How Confident are EFL Prospective Teachers toward Technology?

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ABSTRACT

The advance of ICT development in educational context encourages educators to increase their competence towards technology integration for classroom activities. Consequently, this phenomenon affects teacher education program to equip student teachers as the digital natives in this fourth industrial revolution era with skills accommodating their technology literacy as well as practice. Before deciding the activities as well as the supplementary sources for ICT based courses, technology confidence is an important step for an institution's initial development. This study aims to investigate technology competence of English prospective teachers in terms of applications use capability, technology confidence based on GPA, and TPACK confidence. Questionnaire was used as the instrument, and it was administered to twenty eight participants. The data was analyzed descriptively. The findings reveal that most of the subjects are familiar with the technology application. Further, not all of the subjects are confident to their ICT competence. Inserting GPA information to the prospective teachers' profile, it shows that high GPA do not guarantee high confidence in ICT use. Dealing with TPACK, the confidence result indicates that more than 45% participants integrate technology in their English classroom. This study implies that attempts fostering the student teachers' TPACK confidence in the context of English Language Teaching are highly needed.

Keywords: technology integration, TPACK confidence, digital literacy

ABSTRAK

Semakin berkembangnya teknologi informasi dan komunikasi (TIK) di bidang pendidikan mendorong para pendidik untuk meningkatkan kompetensinya di bidang integrasi teknologi. Hal tersebut juga mempengaruhi program pendidikan guru untuk membekali para calon guru yang merupakan digital native dengan literasi teknologi yang memadai dan memberikan model integrasi yang efektif sehingga mampu mnegakomodir kebutuhan belajar siswa di era revolusi industri 4.0. Namun demikian, untuk menentukan model integrasi dan program peningkatan kualitas dosen yang tepat, tahap awal yang penting dilakukan adalah analisa kepercayaan diri mahasiswa calon guru terhadap penggunaan teknologi. Penelitian ini bertujuan untuk menginvestigasi kompetensi teknologi mahasiswa calon guru Bahasa Inggris dalam hal kemampuan penggunaan aplikasi teknologi, kepercayaan diri pada teknologi berdasarkan IPK, dan kepercayaan diri berdasarkan TPACK framework. Angket digunakan sebagai instrumen pada penelitian ini dan diberikan kepada 28 subjek penelitian. Data yang diperoleh dianalisis secata deskriptif. Hasil penelitian ini menunjukkan bahwa sebagian besar mahasiswa calon guru Bahasa Inggris mengetahui berbagai macam aplikasi teknologi. Kemudian, tidak semua subjek merasa percaya diri pada kompetensi ICT mereka. Menggunakan IPK sebagai tambahan profil subjek penelitian mengindikasikan bahwa IPK tinggi tidak menjamin kepercayaan diri terhadap ICT juga tinggi. Pada TPACK framework, hasil menunjukkan bahwa lebih dari 45% mahasiswa calon guru merasa percaya diri untuk mengintegrasikan teknologi pada pembelajaran di kelas.

Kata kunci: *integrasei teknologi, kepercayaan diri terhadap TPACK, literasi digital*

INTRODUCTION

Online application has attracted all elements of people's activities, including in educational context. Significantly, both teachers and students broaden their competence to be a smart user of technology. This phenomenon also affects teacher preparation program to equip teacher candidates with appropriate skills towards the technology integration in learning. This awareness is in line with today's teachers' candidates who are considered as digital natives in this 21st century. They are capable enough to operate gadgets compared to the elder teachers. Focusing on English language learning, teacher candidates need to be trained to create joyful and meaningful learning by integrating relevant technology. Although they are literate to the digital devices, sometimes the skill is not applicable for classroom context. (Batane & Ngwako, 2017). To define technology, teacher candidates seem to find challenges as well as barriers appearing during the technology use (Christ et al., 2019).

TPACK is one of frameworks promoted by Mishra & Koehler (2006) used to analyze technology integration for teacher candidates. There are seven domains from three main aspects—content knowledge, pedagogical

knowledge, and technological knowledge—which are closely related, and it helps both teachers and teacher candidates identify what to use, why to use, and how to use technology in learning activities. The teacher candidates probably get familiar with the three important aspects. However, limited teaching experience to explore technology use in the classroom seems to give a certain perception on how teacher candidates define and apply technology integration. Accordingly, it is important to investigate ICT competence in the last semester of study period including TPACK confidence. Further, limited empirical studies discussing score of Grade Average Point (GPA) attracted this study to discuss here.

