Perceptions of ESP Lecturers' Professional Development in China: An Ecological Perspective

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Abstract

The teaching of English for Special Purposes (ESP) has become the mainstream of English teaching in Chinese universities. This article, from a perspective of Educational Ecology, explored ESP lecturers' professional development in Chinese universities. Semi-structured interviews were conducted on 13 ESP lecturers who were in the interim of transforming from teaching of English for General Purposes (EGP). It was found that there existed an imbalance in the ESP lecturers' professional development in terms of internal and external ecology. In order to resume the ecological niche, this article proposed a quadruple symbiosis of ESP lecturers' professional development, namely an integrity of ESP lecturers' autonomy, management support, ESP teacher community, and ESP teacher training and enterprise cooperation internship.

Keywords: English for Specific Purposes (ESP), educational ecology, teacher professional development

1. Background and Introduction

The English teaching for non-English majors in Chinese universities, termed as College English Teaching (CET), used to be structured as 'English for General Purposes'(EGP) (Gao & Bartlett, 2014; Hao & Yin, 2015). However, the EGP teaching had been critiqued as being disengaged from its pragmatic purposes, which was out of the tune with internationalised development of China (Borg & Liu, 2013). Accordingly, the new round of CET reform in Chinese universities, starting from 2015, framed English for Specific Purposes (ESP) as its "the core" (Luo & Garner, 2017, p. 82). This reform requires that all non-English majors learn ESP after the completion of EGP, which presents a challenge for the EGP teachers who are encountered by a role shift into teaching both EGP and ESP courses.

ESP is conceptualised by its leading scholars, such as Hutchinson and Waters (1987) and Dudley-Evans and St. John (1998), as the English courses specially offered according to learners' specific occupational needs or techniques, such as business English, metallurgical engineering English. According to Paltridge and Starfield (2013), the goal of ESP is to acquaint learners with the English to perform professional communication in particular domains. ESP has traditionally been divided into two main streams: English for Academic Purposes (EAP) and English for Occupational Purposes (EOP), with the former pertinent to the English needed in an educational context while the latter to the English needed for occupations.

The teaching of ESP is characterised by its cross-disciplinary engagement (Dudley-Evans et al., 1998). However, the present ESP teaching in China is far more than satisfactory. As commented by Cai (2014) and Gao and Guan (2016), of the various other contributing factors , the important reason lies in the insufficiency of ESP teachers' quality, which has, in effect, become kind of a hindrance in the current ESP teaching in China (Li & Wang, 2017). As argued by Wang (2010), "the quality of ESP teachers has always been the 'bottleneck' impeding the efficacy of ESP teaching in China" (p. 80). This idea is echoed by Liu (2015), who contended that the quality of the present ESP teachers in China, where English is learnt as a foreign language, is more likely to impact on learners' success than any other factors. Currently in China, the ESP courses are mainly instructed by two types of lecturers: subject teachers and EGP teachers. ESP courses in China used to be lectured by subject teachers in most Chinese universities, who, though proficient in ESP related subject knowledge, are generally found underequipped with English language skills. EGP teachers, on the other hand, though well equipped with English language skills, are often found shorthanded in ESP related subject knowledge. Apart from that, some EGP teachers are noted to be unfamiliar with, or inexperienced in ESP related operational tasks, regulations or negotiation skills due to a lack of practical training or practice, which has, undeniably, impacted on the efficacy

of ESP teaching.

ESP teaching has become the blueprint of CET reform (Li & Wang, 2017). English language teachers are confronted with a role transfer into teaching both EGP to ESP, during which, qualified ESP lecturers who are well equipped with subject knowledge are in high demand. Teachers' professional development (TPD) is 'the spearhead' to push forward a reform, as argued by Cai (2015). TPD is a professional growth in which teachers continuously acquire teaching expertise and systematically enhance teaching efficacy (Glatthorn, 1995). TPD is an ongoing teachers' learning experience, which lasts the entire career of one's teaching. As pointed out by Kuijpers et al. (2010), teachers are the key figures to influence students' success, and thus TDP should "focus on improving teaching quality" (p. 1687).

