
| 16 – 20 years | 6 | 9.7 |
| More than 20 years | 14 | 22.6 |
| Total | 62 | 100.0 |

Panel B: Familiarity with presentation formats

| | PRESENTATION FORMAT | | | | | |
|---|---|---|---|---|---|---|
| | PDF | | HTML | | XBRL | |
| Familiarity | Number of subjects | Percent | Number of subjects | Percent | Number of subjects | Percent |
| xtremely familiar | 24 | 38.7 | 9 | 14.5 | 2 | 3.2 |
| Very familiar | 18 | 29.0 | 12 | 19.4 | 2 | 3.2 |
| Familiar | 20 | 16.1 | 11 | 17.7 | 1 | 1.6 |
| Neither | 3 | 4.8 | 10 | 16.1 | 2 | 3.1 |
| Unfamiliar | 2 | 1.6 | 7 | 11.3 | 5 | 8.1 |
| Very unfamiliar | 0 | 0 | 3 | 4.8 | 12 | 19.4 |
| Extremely unfamiliar | 6 | 9.7 | 10 | 16.1 | 38 | 61.3 |
| Total | 62 | 100.00 | 62 | 100.0 | 62 | 100.0 |

Panel C: Preferred presentation formats

| Presentation format | Frequency | Percent | Valid Percent |
|---|---|---|---|
| PDF | 21 | 33.9 | 33.9 |
| HTML | 22 | 35.5 | 35.5 |
| XBRL | 19 | 30.6 | 30.6 |
| Total | 62 | 100.0 | 100 |

Table 2. Users' work experience and their preferred presentation format

Panel A: Cross tabulation of work experience and preferred presentation format

| Work experience | Preferred presentation format | | | | | |
|---|---|---|---|---|---|---|
| | PDF | | HTML | | XBRL | |
| | Number | Percent | Number | Percent | Number | Percent |
| Less than 5 years | 4 | 19.0 | 5 | 22.7 | 6 | 31.5 |
| 5-10years | 2 | 9.5 | 9 | 40.9 | 4 | 21.0 |
| 11-15years | 7 | 33.3 | 3 | 13.6 | 2 | 10.7 |
| 16-20years | 1 | 4.9 | 2 | 9.2 | 3 | 15.8 |
| More than 20years | 7 | 33.3 | 3 | 13.6 | 4 | 21.0 |
| | 21 | 100 | 22 | 100 | 19 | 100 |

Panel B: Chi-square test: Users' work experience and preferred presentation formats

| | Value | df | Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 11.561 | 8 | 0.172 |
| Likelihood Ratio | 11.480 | 8 | 0.176 |
| Linear-by-Linear Association | 1.213 | 1 | 0.271 |
| Number of subjects | 62 | | |

Table 3. Users' familiarity with PDF and their preferred presentation format

Panel A: Cross tabulation of familiarity with PDF and preferred presentation format

| Familiarity | Preferred presentation format | | | | | |
|---|---|---|---|---|---|---|
| | PDF | | HTML | | XBRL | |
| | Number | Percent | Number | Percent | Number | Percent |
| Strongly not familiar | 2 | 9.5 | 2 | 9.0 | 2 | 10.5 |
| Mild strongly not familiar | 0 | 0 | 0 | 0 | 0 | 0 |
| Not familiar | 0 | 0 | 1 | 4.5 | 0 | 0 |
| Neither | 1 | 4.7 | 0 | 0 | 2 | 10.5 |
| Familiar | 4 | 19.0 | 4 | 18.2 | 2 | 10.5 |
| Mild strongly familiar | 6 | 28.6 | 7 | 31.8 | 5 | 26.3 |
| Strongly familiar | 8 | 38.2 | 8 | 36.5 | 8 | 42.2 |
| | 21 | 100 | 22 | 100 | 19 | 100 |

Panel B: Chi-square test: Users' familiarity with PDF and preferred presentation formats

| | Value | df | Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 4.912 | 10 | 0.897 |
| Likelihood Ratio | 5.951 | 10 | 0.819 |
| Linear-by-Linear Association | 0.005 | 1 | 0.943 |
| Number of subjects | 62 | | |

Table 4. Users' familiarity with HTML and their preferred presentation format

Panel A: Cross tabulation of familiarity with HTML and preferred presentation forma

| Familiarity | Preferred presentation format | | | | | |
|---|---|---|---|---|---|---|
| | PDF | | HTML | | XBRL | |
| | Number | Percent | Number | Percent | Number | Percent |
| Strongly not familiar | 4 | 19.0 | 2 | 9.2 | 4 | 21.0 |
| Mild strongly not familiar | 2 | 9.5 | 1 | 4.5 | 0 | 0 |
| Not familiar | 1 | 4.7 | 2 | 9.2 | 4 | 21.0 |
| Neither | 4 | 19.0 | 0 | 0 | 6 | 31.5 |
| Familiar | 6 | 28.6 | 5 | 22.7 | 0 | 0 |
| Mild strongly familiar | 3 | 14.5 | 6 | 27.2 | 3 | 15.8 |
| Strongly familiar | 1 | 4.7 | 6 | 27.2 | 2 | 10.7 |
| | 21 | 100 | 22 | 100 | 19 | 100 |