The importance of technology integration skill for teachers can be seen in the statement of UNESCO (2011) that in teacher competence framework, there are six categories that need to be known and applied: (1) understanding ICT in education; (2) Curriculum and Assessment; (3) Pedagogy; (4) application of digital skill; (5) Organization and Administration; (6) Teacher Professional Learning. The framework is described in graphic 1.

Graphic 1:
Teachers' ICT Competence Framework based on UNESCO, 2019)
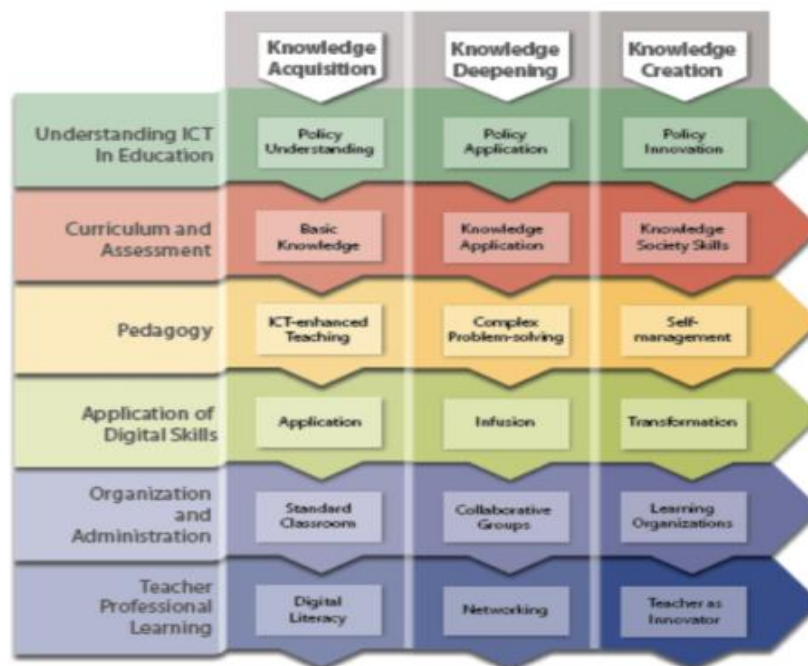
Based on the competence framework, it is stated that technology integration in educational context is not based on personal interest or trend, but it has been the demand of the world in order that every person prepare the global change optimally to face inclusive knowledge societies for sustainable development.

TPACK Confidence Survey (TCS) is one of interesting topics to study. Wang et al. (2018) in their review state that TPACK in teacher candidates is an emerging issue for research. The development of each dimension in TPACK can be identified from several ways such as self-report measures, open-ended questionnaires, performance assessments, interviews, and observations. However, from the existing instruments, it seems that there is a need to develop more accurate TPACK confidence. Therefore, Jamieson-Proctor, Romina Finger & Albion (2010) tried to develop tool through constructing and validating instrument for TPACK confidence. As a result, the instrument is able to measure TPACK in large scale. Moreover, their study explored the relationship between TPACK confidence and the status of institution, age, gender, and study program across situational backgrounds (metropolitan and regional) in Queensland.

Further, a study by Al-Abdullatif (2019) mentions that prospective teachers in one of Saudi Arabia universities have high level of ICT confidence in the process of teaching and learning. In this context, TPACK refers to ICT competence, not completely investigate each domain the framework. The findings reveals that personally the prospective teachers show little interest towards ICT and the use of ICT is restricted to the activity in the classroom learning. Another similar study was carried out by Raman (2014). In his study, 154 prospective teachers majoring in three different departments—Technology and Information, moral education, and Accounting & Management—were involved. The findings indicate that prospective teachers' competence, confidence, and TPACK are high. Additionally, in this study, gender contributes to the different skill towards ICT use.