2. Educational Ecology and ESP Teaching

Ecology is a subject studying the interrelation and interaction between organisms and their surroundings. Educational ecology, first proposed by Ashby (1966), is the integration of ecological concepts into the education field. As an interdisciplinary subject, educational ecology seeks to adopt ecological fundamentals to interpret the interconnection and intercommunication of the various factors within education system, as well as the energy fluidity and information exchange with their settings (e.g., teaching, institutional or societal settings). According to Huang and Chen (2010), educational ecology is a dynamic contradictory comformity integrated with adaptation and development, balance and imbalance, symbiosis and mutual competition, which concerns the relationship between "human-education-environment" (p. 8). Educational ecology highlights that education is a multi-faceted ecosystem, in which each factor, say, teachers, students or administrators, occupies their own 'ecological niche', intermingled and inter-functioning so as to achieve their respective values and gains from it. Only when all factors are working well, can the system remain balanced and stable through its self-regulation; however, when certain factor is abnormal, or disordered, this self-regulation will be attenuated or even diminished, thus leading to the emergence of ecological crisis of the entire system (Huang & Chen, 2010).

Viewed from educational ecology, English as a foreign language learning (EFL) in Chinese universities, is a macro-ecosystem (Yue, 2013). ESP, as a sub-ecosystem, or a micro-ecosystem of EFL system, comprises various ecological factors, for example, ESP teachers, students and administrators, ESP curriculum, teaching contents, pedagogy and assessment. These factors are interdependent yet competing against each other so as to maintain the balance of the system. TPD, as one of its sub-factors, occupies a prominent niche in the ESP education ecosystem, whose quality ultimately determines the equilibrium of EFL system. Yue (2013) compared the ESP ecosystem to an 'egg-layered' configuration as illustrated in Figure 1.
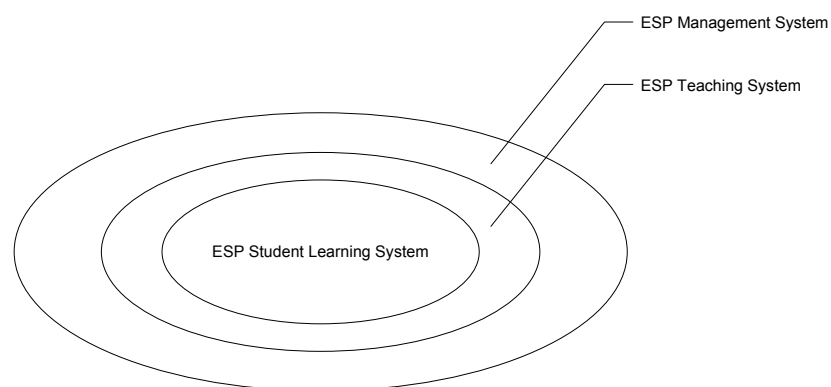

Figure 1. 'Egg-layered' ESP education ecosystem

Source: Yue, 2013, p. 58.

According to Yue (2013), the ESP ecosystem is a three-layered system comprising three stratums of 'shell', 'white' and 'yolk', with ESP teaching sub-system located in the intermediary, which is intercommunicating with the inner and outer layer of the system. As illuminated in Figure 1, the outermost lies the ESP management system. With the strongest organisational structure, this stratum is sensitive to the external information in education scenario, for instance, education policies, social needs, and quickly responds and timely transmits to the other layers, prompting them to adapt to the changes in the environment accordingly. The ESP teaching

system lies in the "hinging layer" of the 'white stratum' that links with students and administrators (Yue, 2013, p. 58). This stratum is not merely the main source from which students acquire knowledge, but the primary channel from which administrators get feedback. In the innermost 'yolk stratum' situates the ESP students' learning system, which is the ultimate attendees of ESP education service. The three sub-ecosystems are nested and interdependent, centering on ESP student learning ecosystem. With ESP teachers' qualities as the 'basic physical entity', the three sub-systems (or organisms) consecutively exchange energy and information, for instance, students' learning needs, institutional management, social needs, education policies and international environment. Yue (2013) holds that only when the three sub-systems are coordinated and functioning well, can the ESP education work on track as expected.

Yue's (2013) model has vividly depicted the ecological niches within the ESP system. The ESP teacher layer in the 'egg-layered' model resembles Bronfenbrenner's (1979) meso-system in the social ecological learning model, which forges the connection between students' learning needs and administration system. To promote education reform, teacher professional development is the prerequisite (Cai, 2015). Educational ecology provides a theoretical framework for the professional development of ESP lectures in China. From the perspective of ecology, TPD is an ecological evolutionary process, in which teachers endeavor to enhance their professional knowledge, skills and teaching ethics with an aim of promoting learning efficacy (Guskey, 2000; Xue, 2012).

