Dialogic Interactions in the English-Mediated Classroom: A Case Study of a Social Science Class for Engineering Students in Korea

Jinsook Choi[1], Bradley Tatar[1] & Jeongyeon Kim[1]

[1] Division of General Studies, Ulsan National Institute of Science and Technology, Ulsan, South Korea

Correspondence: Jinsook Choi, Division of General Studies, Ulsan National Institute of Science and Technology, Ulsan, South Korea. Tel: 82-52-217-2014. E-mail: jschoi@unist.ac.kr

Abstract

In this paper, we explore the role of dialogic interactions in enhancing L2 undergraduate students' classroom participation at a university in South Korea. Previous studies on English-mediated instruction (EMI) have focused primarily on the efficiency of instruction, as evaluated in terms of the skills and proficiency levels of the students or instructors, based on the assumption that L2 linguistic competence is the primary prerequisite for successful EMI classes. However, drawing upon survey and interview data of students' perceptions of dialogic teaching and classroom observation data, we demonstrate the success of dialogic teaching. Our findings suggest that L2 speakers can participate effectively in interactions in English when the class is designed systematically to allow multiple responses built upon their previous knowledge.

Keywords: dialogic interaction, authentic discussion, English-mediated instruction (EMI), collaborative learning, South Korea

1. Introduction

English-mediated instruction (EMI) has been practiced in many Asian countries due to the promotion of the internationalization of higher education. Numerous studies have examined both positive and negative effects of EMI on students' learning processes and outcomes. Positive perspectives of EMI have a great bearing on the internationalization of the campus, as universities have attracted more international students on this basis (Hou et al., 2013; Manakul, 2007; Tsuneyoshi, 2005). Negative perspectives of EMI have centered mainly on ineffective delivery of course content and little evidence of improvement in English language abilities (Chang, 2010; Cho, 2012; Kang, 2012; Oh & Lee, 2010; Tsuneyoshi, 2005). Moreover, difficulties which have been reported in the interactions between instructors and students are believed to result in inefficient education, particularly in cases in which EMI courses are taught by non-native speakers (NNS) (Klassen & Graff, 2001; Yip et al., 2007). In Kang and Park's study (2005), Korean engineering students showed avoidance of EMI because they perceived English as a barrier to comprehension of lectures. However, in a comparative study of EMI and Korean classes for medical students, Joe and Lee (2013) discovered that there was not much difference in students' test scores, which proves that EMI is not necessarily a barrier to lecture comprehension.

These studies of EMI have focused primarily on the efficiency of instruction, as evaluated in terms of the skills, competencies, and proficiency levels of the students or professors. Thus, these studies treat English skill, i.e., L2 linguistic competence, as the primary prerequisite for successful EMI classes. However, little empirical research has been conducted on actual classroom discourse, and none of the studies have dealt with non-major courses. Further, many have focused on "lecture comprehension" (Joe & Lee, 2013; Kang & Park, 2005; Park, 2006), which denotes instructors' monologic instruction of students. In contrast to the claims made in the educational studies mentioned above, in this paper we hypothesize that NNS students are able to interact with the instructor and other students if the instruction is designed systematically to facilitate and encourage students to participate in classroom interaction. We demonstrated the success of dialogic teaching through survey data of students' perceptions of dialogic teaching and two examples of classroom discourse in which dialogic interactions were found.

2. Literature Review

2.1 Language Proficiency and Academic Ability

In order to examine the case of EFL students in a non-major class mediated in English, we referred to discussions on EFL or EAL students' learning experiences. Students, who take classes in a foreign or additional language, whether abroad or in their own country, have been seen as "deficient" in their academic abilities (Cheng, 2000; Clark & Gieve, 2006). However, as Ryan and Viete (2009) argued, this idea comes from "the conflation of proficiency in English with students' ability to think and know" (2009, p. 304), a stereotypic construction of deficient learners, and furthermore, from the notion of idealized native speakers. Hence, in order to enhance EFL students' learning of an unfamiliar subject in English, we need to transform the pedagogy from simply reproducing or delivering knowledge to collaborative production of knowledge.

2.2 Dialogic Interactions

Numerous scholars have made a move toward a more informal and conversational style of lecturing (Bamford, 2005; Morell, 2004, 2007). This informal, conversational lecturing style has been found to induce a higher degree of interaction between the lecturer and his/her audience (Haneda & Wells, 2010; Morell, 2004, 2007). Likewise, there have been studies of "dialogue" in primary education, literacy, and science (Haneda & Wells, 2010; Mercer et al., 2009; Myhill, 2006). Alexander (2008) argued that students would be encouraged (or sometimes required) to engage in the "cooperative enterprise" by answering an instructor's questions (Alexander, 2008). However, simply answering preset questions cannot be considered truly interactive as students' answers are predetermined and controlled by the instructor's questions (Alpert, 1987).