Investigating the relationship of ICT and GPA have been studied previously. Lepp et al. (2015) provide evidence dealing with the effect of ICT use towards GPA. The result of the study shows that the frequent use of mobile phone gave impacts to the low academic performance of the students. Slightly different from previous study's result, Yunita et al. (2018) found that use of cell phone is not significantly distract to the students' GPA. In 2014, Lepp et al. (2014) explored the same topic but different findings. The use of mobile phone was not related to GPA and contributed to learners' anxiety. Regarding the possibility of exploring the relationship between technology and GPA, this study is interested to know whether GPA affects to EFL learners' ICT confidence.

Besides, considering limited studies focusing on English prospective teachers' TPACK confidence, this study is interested in this area for some rationales. First, English language learners have certain characteristics in their learning process, it is more meaningful for theoretical contribution if the study does not compare it with learners from other majors. In English class, four skills are exposed to the learners: listening, speaking, reading and writing. Besides, three language

components support the development of each skill, which is, vocabulary, Grammar, and Pronunciation. Thus, the technology integrated needs to be specified based on expected learning outcomes, learners' condition, and the availability of IT facilities. To bridge the gap, the research questions are formulated as follow:

1. How are English teacher candidates' competence in using technology?
2. How confident are English teacher candidates in using technology across GPA?
3. How are English teacher candidates' TPACK confidence?

METHOD

This study used descriptive quantitative method with a survey design. To investigate ICT competence, the level of confidence in using ICT based on GPA, and the level of TPACK confidence of prospective English teachers, two kinds of questionnaire were used. It was distributed to the 28 prospective English teachers at one of teacher preparation programs at a private universities in Sidoarjo, East Java, Indonesia. Most of the participants were female, and they were in the last year in their study. Related to teaching experience, they have taken micro teaching course as well as Internship III (teaching practice) in various setting and accreditation status of schools. The level of the school students were secondary level, namely, junior high school, senior high school, and vocational high school.

To collect the data, the first step was administering self-report questionnaire about ICT competence. The items were adapted from Jamieson-Proctor, Romina Finger & Albion (2010). This study asked the subjects' perception about the skill in using sixteen technology applications. To make it easier to understand, each type of application was supported by example as mentioned in Appendix 1.

In addition, first items consisted of several ICT applications that the students were able to use in the teaching process. Then, second items were used to measure the level of general confidence of the participants in using ICT applications during the internship across GPA. Next, the second step was distributing questionnaire whose items were adapted from Bostancıoğlu & Handley (2018) to find out the level of confidence based on TPACK framework. The items are selected by answering these options: very confident – confident – unconfident – very unconfident. Table 1 describes the items in the second questionnaire.

Table 1:

Items in The Second Questionnaire

No.	Items
1.	I can teach lessons that appropriately combine English linguistic concepts, technologies, and teaching approaches
2.	I can select appropriate technologies that combine English culture, technologies, and teaching approaches
3.	I can select technologies to use in my classroom that enhance what teach, how I teach, and what students learn
4.	I can use technology effectively to communicate relevant information to students and peers
5.	I can use a range of technologies to help students pursue their individual curiosities
6.	I can use a range of technologies that enable students to become active participants
7.	I can provide equitable access to digital language learning tools and resource
8.	I can facilitate intercultural understanding by using technology to engage students with different cultures
9.	I can participate in digital learning communities to explore creative applications of technology to improve student learning

To analyze the data in the first step, the researchers compute the number of subjects and descriptively interpret the result of the item 1 response. For the second item as well as the second questionnaire, percentage was used.

FINDINGS AND DISCUSSION

After analyzing the data obtained from the first questionnaire, the findings reveal that prospective teachers got familiar with many applications, but not for desktop publishing, Database, Web Page development, and Multimedia Development and Composition. Less than 5 prospective teachers select those items. Additionally, the closest applications are presentation software followed by word processing, web browser and web 2.0 and social network as depicted in graphic 2.