3. ESP Lecturers' Professional Development

With the emergence of educational ecology, ecology-centered approach has witnessed a focus shift from the theoretical exploration to its practical application, from the macro-study of the interrelationship between ecology and education, politics and economy to the micro-study of its application to pedagogy and classroom instruction (Deng & Du, 2009). Literature highlights various matrixes developed to describe the process of TPD. Modelling TDP experienced a process from 'linear model' (e.g., Guskey, 1986) to 'single-cyclic model' (e.g., Clarke & Hollingsworth, 2002), and then to 'double-cyclic model' (e.g., Kuijpers, 2010). These models foreground the various components of TPD. For example, Guskey (1986) emphasised teaching practice while Clarke and Hollingsworth (2002) highlighted the composite of four domains in TPD, namely individual domain (knowledge, beliefs and attitudes), practice domain (professional experimentation), efficacy domain (salient outcomes), and external domain (sources of information, stimulus or support). Particularly, Kuijpers et al.'s (2010) Integrated Professional Development Model for Effective Teaching was considered as a "feasible model for teacher development" (p. 1693) and thus highly implemented in practice. Kuijpers et al.'s (2010) model depicts the process of promoting TPD from four dimensions: individual coaching and team monitoring, training support, and institutional management, stressing the collaboration of internal and external environment in TPD.

In the early 21st century when ecological ideology was introduced to EFL in China (Liu, 2015), Chinese scholars set out to conduct systematic research on ESP teaching. While much of the Chinese literature centred on ecological curriculum design (e.g., Han & Dong, 2011; Qi, 2012), ecological classroom (e.g., Yue, 2013), and ecological pedagogy (e.g., Chen, 2010), few studies were conducted on ESP lecturers' PD (Qiu, 2015). With the advancement of the ESP-oriented CET reform in China, studies related to ESP lecturers' PD have emerged. For example, Wang (2010) and Zhang (2012) explored ESP lecturers' role transfer, and argued that qualified ESP lecturers should be equipped with 'adequate language teaching techniques and professional exterpise'; Tao and Gao (2018) and Cai (2021) empirically investigated the identity construction of ESP lecturers during their transition from EGP to ESP teaching, and found that they were conspciously 'marginalized'. Cai (2021) argued that one of the main reasons for ESP lecturers' low identity is that ESP courses, as a subject major, fail to be emcompassed into the subject catalogs issued by China's Ministry of Education due to its ambiguity in the EFL teaching, which, to a large extent, has deterred lecturers from shifting from their original specialties, namely English Language and Literature or Translation studies, to engage in the new field—ESP research. Despite that, few studies have focused on ESP teacher professional development experiences (Cheng, 2016). Admittedly, a handful of studies have delved into the PD of Chinese ESP lecturers from the persective of educational ecology. For example, Qi (2012), Qiu (2015) and Yue (2012) argued that ESP lecturers' PD is a synthesis of their internal and external ecological development. Nevertheless, few research has put ESP lecturers' PD into a dynamic and systematic ecosystem.

ESP lecturers are the most dynamic factors in the ESP ecosystem, whose quality is the ultimate determinant of the ESP reform (Li, 2022). To put ESP lecturers in the framework of ecducational ecology is to situate TPD in the contextual syntheses of individual, social and cultural settings (Liu, 2015). This research, from the perspective of educational ecology, sought to identify how ecological settings influence and determine Chinese ESP lecturers' PD in order to construct a matrix with China's characteristics that fits the current settings of ESP teachers. This project aimed to address the following two questions: i) what is the ecology of the ESP lecturers'

PD in Chinese universities ? ii) what could be done in order to construct a harmonious symbiosis ecosystem regarding ESP lecturers' PD in China?

4. An Investigation of ESP Lecturers' Professional Development

4.1 Research Method

In this research, a purposive sampling method was utilised to select the matched participants. The participants were enlisted mainly through distributing invitation cards with the researcher's contact number indicated via Wechat and QQ, two Chinese popular social media. Personal efforts were also made by the researcher through approaching departmental/institutional directors with a request to help to recruit ESP lecturers. Eventually 13 academic participants were recruited from six universities in Chongqing China.