Panel B: Chi-square test: Users' familiarity with HTML and preferred presentation formats

| | Value | df | Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 22.145 | 12 | 0.036 |
| Likelihood Ratio | 28.855 | 12 | 0.004 |
| Linear-by-Linear Association | 0.012 | 1 | 0.912 |
| Number of subjects | 62 | | |

Table 5. Users' familiarity with XBRL and their preferred presentation format

Panel A: Cross tabulation of familiarity with XBRL and preferred presentation format

| Familiarity | Preferred presentation format | | | | | |
|---|---|---|---|---|---|---|
| | PDF | | HTML | | XBRL | |
| | Number | Percent | Number | Percent | Number | Percent |
| Strongly not familiar | 12 | 57.1 | 16 | 72.7 | 10 | 52.6 |
| Mild strongly not familiar | 5 | 23.8 | 2 | 9.3 | 5 | 26.3 |
| Not familiar | 3 | 14.2 | 0 | 0 | 2 | 10.5 |
| Neither | 0 | 0 | 1 | 4.5 | 1 | 5.3 |
| Familiar | 0 | 0 | 1 | 4.5 | 0 | 0 |
| Mild strongly familiar | 0 | 0 | 1 | 4.5 | 1 | 5.3 |
| Strongly familiar | 1 | 4.9 | 1 | 4.5 | 0 | 0 |
| | 21 | 100 | 22 | 100 | 19 | 100 |

Panel B: Chi-square test: Users' familiarity with XBRL and preferred presentation formats

| | Value | df | Sig. (2-sided) |
|---|---|---|---|
| Pearson Chi-Square | 10.359 | 12 | 0.585 |
| Likelihood Ratio | 14.232 | 12 | 0.286 |
| Linear-by-Linear Association | 0.033 | 1 | 0.856 |
| Number of subjects | 62 | | |

Table 6. Multinomial logistic regression

| | Model fitting criteria | Likelihood ratio tests | | |
|---|---|---|---|---|
| Effect | -2LL | $x^2$ | Df. | Sig. |
| Work experience and familiarity with PDF | 17.245 | 9.503 | 14 | 0.798 |
| Work experience and familiarity with HTML | 42.024 | 34.282 | 28 | 0.192 |
| Work experience and familiarity with XBRL | 20.559 | 12.816 | 20 | 0.885 |

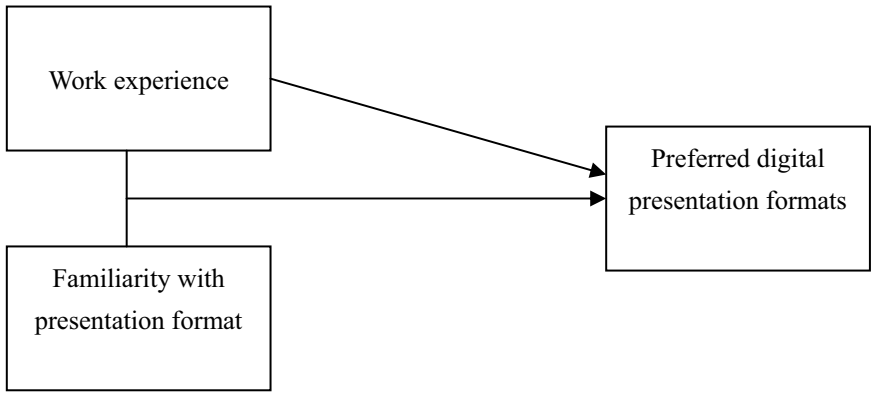


Figure 1. Research Framework

# Editorial Board


| | |
|---|---|
| Ahmad Baharuddin Abdullah | Universiti Sains Malaysia, Malaysia |
| Ahmad Nurulazam Md. Zain | Universiti Sains Malaysia, Malaysia |
| Alicia Cortes Wegner | University of Canterbury College of Education, New Zealand |
| Anita Thakur | Rajiv Gandhi Technical University, India |
| Blane R. Després | University of British Columbia Okanagan, Canada |
| Cecilia Ka Yuk Chan | University of Hong Kong, Hong Kong |
| Charles Edward Notar | Jacksonville State University, United States |
| Cindy Xu | Canadian Center of Science and Education, Canada |
| Erlane K Ghani | Universiti Teknologi Mara, Malaysia |
| K. G. Viswanadhan | NSS College of Engineering, India |
| Law Kian Aun | University College Sedaya International, Malaysia |
| Pham Thi Hong Thanh | The University of Queensland, Australia |
| Stephen James Minton | Trinity College Dublin, Ireland |
| Wichian Sittiprapaporn | Mahidol University College of Music, Thailand |
| Ying Jin | Qingdao Technological University, China |

A journal archived in Library and Archives Canada
A journal indexed in Canadiana (The National Bibliography)
A journal indexed in AMICUS
A peer-reviewed journal in education research

# International Education Studies

Quarterly

Publisher Canadian Center of Science and Education
Address 4915 Bathurst St. Unit #209-309, Toronto, ON. M2R 1X9
Telephone 1-416-208-4027
Fax 1-416-208-4028
E-mail ies@ccsenet.org
Website www.ccsenet.org
Printer William Printing Inc.
Price CAD.$ 20.00

ISSN 1913-9020