Graphic 2. The ICT Competence of The Prospective Teachers
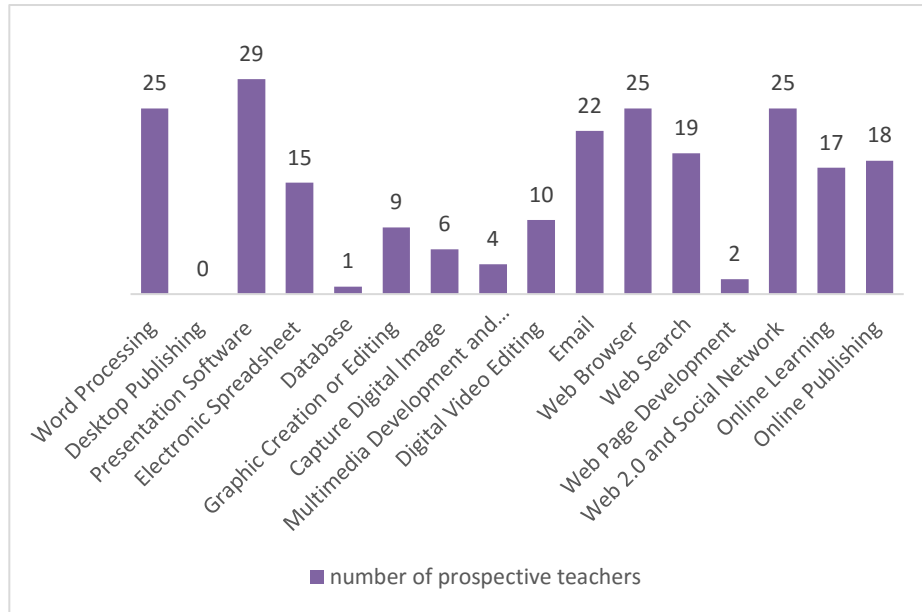
The second question is about ICT confidence. From what was selected in item umber 1, the prospective teachers expressed their general confidence in using the apps variously based on their experience. As described in graphic 2, the prospective teachers are not in the same level of confidence. It is proved based on the dominant perception that they were rather confident in using the application (44%). Next, 40% feel confident to use the technology. 13% of prospective teacher shows their confidence. Finally, as the lowest percentage, 3% selects unconfident. In general, the results indicates that the familiarity of technology applications is not always supported by the intensive experience in using ICT which affects the users' confidence.

Graphic 3:

ICT Confidence of Prospective Teachers
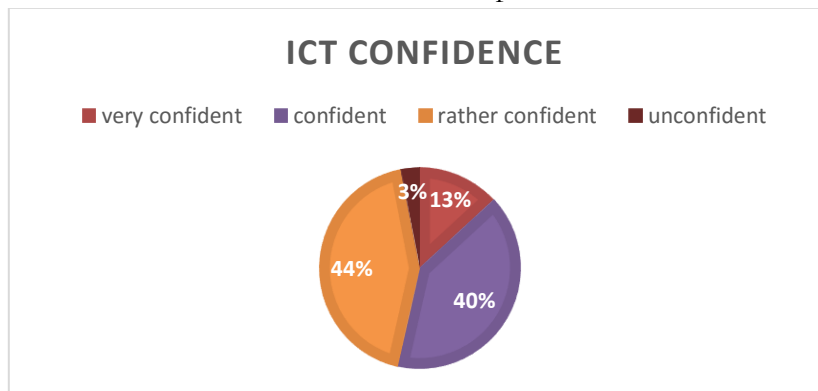
The detailed level of ICT Confidence based on GPA is depicted in Table 2.

Table 2:
The Level of ICT Confidence based on GPA

No.	Subject Number	GPA	Level Confidence
1.	Subject Number 1	3.21	Very Confident
2.	Subject Number 2	3.91	Confident
3.	Subject Number 3	3.10	Rather confident
4.	Subject Number 4	3.57	Rather confident
5.	Subject Number 5	3.40	Very Confident
6.	Subject Number 6	3.56	Confident
7.	Subject Number 7	3.45	Confident
8.	Subject Number 8	3.44	Rather confident
9.	Subject Number 9	3.44	Rather confident
10.	Subject Number 10	3.44	Rather confident
11.	Subject Number 11	3.84	Unconfident
12.	Subject Number 12	3.31	Rather confident
13.	Subject Number 13	3.07	Rather confident