A semi-structured interview was conducted to collect qualitative data concerning ESP lecturers' perceptions regarding their PD in the transition from EGP to ESP professionals. This technique enabled the researcher to use a list of already pre-determined questions to obtain respondents' opinions of the topic under discussion. The interview questions were developed based on a detailed exploration of the issues associated with ESP teachers' PD in the review of literature (e.g., Cheng, 2016; Liu & Huang, 2017; Liu & Garner, 2017; Shi, 2018). Although the guiding questions were pre-designed, they were, in effect, open-ended enough to engage participants to reflect deeply, talk freely, and "actually construct their social worlds" (Silverman, 1997, p. 21). Questions related to ESP lecturers' professional development needs, approaches, confusions, organizational support and their expectations were included in the survey in order to explore the ecological situation of ESP teachers' PD.

After a pilot interview, formal interviews were conducted. In order to ensure the sample was as representative as possible, consideration was given to the gender, years of service in ESP teaching, subjects of ESP courses and affiliation to universities. In order for the participants to fully express their thoughts, the interviews were conducted in Chinese Mandarin.

A long and iterative process was used to organise the qualitative data collected from interviews with the participants. The 40 to 60-minute length of each interview recording was first transcribed into text verbatim, and the main ideas extracted and sent back to the participants for accuracy checking. The checked data was translated into English by the researcher, and further back-translated before being entered into NVivo software for thematic coding. In order to protect anonymity, data collected from the participants were de-identified and pseudonyms were used with A1−13 referring to the participants, U1−U6 their affiliation, and F and M standing for gender of female and male.

The participants, with four males and nine females, were enlisted from six different universities aged from 25 to over 61 with most between 30 and 45. They had different teaching experiences with lengths of working from 4 to 34 years. All of them used to be EGP teachers, and were lecturing both EGP and ESP courses at the time of investigation. They were instructing different ESP courses such as Medicine English and Investment English. Of the six universities under investigation, only one (U1) ranks as a 985-ranking university in China and the rest five are ordinary universities located in Southwest China.

4.2 Primary Findings

A thematic analysis (Minichiello et al., 2008) was conducted with several rounds of coding. The transcribed data were entered into NVivo12.0 for nodes coding and analysing based on emergent themes. Eventually, four main themes were identified related to the ESP lecturers' PD during their transition from EGP to ESP, which are classified as internal and external imbalance of ESP lecturers' PD ecology.

4.2.1 Internal Ecological Imbalance

Identity Struggle. As revealed in the interview, 8 out of 13 of the interviewees (nearly 62%) reported that they had a sense of inadequacy while instructing ESP courses. A majority of the participant academics (75%) admitted their unpreparedness in ESP teaching as they seemed have not acquired adequate subject knowledge, skills or theories in the field ESP. They reported kind of 'devaluation' when working with students who seemed to have known more about the specific areas than them, particularly when confronted with the skepticism from some ESP specialists who questioned their qualifications, particularly as compared with ESP subject lecturers. As was expressed by one participant, "*with a liberal arts mindset, science and engineering stuff renders me headache. I do not know much of that knowledge, then how can I go to teach students?*" (A6U5M) Another participant lamented "*ESP courses, together with EGP courses, are not held high in China, and have been placed into the selective course lists. …. It is unfavorable to ESP teaching*" (A9U2F).

4.2.2 External Ecological Imbalance

Defficiency of In-service Training. This interview also revealed some external imbalance that had impeded ESP lecturers' PD. All the participant lecturers reported great pressure arising from both teaching and research. Apart from EGP course, they had to deliver ESP courses simultaneously, which had consumed most of their availability, acquiring the relevant new knowledge, skills or theorises related to ESP, preparing and giving lectures. Most of the participants reported in-service training was effective to speed their classroom performance but the opportunity was scarce, with merely 5 in 12 (42%) having obtained. Particularly overseas training was most scarce with only one having secured. As was quoted by one participant:

> *Relatively fewer training opportunities were provided by universities. Some English teachers were directly put into [ESP] teaching without going through formal training. Acquisition of ESP expertise, or theories [related ESP], had to be sought by ourselves… but it would be better if a bit of in-service training could be provided. That would have made things better.* (A4U1F)

Also, another participant commented, "*if been trained, we would not have so struggled in preparing and delivering lessons. But you know, training opportunities were too rare*" (A8U5M). Even there was a chance for English teachers to get trained, the efficacy seemed have been discounted. As one respondent (A10U6F) remarked, "*I do not think it [the ESP training] was so much geared at EGP lecturers since what we [ESP lecturers] need most is the subject related expertise. But we have to acquire it by ourselves*".