One way to determine whether or not classroom discourse is dialogic is to see if the instructor's question is "authentic" or not. Authentic questions are open-ended and involve "uptake," in which the instructor asks an additional question that builds upon the student's answer. Nystrand, Gamoran, Kachur and Prendergast's findings (1997) suggest that teachers' authentic questions lead to higher academic performance among students, a finding supported by many other studies of dialogical classroom interactions (Alexander, 2008; Hadjioannou, 2007; Mercer, Dawes, & Staarman, 2009; Myhill, 2006). However, simply using authentic questions does not suffice to make classroom interaction dialogic. Central to dialogic teaching is the connection of students' previous knowledge with new knowledge (Boyd & Markarian, 2011; Collins, 1996). Thus, in addition to using authentic questions, the instructor in this study designed the course to connect students' previous knowledge with new knowledge. In this paper, we explore how dialogic interactions help students to acquire new knowledge in a social science EMI class for engineering undergraduate students.

3. Methods

3.1 Research Site and Participants

The research was conducted during the fall semester of 2012. This study was part of a larger research project concerning the policy of English as an official language and EMI at a university located in Ulsan, a city in the southeastern region of South Korea. The research site is an engineering university with no undergraduate departments or majors in the humanities and social sciences. It was built in 2009, with a master plan based upon the policy of internationalization of the university; the university adopted a policy of EMI from the outset.

A total of 210 students who took the general social science course called "Society and Culture" participated in a survey on classroom discussion. Among the participants were 118 students enrolled in engineering majors, 18 majoring in technology management, and 72 freshmen whose majors were undecided. The majority of the students were Korean, and 8 non-Korean students (6 from Central Asian countries, one from Ghana, and one from Vietnam). Among the 210 students, approximately one-third was freshmen and the rest second or third year students, with only a few seniors. The students who took part in this study had good reading comprehension skills in English because they took English as a school subject throughout their secondary and tertiary educations. However, many of them had limited ability to communicate in English on unfamiliar topics, such as social sciences or humanities, because Korean students are divided typically into science and liberal arts tracks from high school onwards. The students were given a consent form to sign, and participants agreed to respond to the questionnaire and to be videotaped during classroom activities. Among 3 sections of the same course, we videotaped two sections, and the classroom discourse data were derived from one section.

The characteristics of the class were as follows: 1) the instructor who participated in this research was a Korean female professor who obtained her Ph.D. in cultural anthropology in the U.S. and had 4 years of EMI experience in Korea; 2) the instructor used clear and slow speech in every lecture and used many elicitation strategies to encourage voluntary responses from students; and 3) the instructor assigned articles and videos, as well as

questions, which students were expected to answer prior to the next classroom meeting. The main goal of this general social science course was to enable students to contextualize social phenomena and explain the reasons for or to interpret the meanings of the phenomena in question. Students were therefore prepared to think of answers before they came to class, and the professor often modified her questions in the course of the discussion. The questions were designed to elicit students' opinions about assigned articles or videos. Furthermore, by framing the discussion around popular movies or current media events, the students felt qualified to speak on the topics.

3.2 Data Collection

Taking our inspiration from ethnographic research methodology, we combined multiple data collection methods: participant observation, survey, and interviews with students. Two research assistants conducted participant observation of two sections of the course that dealt with general social science topics over the course of one semester. Classes were videotaped, transcribed, and coded using the qualitative research software Atlas.ti™. Among the utterances produced in the classroom, sequences of initiation-response-evaluation (IRE) were coded primarily, followed by types of questions and responses. In addition to observation, at the end of the semester, the researchers administered a survey and conducted semi-structured interviews with students with respect to how they perceived the classroom discussion.

The class activities included lectures, discussions, assignments for teams or groups, and student presentations. In this paper, we focused on interactive lectures in order to analyze how dialogic interactions occurred. The class included 40-50 students, and on average, 10-20 students participated actively in each classroom discussion. The selection criterion for inclusion was whether or not dialogical exchanges, rather than a simple exchange of question and answer, occurred. In the next section, we present the qualitative findings from the observation of classroom discourse and then the data gathered from the survey and interview on students' perceptions of classroom discussion.