No.	Subject Number	GPA	Level Confidence
14.	Subject Number 14	3.64	Confident
15.	Subject Number 15	3.25	Confident
16.	Subject Number 16	3.70	Confident
17.	Subject Number 17	3.72	Confident
18.	Subject Number 18	3.74	Rather confident
19.	Subject Number 19	3.14	Confident
20.	Subject Number 20	3.80	Rather confident
21.	Subject Number 21	3.75	Rather confident
22.	Subject Number 22	3.39	Rather confident
23.	Subject Number 23	3.58	Confident
24.	Subject Number 24	3.81	Rather confident
25.	Subject Number 25	3.52	Confident
26.	Subject Number 26	3.34	Very Confidence
27.	Subject Number 27	3.58	Confident
28.	Subject Number 28	3.44	Confident

Based on the table 2, it can be seen that the GPA is not always in line with their ICT confidence. The prospective teachers tend to answer confident or rather confident. Surprisingly, one subject selected very confident although the GPA is lower than 3.5., yet one student with GPA 3.84 answered unconfident.

To answer the third research question of this study, perceived confidence to integrate ICT into students learning based on TPACK framework is presented in graphic 4.

Graphic 4:
EFL Prospective Teachers' TPACK Confidence
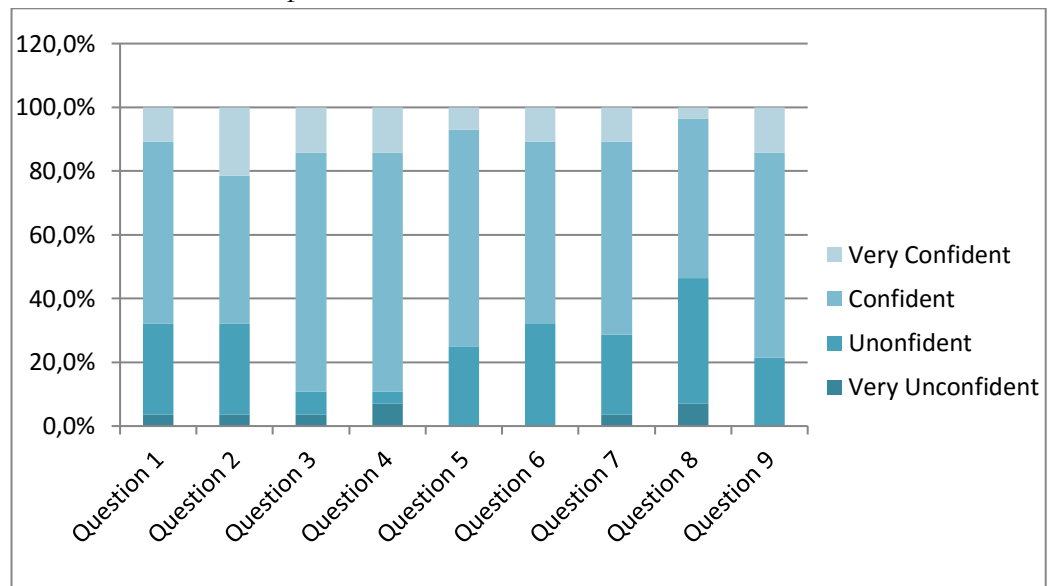
Technological Pedagogical and Content Knowledge survey results indicate that most of the respondents are confident 46.4%-75% out of 28 prospective teachers. However, the percentage of unconfident cannot be ignored since some of the items were selected more than 20%, particularly number 1,2,5,6,7,8, and 9.

The following part is discussion which relates the results of the data analysis with theories and relevant previous research to find out the justification or clarification through the obtained evidence of this study.

The first is about ICT competence identified from the kinds of technology used. Among the sixteen applications, presentation software is the most favorable one. PowerPoint is one of effective media for teachers in sharing their materials or presenting related media. It was also experienced in this study. Focusing on the availability of LCD projector and the practicality in sharing materials, media, and tasks, prospective teachers tend to prepare PowerPoint slides for their instruction. Some studies have proved its power to classroom activities more interactive (Clark, 2008; Cosgun Ögeyik, 2017; Meibauer & Aagaard Nøhr, 2018). To provide joyful activities, PowerPoint can present games for learners (Siko & Barbour, 2012). For the next emerging application is word processing, web browser, web 2.0 and social network. The three application are the most popular tool for students' learning and assessment. Highlighting social network or social media, it has been something normal to be applied by prospective teachers. Szeto et al., (2016) found that Youtube is the

common social media was frequently used by digital-native pre-service teachers.