Inadequacy of Teacher Community Support. In addition, this study also identified the inadequacy of team support. The informants reported that, various ESP teams, such as Business English Team and Marine English Team, were established with an intention to provide support for ESP teachers. However, when it comes to more specialized ESP knowledge and skills, they had to seek external assistance, such as lecturers from other department. Due to the informality and instability of such external assistance, it was at odds with their needs for PD.

Procdualised Management System. The participants also reported the issues of "proceduralism" related to ESP lecturers' promotion and assessment. As revealed in this study, the current ESP assessment system in the universities under investigation was more '*procedualised' than 'humanistic*' (A1U1M), with much more weight prioritised on the turn-out of research papers. The participants complained they were being pushed harder than ever before to publish research outputs. When confronted with the 'publish or perish' academic culture (Lee, 2014) in Chinese tertiary institutions, the ESP practitioners are required to fulfill the quantified research. Such helplessness was discerned by the remark from one participant:

> *Besides preparing lessons and giving lectures, I have to finish research tasks. It is killing me. The university puts too much weight on research outputs. Only if you have turned out research, can you get promoted.* (A7U2F)

Some practitioners reported they were fully occupied so that they hardly had time considering furthering their career development. As another teacher complained:

> *Apart from teaching, I have to fulfil my obligations (e.g., looking after my child, aging parents).… A big burden [is] from teaching and research. Professional development? Maybe later [I will do it]. I do not find the time now.* (A3U2F)

5. Construction of ESP Lecturers' Professional Development Matrix

Educational ecology is prominently characterised by stability and continuity with emphasis on the interconnectedness and dynamic construction of the whole system (Liu, 2015). Teacher professional improvement is a long-term, continuous and dynamic process that requires systematic planning (Kuijpers et al., 2010). As indicated in this study, the current ESP teacher participants were confronted with identity struggle arising from the pressure stemming from teaching and research, along with a perceived lack of adequate external support for their PD. As such, there appears a need to construct a pathway suitable for the ESP lecturers at the transit from EGP to develop their ESP professional career.

To construct the TPD Matrix is to explore the internal mechanism and external facilitators of TPD process (Li, 2022). Considering the status quo of ESP teachers, this study proposed constructing a symbiosis of internal and external facilitators for their PD from the perspective of educational ecology as diagrammatised in Figure 2. This matrix was formulated based on the elements generated from the investigation of ESP lecturers, and also integrated with other factors included in studies related to TDP (e.g., Clarke & Hollingsworth, 2002; Kuijpers et al., 2010), as discussed in the literature review. It was proposed that ESP teacher professional development could be conducted from two broad ecological perspectives: internal and external, with the former expressed by individual coaching and the latter broken down into management support, teacher community, and ESP training

and probation mechanism. As maintained by Yue (2013), teachers' professional advancement is a dynamic adaptive process between teachers and their surroundings. While individuals' internal drives ultimately determine the breadth and width of their development, external facilitators are the guarantee of teachers'their professional growth in the retifief ecology. The following is nuanced elaboration of the factors included in this quadruple symbiosis.
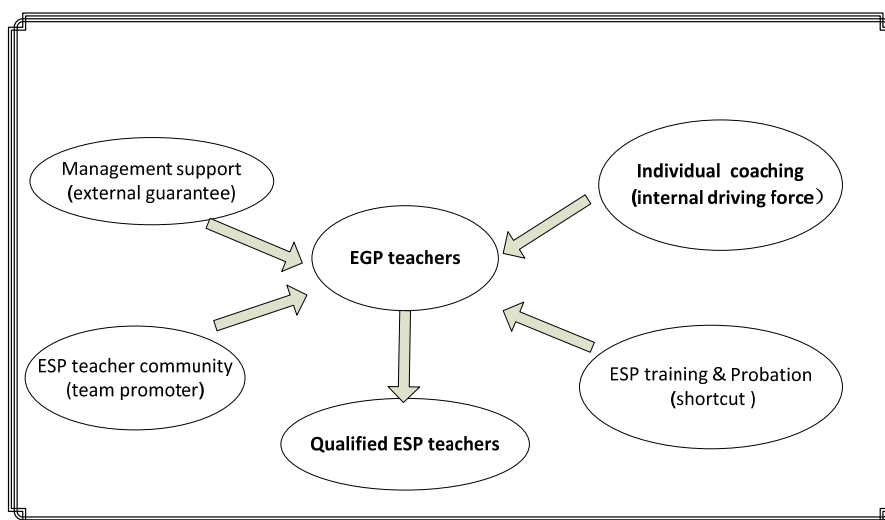

Figure 2. A quadruple symbiosis of ESP lecturers' professional development

Source: Li, 2022, p. 99.