4. Findings

Discussion and conversation provide an opportunity for students to make their own voices heard. In this process, students feel that they are being included in the learning community by participating in classroom interactions, rather than remaining as passive listeners. What then, do dialogic interactions look like? We provide here two excerpts from our classroom observation data.

4.1 Dialogic Interactions

The first example involves the interaction between the professor and students, initiated by the professor's authentic questions. The other is an interaction primarily among students. In the first excerpt, students expressed opinions on the issues of gun ownership as a result of their reflections on the documentary, *Bowling for Columbine*, which deals with a 1999 high school shooting incident in the United States. The professor first began with a statement so that students could express either their disagreement or agreement on it.

Excerpt 1 (Note 1)

1) P: (professor takes out the worksheet and reads) "Government should control people rather than guns." (Looking around the classroom) Anyone?

2) S1: I think government should control gun.

[If] Everyone have no gun, they didn't have to protect themselves. So, if people want to kill other, they have to work more than they have guns. Many problems come from [having] guns.

3) S2: I think, criminal is stronger than us. We should protect ourselves=

4) S 3: = Guns are used to kill people. Even everyone has gun, they use for killing criminal.

5) P: Having guns is not same as self-defense. Is the gun designed to kill people? How about hunting?

6) S 4: It's different. In Korean military, people have a gun, we can handle. But, Korean military doesn't do mass killing.

7) S 5: Someone said gun is designed for killing. I agree with that. But, people who want to kill other people will kill=

8) P: =They kill anyway. Ri::ght

9) S 4: If we allowed gun to protect or hunt, we can check them if they are more dangerous people than others. We can check their mental (.) like (.) every one month.

10) S6: My opinion is very different from them. In the past, I watched the comedy show. They said that the important thing is not gun control. We can control the bullet. The gun is symbol of defense. Other people don't know they have bullets or not. If we control the bullet, shooting other people is difficult.

This example illustrates authentic questions and uptakes (line 5) with limited control from the professor; the students participated actively in the discussion, offering justifications for their positions. The professor did not require a single right answer; rather, she initiated the discussion and then used uptake questions to elicit additional responses, as in line 5: "Is the gun designed to kill people? How about hunting?" This prompted students to consider whether their position needed to be better supported. In other words, guns can have many different functions. Therefore, we cannot simply assume that only a gun can kill people and therefore guns need to be removed from society. The professor did not try to impose one argument over another; rather, she encouraged students to exchange diverse opinions, allowing them to refute or build upon each other's arguments. In addition, note that Student 6 emphasized that his opinion was different from others and used his previous knowledge to connect with the current issue by saying, "In the past, I watched the comedy show..." (line 10). This kind of dialogic interaction reflects prompts used generally in social scientific essay questions, rather than memorized terms and concepts. Hence, students who are exposed to this kind of dialogic interaction can be trained to connect many texts, including their previous knowledge, and to justify their arguments.

The next excerpt illustrates dialogic processes in student-student interactions. This particular interaction occurred after a class activity that required the students to interview other classmates regarding multiculturalism and then to present their findings. The purpose of this activity was to allow the students to discover their own and others' perceptions of issues related to multiculturalism in their own society. The students first read two paragraphs on a brief history and the current situation of immigration and multiculturalism in Germany. Next, they composed interview questions and interviewed up to five classmates for approximately 20 minutes. After the interviews, students were asked to volunteer to present their results. The remainder of the students was supposed to ask questions or comment on the presenters' interview results. This lesson occurred at the end of the semester, which meant that the students had already been exposed to many topics and had already participated in many classroom discussions. In this excerpt, S1, a female student was the presenter, and S2 and S3 were male students.

Excerpt 2

1) S1: Hello, I will present my interview questions and answers about multiculturalism.

My first question is very easy question. "What do you think about multiculturalism? Pros or cons and why?" Because, how multiculturalism is accepted in our country, I want to know that. All people agree with multiculturalism because we have broad thinking about globalization and in globalization uh (.) it is not our choice. It must be accepted, and (.) so (.) now I want to know who [else] disagree on multiculturalism in this class and why. (To students) Anyone who disagree about multiculturalism?

(Two students raised their hands.)

2) S1: (Pointing at one of these students) I want to know you're thinking.

3) S2: Because children education in Korean. Mothers who come from other country have less passion for education. (S1 does not say anything)

4) P: I guess he is talking about migrant women who come to Korea and they might not really do well like Korean moms since they can raise children not quite competitive way. (Pointing at one student who raised hand). OK.

