Innovations

The TPACK Level of College EFL Novice Teachers and Experienced Teachersin China

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Abstract : *The TPACK level of college EFL teachers can realize teaching innovation, lay a solid foundation for the all-round development of students, and help the national digital education strategy to further promote.The paper aims at finding what is the TPACK level of college ELF novice and experienced teachers. Firstly, by means of questionnaire survey, this study studied 100college EFL teachers(experienced teachers and novice teachers) in Hebei provincein China. Then, the paper analyzes the differences between novice EFL teachers and experienced EFL teachers in seven dimensions of TPACK and analyzes the reasons for the differences in combination with the interview method. Finally, according to the TPACK development model proposed by predecessors, this paper puts forward an effective way for college EFL novice teachers and experienced teachers to improve their TPACK ability.*

Keywords: *TPACK level, College EFL novice teachers, College EFL experienced teachers*

1. Introduction

The rapid advancement of technology requires an examination of its effects on education and teachers' beliefs (Margerum-Leys & Marx, 2002). TPACK, a concept introduced based on Shulman's Pedagogical Content Knowledge (PCK) (Shulman, 1986), incorporates technological knowledge to analyze how teachers use information technology in classroom instruction. In 2006, Koehler and Mishra formally introduced the TPACK framework, detailing its components, as illustrated in Figure1. This framework includes three core areas of knowledge: technology, subject matter, and pedagogy, and four complex areas of knowledge: technological pedagogical knowledge, technological content knowledge,

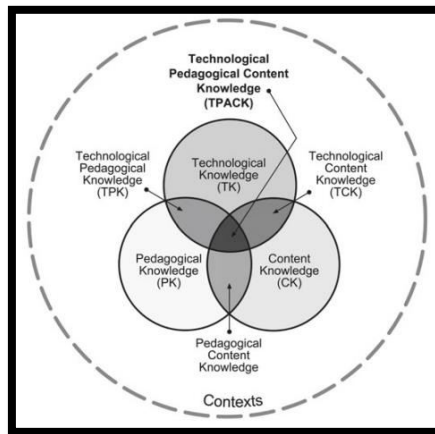pedagogical content knowledge, and technological pedagogical content knowledge (Mishra & Koehler, 2006).

Figure 1 TPACK framework proposed by Mishra & Koehler (2006)

The TPACK constructs are elements that make up teacher knowledge for effective technology integration. TPACK is designed as a seven-component model that elucidates the connections between technology knowledge (TK), pedagogical knowledge (PK), and content knowledge (CK) (Koehler & Mishra 2009; Mishra & Koehler, 2006). TPACK represents a pedagogical approach to teaching content using the most suitable technology for the subject matter (Mishra & Koehler, 2006).

2. Problem Statement

With the rapid development of information technology, modern education technology has been greatly impacted and transformed, and the application of information technology in education by college EFL teacherscan optimize classroom teaching and change learning methods, which also puts forward new requirements on the knowledge that teachers should master.

The TPACK level of college EFL teachers can realize teaching innovation, lay a solid foundation for the whole development of students, and help to promote the national digital education strategy. However, the current research has not fully reflected the TPACK level of college EFL teachers. The development of teachers should go through the transition from novice teachers to experienced teachers.

At present, there are few research on TPACK for novice and experienced EFL teachers in colleges. Some studies have analyzed the differences in PCK ability between novice teachers and experienced teachers. (Long Yan,2022; Wang Qiong,2019); Some studies investigated

the TPACK ability of novice teachers and experienced teachers (Lu Yangyang,2018); Other studies compare the PCK ability of novice teachers and experienced teachers based on a certain teaching content (Zhang Meng,2022). A review of the relevant literature shows that the research on novice teachers and experienced teachers mainly focuses on the development of teachers' PCK ability, while the research on teachers' TPACK ability development is less.

Based on this, the purpose of this study is to investigate the current situation of TPACK level of novice EFL teachers and experienced EFL teachers in colleges. Besides, the study tries to build an effective way to improve TPACK. This study will select 100 college EFL teachers in Hebei Province to participate in the questionnaire survey, conduct face-to-face interviews with 10 teachers (5 novice teachers and 5 experienced teachers) to answer the following research questions: 1. What is the TPACK status of college EFL novice teachers and experienced teachers? 2. How to improve teachers' TPACK level?

3. Definition of Novice Teacher and Experienced Teachers

Foreign scholars (Sternberg,1997; Farrell,2012) define novice teachers and experienced teachers is almost by the working years of teachers, that is, novice teachers, including teacher training interns, and teachers who have been teaching in schools for less than 4 years. The experienced teachers are teachers who have been teaching for more than 3 years or more than 5 years. Most domestic researchers define different types of teachers from the two aspects of working age and professional title. For example, domestic scholars generally believe that teachers whose teaching age is less than 5 years are called novice teachers (Lian Rong, Meng Yingfang, 2001). In this study, novice teachers are defined as teachers with teaching experience of 5 years or less; Experienced teachers are those with more than 5 years of teaching experience.