5.1 Individual Coaching

In the ESP ecosystem, ESP lecturers are the most active organism, whose ecological state ultimately determines the stability of the whole system. Educational ecology stresses that, individual factor should, first, work out all to adapt and proactively cooperate with other factors within its system in order to achieve sustainable development (Liu, 2015). According to Feiman-Nemser (2001), TPD, in fact, is an individual long-term learning and self-constructing process, which is implicitly epitomised by the growth in expertise, skills and moralities, and this level of personal growth is heavily depended on individuals' activeness (Mao, 2016). This nationwide English curriculum overhaul undoubtedly presents challenges to English teachers (Cai, 2015; Tao & Guo, 2018). For those who have been confined to EGP for a long time, the interdisciplinary nature of ESP undoubtedly brings challenges to their original professional skills and knowledge structure. As pointed out by Cai (2015), the ESP teachers' identity struggle could be accounted by the long prevailing ideology in China, the 'common cores' of foreign language teacher education, which highlights the commonality of English languages skills in language use regardless of subjects. Educated and guided by such an ideology, most English lecturers in China have liberal arts mindset, majoring in English literature, linguistics or translation (Cai, 2012), who might know well how to teach English language (Zhang, 2012), but lack other expertise, say, the subject-matter knowledge (Cai, 2015), disciplinary knowledge, particularly the knowledge in science and engineering (Wang & Tao, 2010). ESP, as a language specially gearded to learners' occupational needs, has interdisciplinary characteristics, which elicits lecturers' expertise far beyond their so called 'common cores' of the English language teaching (Dudley-Evans & St. John, 1998). Although language use is a prerequisit that qualified lecturers are equipped with, other competencies, such as pragmatic competence, subject knowledge and professional skills, are all essential. Confronted with this identity struggle, how ESP lecturers seek to obtain ESP related expertise, to a great extent, determines ESP teachers' ecosystem, and thereby the success of ESP reform.

In view of ESP teachers' identity struggle, Li (2022) argues that ESP lecturers need, first, seek personal autonomous development reconstructing their knowledge structure by acquiring relevant ESP expertise so as to boost their identity as ESP professionals. As suggested by Master (1997), ESP teachers can achieve their personal growth through the strategies of 'self-coaching' and 'learning as they go'. Post-modernism and action research theory both hold that teachers advancement is autonomous, dynamic and continuous constructive process, during which teaching reflection and action research are keys to their self-improvement. Wang and Yu

(2021) argue that relective practice is condusive to TPD. To make it specific, ESP teachers can conduct systematic and reflective researches on the problems arisen from their routine teachings. That is what Schon (1992) depicts as "reflection-in-action" and "reflection-on-action" (pp. 21, 26).

As suggested by academic interviewee A1U1M, the ESP lecturers can implement institution-based action research to speed up their transformation through self-reflecting, peer coaching and expert monitoring. As was quoted from him:

> There exists a burn-out on some English teachers. To those with fixed knowledge structure, ESP teaching is challenging… [However,] institution-based research might be a way out. Particularly at present when there is not enough external supports, ESP teacher development has to largely depend on them…. It [institution-based research] is derived from and serves teaching. It can help alleviate such problems, say, the lack of large-scaled training of ESP teachers due to resource deficiency, the mismatch between research and practical teaching, the collision between research schedule and lecture time… (A1U1M).

Consistent with this idea, Gao and Guan (2016) argue that, university-based action research is suitable for ESP teachers' PD, which could be "the most effective way" to assist them to become classroom researchers (p. 113), as it can help greatly remove some of the impediments in ESP lecturers' PD (Qi, 2012).