Moreover, the ICT confidence based on GPA in this context gives new insight that affective factor in term of confidence is not always in line with GPA level. Some studies have investigated affective factors but not confidence. Park et al. (2014) have different idea regarding this issue. They agree with the Moreno's Cognitive-Affective Theory of Learning with Media and provide evidence on how affective factor (emotion and interest) can accommodate cognitive processing. Another different result is from Lepp et al. (2015). They found that the use of technology represented by mobile phone is the important predictor of the college students' GPA. The low score was associated with the use of mobile phone.

The result of TPACK confidence in this study indicates that 75% are confident in the area of technology selection for classroom activities before they use it for the learners and colleagues. This is the highest level among other items in the survey result since the participants selected "confident" to express their perception. Accordingly, a skill to select appropriate technology plays an important role. Some requirements are needed to obtain the effectiveness of the media, i.e. accessibility, performance, practicality, data feedback, efficiency, customizability (Petrick, n.d.).

To respond item number 8 related to intercultural issue, more than 40% students selected unconfident and very unconfident. This indicates that not all of the prospective teachers had an opportunity to share culture-related lessons to the learners. It is not a big deal in this case since in the teaching practice, they taught based on what was assigned by the mentor, and it was not always about cultures. The common materials that can be shared as the representative of intercultural is stories or narrative. Another form of culture presented in technology is language itself. Through exposing many sources from the Internet, the prospective teachers develop their English language in different situation, formal and informal or academic and non-academic. As a result, what they suggest to the learners during teaching practice was also same. Many online dictionaries very informative in guiding the readers to use the language in appropriate context. Currently, video conferencing (VC) and webinar are getting popular to be used for learning activities. It is not only just receiving materials from the speakers, but also facilitating cultural exchanges (Pim, 2013).

Interestingly, highlighting the pedagogical concept, not all prospective teachers find themselves confident to teach with technology. Technological knowledge is not sufficient to make them skillful in using the apps for teaching. Both self-improvement and supporting program in teacher education institution are crucial attempt to update the technology use. Related to teacher education program, more sophisticated activities in micro teaching practice may provide prospective teachers a chance to experience various use and kinds of technology which later affect the ICT competence as well as TPACK (Agustin & Lilisari, 2016).

CONCLUSION

To sum up, this study provides an evidence that prospective teachers vary their responses in expressing their ICT competence and TPACK confidence. Additionally, GPA seems to contribute to the level of ICT confidence. Further, investigating technology applications used outside classroom and for academic activities needs more deep analysis, particularly on how to use it and why they choose the apps. Dealing with TPACK confidence, prospective teachers are recommended to explore their competence through self-initiated professional development. It is expected that the more exposure the more educational applications they get familiar; as a result, the more confident they integrate technology to English classroom activities. Since this study took small participants, it calls future researchers to carry out deeper analysis on EFL teachers' TPACK confidence with large participants and different method. Combining observation seems to be important to share the process of the implementation.

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Appendix 1. Item in questionnaire 1

Please select the following ICT applications you are capable of using in your daily and academic activities by giving checklist. You are allowed to choose more than one item.

No	Technology Application	Example	Checklist (✓)

1	Word Processing	Microsoft Word	
2	Desktop Publishing	Microsoft Publisher	
3	Presentation Software	Microsoft PowerPoint	
4	Electronic Spreadsheet	Microsoft Excel	
5	Database	Microsoft Access	
6	Graphic Creation or Editing	Adobe Photoshop, CorelDraw, Paint, Canva	
7	Capture Digital Image	Digital Cameras, Scanning	
8	Multimedia Development and Composition	Flash, Director	
9	Digital Video Editing	Adobe Premiere, Movie Director	
10	Email	Gmail, Yahoo, Microsoft Outlook	
11	Web Browser	Internet Explorer, Google Chrome, Firefox	
12	Web Search	Google	
13	Web Page Development	Dreamweaver	
14	Web 2.0 and Social Network	Facebook, Twitter, YouTube, Whatsapp	
15	Online Learning	Moodle, Edmodo	
16	Online Publishing	Blog, Podcast, YouTube	