5) S3: I just want to say about his [S2's] opinion. I think we have to accept that kind of situation. Because we are ready for multicultural society. We have to (.) we have to also include the mother's culture. So I think multiculturalism is necessary.

6) S2: Multiculturalism can confuse some young kids. It can be problem of identity of mother country. (To the presenter) So what do you think about it?

7) S1: Uh (.) I agree with your idea. However, it is the problem. We should solve this problem=

8) S2: = Yes. But, how?

9) S1: (.)Uh (.) Because I am not the government (.) so I cannot think about this (looking at the professor).

10) P: (to the presenter) OK. Why did you make that interview question?

11) S1: I want to show in this class multiculturalism is very accepted in Korea, it is common sense. Many think multiculturalism should be accepted.

12) P: OK, very good. It is very interesting, [you did] some kind of survey. (To the presenter) OK, go on [presenting].

In this excerpt, the presenter first introduced her interview question to elicit interviewees' opinions on multiculturalism, assuming that we have no choice but to accept a multicultural society, as more and more foreigners are immigrating to Korea. The professor's role was not to lecture, but only to facilitate the students' exchange of questions and comments. The authentic discussion was led by the students themselves, as seen in the underlined questions by the presenter and Student 3. The only time that the professor had to intervene (line 10) was when the presenter did not seem able to respond to the question asked by another student. This example shows that the students were able to participate actively in discussions led by their peers. They were able to challenge or question other students because their peers did not represent authority, unlike the professor. What is interesting is that students also imitated the way the professor asked an open question to elicit the presenter's opinions further (lines 6 and 8).

A conversation of this type may appear to be shapeless, because one particular opinion or point of view does not predominate. However, the discussion is not intended to reach one particular conclusion. Therefore, the same set of questions may produce different responses in each classroom section. In addition, as the examples have shown, the professor's minimal interventions during the discussion were intended to facilitate active student participation because this approach allowed students to take ownership of the classroom interaction. Further, the professor in these examples tended not to correct the students' English; instead, she simply went along with the flow of the class discussion. Refraining from correcting linguistic errors has many positive effects on communication, as we can see in literacy classes (Collins, 1996), because it allows students to develop the ability to think rather than merely to increase language proficiency.

4.2 Students' Perceptions of Dialogic Interactions

Would such interactions that we saw above lead to students' acquisition of new knowledge? According to Mercer et al. (2009), a dialogic classroom is designed to co-construct knowledge: "through dialogue, students' perspectives can be shown, and when their own voices are recognized, students are more likely motivated" (Mercer et al., 2009, p. 368). The following table indicates that the majority of students prefer discussion in classroom and they believe discussion could help them to understand the subject better.

Table 1. Student satisfaction with discussion in classroom

Survey Questions	Yes	No	Other
Did this class help you to become more confident about speaking in classroom discussion?	147	61	2
Did the classroom discussion help you to understand the issues that were taught in this class?	204	6	0
Was the classroom discussion more interesting to you than the lectures?	151	45	14

In the further interview questions that addressed the reason(s) for their answers, many students who responded positively made the following statements:

In this class, the professor gives us a chance to talk, whereas I don't really get to talk in my major classes. We just listen to the lecture. (Sophomore, electrical engineering)

The professor asked us a question that does not require a single specific answer. So I felt more confident expressing my opinion. (Junior, urban engineering)

Thus, when they feel their answer is valued as one of many possible responses, students feel more confident and included in the learning community.

In addition, although not every student talked in this class, "listening to others" cannot be considered to be simply passive, because students' learning involves listening as well as talking (King, 2013). It is common for silence to be regarded simply as an indication of the inability to think. However, it is often untrue that students are not thinking when they do not talk. As some students observed, it is a way to enhance their understanding of a subject, as articulated in the following responses:

I thought, while listening to others, 'oh, that way of thinking is possible. So I can think of more ways than just mine' (sophomore, electrical engineering)

I was able to understand better after I heard other students' opinions because it made me confirm what I am thinking or what I am not agreeing with. (Freshman, major undecided)

The students who liked to participate in discussion claimed that in dialogic classroom activities they were able to express themselves best in their own words. One student remarked, "It is harder to understand when the information is abstract and the topic is too big, but it gets better through discussion, and because we can use our own language it seems easier to understand." In this quote, "our own language" refers to specific examples they can bring from things they have learned in their engineering classes, or else from everyday life to build their social scientific knowledge.