5.2 Management Support

Bronfenbrenner (1979) highlights the tremendous impact the external ecology exterts on individual development. The internal need of ESP lecturers' PD could be motivated via supports from the outside (Li, 2022). Liu and Huang (2017) argued that the external ecology is indispensable for teachers' progress in their professions. As pointed out by Cao (2006), how to comprehensively optimise the ecological settings and to establish sound management ecology is of significance to TPD. Of various external factors impacting on ESP teacher, institutional or faculty management have the most direct influence on ESP lecturers' trajectories of PD.

As indicated in the interview, part of the reasons for ESP lecturers' devaluation was attributed to the perceived inadequate institutional management, particularly to the procedualism in terms of teacher assessment. Viewed from educational ecology, assessment is, by nature, a psychological construction process through negotiation between the assessors and the assessed, which is characterised by unfinalisability (Kramsch, 2008). Chang (2013) contends that a pluralist assessment system helps motivate teachers' intrinsic needs for professional growth. A pluralist assessment system, as defined by Liu and Huang (2017), is one fused with assessing both teaching process and product quantitatively and qualitatively, formatively and summatively, with self-assessing and mutual assessing combined. Liu and Huang (2017) argued that such a system can essentially boost ESP lecturers' professional growth. In Cao's (2006) view, assessment should focus on the developmental evaluation of teachers, paying attention to their personal growth experience. Cao (2006) further pointed it out that teacher assessment, rather than an end to supervise their behaviors, is supposed to be a means to reasonably analyse and evaluate teaching efficacy in order to understand and track students' learning needs, and then to macro-adjust the management at institutional and faculty levels.

Educational ecology highlights that inner equilibrium is the prerequisite for the development within the system, being personal or as a whole, and this equilibrium can be achieved through personal emotion, cognition and psychology (Bronfenbrenner, 1979). As indicated by Fessler (1985) in his theory of Teachers' Professional Life Cycles, to the lecturers at their novice stage, 'motivational rewarding' is supposed to be highlighted. Such is the case for the ESP lecturers who are just at their budding phase of ESP profession, whose work is understandably hard and stressful. As such, "incentive-oriented" and "developmental assessment" are recommended by Cao (2006, p. 124), who holds that such a system is conducive to motivating teachers' enthusiasm to acquire expertise and promote their career development. Qi (2012) espouses that, in contrast with the procedural administrative management system, 'humanistic management' can effectively stir up ESP teachers' motivation for PD.

5.3 ESP Teacher Community

TPD is not only the evolution of individuals, but also the process of "teamwork and team growth" (Ye, 2009, p. 25). Integrating and optimising teacher resources are also effective ways to improve ESP teaching quality. For the two types of ESP lecturers in the present ESP teaching in China, each has their 'short board' (Cao, 2009), namely "subject teachers' deficiency of English language skills while English teachers' insufficiency of subject knowledge" (p. 124). Therefore, neither EGP teachers nor subject teachers alone can effectively accomplish the ESP teaching task, as students' academic needs are not sufficiently satisfied by either English teacher or subject teacher (Ghafournia & Sabet, 2014). Accordingly, some scholars, such as McDonald (2014) and Shi (2018),

propose an interdisciplinary collaboration between English and subject lecturers through the establishment of a "subjects-learning community" or "community of practice". According to Coffey (1984), a subject-learning community facilitates to improve teaching quality and teachers' coaching ability while effectively reducing the negative influence on teaching caused by teachers' insufficiency in knowledge structure. Hence, it is considered an effective strategy to promote teacher's PD (McDonald, 2014). As pointed out by Shi (2018), ESP pedagogy that is featured by the inter-sectional involvement necessitates collaborative efforts from 'teaching team'.

Specifically speaking, ESP teacher community refers to the collaborative team established to achieve interdisciplinary cooperation between English teachers and subject teachers. This community consists of three types of lecturers: English teachers, subject teachers and ESP specialists. English teachers, with linguistic expertise, are expected to be the main entity of this community, who are the 'purveyors' for learning contents and 'orchestrators' of student learning, collaborating closely with the subject teachers through ESP teaching practices, and conducting professional learning under the guidance of the ESP specialists (Shi, 2018, p. 18).

The cooperation engagement between the three cohorts enables English lecturers better informed of students' learning needs while enhancing subject lecturers' English language competency (Shi, 2018). According to Dudley-Evans and John (1998), there are three levels of cooperation between language and subject practitioners according to the intimacy of working together between them: cooperation, collaboration and team-teaching. Shi (2018) argues that, from the perspective of ESP teaching practice, team-teaching is the primary means of interdisciplinary cooperation among ESP practitioners. That is, English teachers and subject teachers form a team, exchanging ideas on regular basis, negotiating and co-supervising the teaching process, for example, working out the curriculum, writing lecture plans, giving lectures and assessing students' learning. Collaborative teaching enables the two cohorts to learn from each other and make progress together to achieve their PD collaboratively.