4. Research Instrument

This study will use two research instruments, questionnaire survey and interview. By referring to the existing authoritative and mature TPACK scales abroad and combining English subject related technologies and English subject pedagogy knowledge, this study adds, deletes, tests and revises the existing TPACK scales to form a TPACK scale suitable for EFL teachers in universities (Chen Jing, 2009). The 50 novice teachers are

teachers with less than five years of teaching experience, but they have systematically learned the professional knowledge of teachers and are usually able to meet the general teaching requirements. The 50 experienced teachers all come from the teaching front line with more than 5 years of teaching experience, and have rich teaching theory and practical knowledge, and have formed their own complete teaching system and unique teaching style, which can efficiently solve the problems in teaching, and the students in the class have outstanding achievements.

5. Research Conclusions

Based on the questionnaire data and interview results, this study draws the following conclusions regarding teachers' TPACK:

5.1 Analysis of the TPACK level of EFL novice and experienced teachers in colleges

According to descriptive statistical analysis, the total average TPACK of novice and experienced EFL teachers is 6.685; The differences in the seven dimensions can be sorted as follows: PCK>PK>TPACK>TPK>TCK>CK>TK. The highest dimension is subject teaching knowledge, indicating that English teachers have solid course knowledge and high professional level. However, compared with other dimensions, the score of technical knowledge is lower than the average, indicating that most teachers cannot adapt to the general background of education informatization. The score of TCK dimension of integrated technology is lower than that of other dimensions, indicating that teachers' level of selecting appropriate information technology to support subject knowledge teaching needs to be improved.

5.2 Analysis of TPACK level between novice teachers and experienced teachers

Variable	novice teacher		experienced teacher		MD	t
	M	SD	M	SD		
TK	6.12	1.88	6.52	2.46	0.40	0.326
CK	7.36	2.12	5.50	1.87	1.86	2.125[*]
PK	6.34	2.13	6.67	2.45	0.33	0.413
PCK	6.32	1.97	6.69	2.32	0.37	0.521
TCK	6.01	1.94	6.91	2.14	0.80	0.714
TPK	6.34	1.89	6.86	2.51	0.52	0.612
TPACK	6.53	1.92	6.95	2.35	0.42	0.556

The results of independent sample T-test showed that there were significant differences in CK dimension between novice teachers and

experienced teachers (t=2.127, df=20, p<0.05) : CK dimension of novice teachers was higher than that of experienced teachers (MD=1.86). English teachers' overall cognition of TPACK is good, among which the experienced teachers' TPACK is at the integration level, while the novice teachers are at the application level. The overall level of TK, PK, PCK, TCK, TPK and TPACK of experienced teachers was higher than that of novice teachers (only CK level was lower than that of novice teachers). This shows that novice teachers still lack in the integration of technology and teaching methods. They have not effectively mastered the ability to use technology in teaching. This shows that most of the new teachers cannot adapt to the general background of education informatization, and the level of selecting suitable subject knowledge teaching supported by information technology needs to be improved. However, the level of novice teachers in CK dimension is higher, indicating that English teachers have a solid course knowledge and a higher professional level.

6. Analysis of the Reason and Research Suggestions

6.1 Analysis of the Reason

There is no significant difference in TPACK level between novice teachers and experienced teachers, which is an unexpected finding of this study.

Through interviews with teachers, the author makes the following inferences about the reasons for the lack of significant difference in TPACK level between novice teachers and experienced teachers:

(1) Limited Focus on Technology Integration in Teacher Education

Teacher education programs may not emphasize technology integration sufficiently, meaning both novice and experienced teachers might not have been trained in this area. Traditional pedagogical skills may have been prioritized over technological fluency.

(2) Rapidly Changing Technology

The fast pace of technological advancements may mean that experienced teachers haven't kept up, while novice teachers are only starting to learn about the technologies available. This results in both groups having similar TPACK levels due to the constant need to update skills.

(3) Limited Professional Development Opportunities

Both novice and experienced teachers might not have had ample opportunities for ongoing professional development focused on technology

integration. Schools may lack resources or initiatives for continuous learning in this area, causing stagnation in TPACK levels.

(4) Resistance to Change

Experienced teachers may rely on established teaching methods and be resistant to adopting new technologies, while novice teachers may focus on mastering basic pedagogical techniques first. As a result, both groups might be at a similar TPACK level, albeit for different reasons.

6.2 Research Suggestions

The institutions of education should encourage teachers to continue to carry out in-service education or set up relevant systematic in-service training courses to help teachers deepen their understanding and learning of information technology, improve their ability to apply relevant technical knowledge, and enhance their confidence in technology learning and use. It is necessary to provide incentives for teachers to continually improve their TPACK, such as recognition, certifications, or career advancement opportunities. This can motivate both groups to engage in ongoing learning.

The systematic and comprehensive application of training programs should be ensured when training in-service teachers' TPACK. The overall development and improvement of TPACK depends on the efforts of novice teachers and expert teachers themselves. Teachers should actively participate in different levels and different forms of teaching ability competitions, such as intramural, inter-campus, provincial and other teaching ability competitions. In this series of activities, teachers can integrate content knowledge, teaching method knowledge and technical knowledge organically.

In conclusion, the dynamic nature of the TPACK framework reminds educators not to simply "add" technology to teaching content and pedagogical knowledge, but to cultivate and develop TPACK ability by connecting each dimension of the seven dimensions as a "community".

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