5. Conclusions

It is assumed commonly that L2 speakers may have a harder time learning new content in a foreign language. However, the data analyzed in this paper suggest that participation in discussion did not require students to have perfect English skills or advanced social science vocabularies, as long as they could understand the professor's questions and articulate their responses in everyday English. Also in this paper, we showed that even those who have a limited command of English were able to express and justify their opinions. Students also drew on their previous knowledge that they brought to this class. The fact that diverse responses were encouraged is one main feature that enabled students to participate equally in classroom interactions. When professors asked authentic questions that allow for many possible answers, students felt more motivated to respond to the questions. These findings suggest that L2 speakers can participate effectively in dialogic interactions in English, and having equal opportunities to take part in classroom activities allows students to become confident participants.

This paper certainly does not argue that linguistic competence has no correlation with academic performance, or that only a dialogic teaching style enables students to learn. The dialogic teaching method was developed for teaching in this Korean university, where students have been divided typically into science and liberal arts tracks from high school onwards. We believe that the students have native knowledge of society from their own standpoint and simply need to learn to talk about it in the vocabulary of social sciences. Hence, the dialogic method is optimal for any undergraduate program in which the majority of students lack prior exposure to social science.

Certain limitations of this study are evident: first, the speech data are limited to a particular social science class in a particular engineering college. Thus, the data cannot be generalized to other EMI classes at this university or elsewhere. Second, class sizes may influence the degree of student participation and opportunities for speech, which we did not consider in this study. These limitations can be overcome through investigation of classroom interactions in science and engineering courses mediated in English and through further empirical studies on the correlations between class size and students' participation and academic performance.

Acknowledgments

References

Alexander, R. J. (2008). *Towards dialogic teaching: Rethinking classroom talk* (4th ed.). York, UK: Dialogos.

Alpert, B. R. (1987). Active, silent, and controlled discussions: Explaining variations in classroom conversation. *Teaching & Teacher Education, 3*, 29-40. http://dx.doi.org/10.1016/0742-051X(87)90032-1

Bamford, J. (2005). Interactivity in academic lectures: The role of questions and answers. In J. Bamford, & M. Bondi (Eds.), *Dialogue within discourse communities: Metadiscoursive perspectives on academic genres* (pp. 123-144). Tübinge: Niemeyer.

Boyd, M. P., & Markarian, W. C. (2011). Dialogic teaching: Talk in service of a dialogic stance. *Language and Education, 25*(6), 515-534. http://dx.doi.org/10.1080/09500782.2011.597861

Cheng, X. (2000). Asian students' reticence revisited. *System, 28*(3), 435-446. http://dx.doi.org/10.1016/S0346-251X (00)00015-4

Cho, J. (2012). Campus in English or campus in shock? *English Today*, *28*, 18-25. http://dx.doi.org/10.1017/S026607841200020X

Clark, R., & Gieve, S. N. (2006). On the discursive construction of 'the Chinese learner'. *Language, culture and curriculum, 19*(1), 54-73. http://dx.doi.org/10.1080/07908310608668754

Collins, J. (1996). Socialization to text: Structure and contradiction in schooled literacy. In M. Silverstein, & G. Urban (Eds.), *Natural Histories of Discourse* (pp. 203-228). Chicago: University of Chicago Press.

Hadjioannou, X. (2007). Bringing the background to the foreground: What do classroom environments that

support authentic discussions look like? *American Educational Research Journal, 44*(2), 370-399. http://dx.doi.org/10.3102/0002831207302173

Haneda, M., & Wells, G. (2010). Learning science through dialogic inquiry: Is it beneficial for English-as-additional-language students? *International Journal of Educational Research*, *49*(1), 10-21. http://dx.doi.org/10.1016/j.ijer.2010.05.003

Hou, A. Y., Morse, R., Chiang, C., & Chen, H. (2013). Challenges to quality of English medium instruction degree programs in Taiwanese universities and the role of local accreditors: A perspective of non-English-speaking Asian country. *Asia Pacific Education Review*, *14*(3), 359-370. http://dx.doi.org/10.1007/s12564-013-9267-8

Joe, Y., & Lee, H. (2013). Does English-medium instruction benefit students in EFL Contexts? A Case study of medical students in Korea. *Asia-Pacific Education Researcher, 22*(2), 201-207. http://dx.doi.org/10.1007/s40299-012-0003-7

Kang, H. (2012). English-only Instruction at Korean Universities: Help or Hindrance to Higher Learning? *English Today, 28*(1), 29-34. http://dx.doi.org/10.1017/S0266078411000654

Kang, S., & Park, H. (2005). English as the medium of instruction in Korean engineering education. *Korean Journal of Applied Linguistics*, *21*(1), 155-174.