5.4 ESP Teacher Training and Enterprise Probation

As indicated previously, this ongoing ESP curriculum reform involves all English teachers in China. As compared with the vast majority of ESP lecturers who are in the transit from EGP, there exists a severe shortage of ESP in-service training. This study echoes what Luo and Garner (2017) found in their study that ESP teacher training in China is in high demand given the fact that a majority of EGP teachers are in their transition into ESP profession. As Misra (2018) and Qiu (2015) argued, one of the viable approaches to enhancing ESP lecturers' quality is to implement in-service training. Cai (2015) maintains that ESP training is a shortcut to upgrade ESP lecturers' expertise. However, it is unrealistic to get all the English teachers trained in large-scale in a short period of time. As such, university-based training is seen as an economical yet effective training mode. University-based-in-service training, as defined by Wang (2010), refers to the on-campus training activities initiated by universities to revitalise university teaching resources. Characterised by its flexibility, this training mode avails ESP lecturers the opportunity to get trained based on their individual schedules while they are teaching. As commented by Wang (2010), such training programs are effective in keeping the continuity of training due to the convenience and less disturbance incurred on teaching.

In addition, literature suggests that ESP teachers obtain practical performing skills through cooperation with enterprises (e.g., Gao & Guan, 2016; Li, 2022). That is, an ESP teacher-to-enterprise training internship system can be established to promote engagement between ESP teachers and enterprises. The specific operation goes that enterprises set up research projects based on their own business needs, offering ESP lectures the opportunity to research and perform the task guided by the ESP experts from the community. By engaging in such enterprise projects, ESP lecturers can not only improve their professional practice ability, but also learn the timely social needs for ESP teaching. Gao and Guan (2016) argue that such an internship is a win-win strategy for both ESP lecturers to achieve their social values, and enterprises to improve their efficiency economically and socially. Therefore, it is advised that higher institutions establish an ESP teacher internship base, or an off-campus learning center, to achieve resource sharing with enterprises for mutual benefits.

As elaborated above, the quadruple symbiosis matrix is an attempt to explore how ESP lecturers, particularly those in the transition from EGP, effectively achieve their PD from the perspective of educational ecology. This symbiosis matrix, integrated internal and external ecosystem, is an evolutional process for English teachers to craft and develop their profession in ESP teaching. In this matrix, as demonstrated in Figure 2, while ESP lecturers' autonomous coaching is the primary internal impetus for their PD, the other three constituents, i.e., managerial support, professional community and teacher training and probation system, are the external ecology. With management support, both at institutional or faculty levels, being the most direct 'external guarantee' to promote ESP lecturers' PD, teacher community is the 'team promoter'. While in-service training is 'the shortcut'

to upgrade their knowledge structure and enhance their delivery in ESP teaching, enterprise probation system is the 'training base' to boost their actual performance in ESP profession.

6. Conclusion

The proposed quadruple ecological framework basically covers the factors influencing ESP ecosystem within Chinese universities, serving as a guideline for ESP lecturers' PD pathway. ESP lecturers, professional community, institutional managment and corporate probations are united organic beings in the ESP ecosystem. Only by comprehensive considerations and overall arrangements, can the goals of ESP lecturers' PD be achieved as expected.

As with any study of similar kind, this study has some limitations. First, this study was a cross-sectional study with a single snapshot provided in time of ESP lecturers' perceptions of their PD. As is well documented, TPD is an evolutionary process, which can not be achieved in a short period of time. As such, a longitudinal study could be conducted to provide opportunities to measure the dynamics of ESP lecturers' PD over time. Another limitation involves the representation of the chosen sample in this study—the 13 ESP teacher participants recruited from six universities in Chongqing, China. Although the sample size was sufficient for statistical analyses, future study should involve a more representative sample of ESP lecturers from more Chinese institutions. Furthermore, this study only delved in the inside factors within university impacting on ESP lecturers' PD with other outside factors, such as international political status quo, national linguistic policies and social needs, untouched for the limited pages confined to this study, which, however, are indispensable for teachers professional development and should be covered in further research.

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