Kim, E. (2002). Voices of learners from English-medium lectures. *Journal of the Applied Linguistics Association of Korea*, *18*(2), 145-163.

King, J. (2013). Silence in the second language classrooms of Japanese universities. *Applied Linguistics, 34*(3), 325-343. http://dx.doi.org/10.1093/applin/ams043

Klaassen, R. G., & De Graaff, E. (2001). Facing innovation: Preparing lecturers for English-medium instruction in a non-native context. *European Journal of Engineering Education*, *26*(3), 281-289. http://dx.doi.org/10.1080/03043790110054409

Lee, J. S. (2010). Offering English-mediated chemistry classes in South Korea: A note on this nationwide experiment. *Journal of Chemical Education, 87*(5), 470-471. http://dx.doi.org/10.1021/ed1001152

Manakul, W. (2007). Role of English in internationalization of higher education: The case of the Graduate School of Engineering. *Higher Education and Lifelong Learning*, *15*, 155-162.

Mercer, N., Dawes, L., & Staarman, J. K. (2009). Dialogic teaching in the primary science classroom. *Language and Education, 23*(4), 353-369. http://dx.doi.org/10.1080/09500780902954273

Milne, D. E., & García, D. S. (2013). Does everybody understand? Teacher questions across disciplines in English-mediated university lectures: An exploratory study. *Language Value, 5*(1), 129-151.

Morell, T. (2004). Interactive lecture discourse for university EFL students. *English for Specific Purposes, 23*(3), 325-338. http://dx.doi.org/10.1016/S0889-4906(03)00029-2

Morell, T. (2007). What enhances EFL students' participation in lecture discourse? Student, lecturer and discourse perspectives. *Journal of English for Academic Purposes*, *6*, 222-237. http://dx.doi.org/10.1016/j.jeap.2007.07.002

Myhill, D. (2006). Talk, talk, talk: Teaching and learning in whole class discourse. *Research Papers in Education*, *21*(10), 19-41. http://dx.doi.org/10.1080/02671520500445425

Nystrand, M., Gamoran, A., Kachur, R., & Prendergast, C. (1997). *Opening dialogue: Understanding the dynamics of language and learning in the English classroom*. London & New York: Teachers College Press.

Oh, H., & Lee, H. (2010). Characteristics of effective English medium instruction and support measures. *Modern English Education, 11*(1), 191-202.

Park, H. (2006). The effectiveness of English-mediated courses with engineering students. *Journal of English Education*, *33*, 86-119.

Ryan, J., & Viete, R. (2009). Respectful interactions: Learning with international students in the English-speaking academy. *Teaching in Higher Education, 14*(3), 303-314. http://dx.doi.org/10.1080/13562510902898866

Sacks, H., Schegloff, E., & Jefferson, G. (1974). A simplest systematics for the organization of turn-taking for conversation. *Language, 50*(4), 696-735. http://dx.doi.org/10.2307/412243

Tsuneyoshi, R. (2005). Internationalization strategies in Japan: The dilemmas and possibilities of study abroad programs using English. *Journal of Research in International Education, 4*(1), 65-86. http://dx.doi.org/10.1177/1475240905050291

Yip, D. Y., Tsang, W. K., & Cheung, S. P. (2003). Evaluation of the effects of medium of instruction on the science learning of Hong Kong secondary students: Performance on the science achievement test. *Bilingual Research Journal*, *27*(2), 295-331. http://dx.doi.org/10.1080/15235882.2003.10162808

Notes

Note 1. The transcript partially follows the conventions of conversational analysis (Sacks, Schegloff, & Jefferson, 1974). Transcription conventions: "=" = latching (overlap between adjacent turns); = lengthened vowel; hhh = laughter; (xxx) = uncertain or undecipherable; underline = utterance highlighted for analytic purposes; (.) = pause; "text" = quoted speech; ( ) = description of speech situation and other paralinguistic features, and [ ] = transcriber's comments, omitted phrases, or non-literal translation. "P" indicates "professor," and "S" indicates "students." Students are numbered because more than one student is participating in the interaction. Transcription followed the speakers' verbatim speech; therefore, some parts of utterances may be ungrammatical or incomplete sentences.

Copyrights