

Adopting Technological Pedagogical Content Knowledge in Muhammadiyah Higher Education Institutions: Benefits and Challenges

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ABSTRACT

This study aimed to reveal challenges and benefits that lecturers may face when integrating TPACK in their classrooms. A qualitative approach was employed to gain insight into this study. The participants in this study were English lecturers in Muhammadiyah Higher Education Institutions in Jambi province, Indonesia. There were eight participants in this study. The instruments of this study were individual semi-structured interviews. The technique of data collection was to transcribe the results of the interview. This study used a thematic approach to analyse the data. The thematic analysis of this study involved coding every meaningful statement in the interview transcription data. This study revealed the benefits and challenges of adopting TPACK. The benefits were encouraging students' motivation, supporting an adaptable and pleasant classroom, and facilitating the lecturer's creativity. Additionally, the challenges were supporting system, digital literacy, and time constraints. This study fulfills the research gap regarding the contributors and the area of research. The contributors are the lecturers who teach for the English department and the lecturers who teach for non-English department students. The area of this research was in higher education and in the classroom context.

INTRODUCTION

Moreover, this study examines the possible benefits and challenges of using TPACK in English language learning. Studies have looked at the benefits and challenges of integrating technology in learning and education, but there hasn't been much attention paid to how this integration might be used in English language instruction, especially in Indonesia (Rintaningrum, 2023). Therefore, it is necessary to focus studies on integrating technology in English language teaching and learning, particularly in Indonesia, and to examine the challenges and benefits that lecturers face in the classroom. In addition, it becomes increasingly more important for lecturers to have a proper understanding of technology and how to use it to improve students' learning and engagement. In accordance with those points, the researcher conducts this study.

In line with those points stated above, higher education must take advantage of technological advancements to increase teaching effectiveness and improve learning outcomes if it wants to remain competitive. The way that lecturers view technology may have an impact on how they educate. The learning of the students is then impacted. As a result, it's critical to comprehend how educators view technological integration. Additionally, students will ultimately gain by meeting instructors' professional needs and improving their classroom instruction. To put it another way, a teacher's judgment of how beneficial technology integration is hinges on whether they think it will improve their instruction and how they think those who matter to them view it (Wang & Lam, 2024).

In addition, (Ilahude et al., 2023) stated that educators today face challenges and uncertainties regarding when and how to incorporate new digital technologies alongside those traditionally used for teaching and learning. In traditional instruction, teachers and students of English as a Foreign Language (EFL) primarily encounter content knowledge alone. However, technology-based learning environments now require proficiency in Technological Pedagogical Content Knowledge (TPACK). As a result, teachers must consistently employ innovative and creative teaching methods to support learning in the twenty-first century. Technology-based learning has become one of the most rapidly evolving breakthroughs in education, driven by continuous advancements in digital tools. Consequently, the education sector is among the many industries striving to remain competitive, adaptive, and forward-looking.

This study aimed to answer the question: What benefits do EFL lecturers experience when implementing TPACK in English language teaching at Muhammadiyah Universities in Jambi Province? And what challenges do the EFL lecturers experience in implementing TPACK in English language teaching in Muhammadiyah Universities in Jambi province? The purpose of this study was to investigate the benefits of implementing TPACK in English language teaching in Muhammadiyah Universities in Jambi province and to investigate the challenges of implementing TPACK in English language teaching in Muhammadiyah Universities in Jambi province. This study makes contributions to practical implications by investigating how lecturers perceive the benefits and challenges of integrating TPACK in their classrooms. It described their teaching experiences.

RESEARCH METHOD

In addition, in the realm of educational research, qualitative inquiry has recently flourished. According to (Stahl & King, 2020), qualitative research is in a unique position to give researchers process-based, narrated, and storied data that is more directly tied to the human experience. (Ishtiaq, 2019) provides the following definition of qualitative research. The process as well as the outcome are equally important in qualitative research. Researchers are particularly interested in understanding how things happen. Moreover, qualitative research contributes to the literature in many fields by describing, interpreting, and developing hypotheses about human experiences and social interactions as they occur in natural, rather than experimental, situations. The goal of qualitative research is to comprehend the perspectives and experiences of individuals or groups, as well as the contexts in which they are situated (Brien et al., 2014).

In line with this, the criteria of the participants of this study are the lecturers who teach English in those universities. Eight EFL lecturers who come from two private universities in Jambi with more than five years of teaching experience. Most of the participants were ELT professionals with a master's degree and even a doctoral degree. They are specifically selected based on four criteria: (1) recommended lecturer to be interviewed by the head of departments; (2) having ELT experience; (3) having more than five years of teaching experience; (4) having an EFL classroom. The participants are three lecturers of Universitas Muhammadiyah Jambi and five lecturers from Universitas Muhammadiyah Muara Bungo. Therefore, there are eight lecturers who are interviewed in this study.

While conducting interviews, the researcher applied a standardised open-ended interview approach (Gall et al., 2007). This approach allows the researcher to ask

probing questions as a means of follow-up and to change the sequential order depending on the situation. It also facilitates the participants in contributing as much detailed information as they desire. Other than these, non-verbal communication aspects, such as facial expression, hand gestures, and emotion (Onwuegbuzie et al., 2010) were also observed in order to improve the understanding of the data.

In this qualitative interview, the researcher conducted two interviews. Those interviews involved eight participants. The first interview was conducted by phone, which was recorded. It lasted for approximately 30-40 minutes. The first interview was from May 21st - June 15th, 2025. The purpose of interview questions is to encourage participants to share their views, experiences, and opinions in a natural and detailed manner. The purpose of the first interview was to explore the participants' experiences and identify themes and emerging sub-themes.

The second interview was conducted face-to-face and was recorded. The second interview was from October 13rd to October 15th, 2025. It lasted approximately 60-90 minutes. The purpose of the second interview was to confirm and to have a deeper understanding of the interview data. This approach allows researchers to gather in-depth and nuanced information directly from the participants (Ishtiaq, 2019). The primary data was taken from in-depth interviews. As Taylor & Bogdan (1984) said that frequent in-person meetings between the researcher and informants with the goal of comprehending the informants' viewpoints on their experiences, lives, or circumstances as they are articulated in their own words.

The data analysis of this study is to code every meaningful statement in the transcription of the data interview. This study used a thematic analysis to analyze the data (Braun & Clarke, 2006). The analysis began with the researcher becoming familiar with the data by transcribing the interviews. The transcription enabled us to gain our first understanding of the data. After that, the researcher read the entire data set and assigned notes or codes to each statement. The notes or codes represented the content or meaning. It was a recursive process that required constant back-and-forth movement between the entire data set. Then, the researcher created 'containing a coding list, categorized it, and classified it into themes. In reporting this research, codes are used throughout the discussion to refer to each participant for ethical reasons.

All ethical standards are strictly followed throughout the research process. Before data collection, the researcher obtained formal approval from the Doctoral Education Study Program of Universitas Jambi. It is a letter of permission that is given for two universities, where the participants are enrolled.

All participants, comprising 8 English lecturers, are informed about the purpose, the procedures, and the voluntary nature of the study. They are assured that their participation would not affect their academic standing and that they could withdraw from the study at any time without any consequence. Each participant signed a written informed consent form, acknowledging their willingness to participate in interviews.

To ensure confidentiality and anonymity, pseudonyms were used instead of real names in all interviews. And also, recordings were stored securely and used solely for academic purposes. The researcher also ensured that any photographs taken and used in the study respected privacy, cultural sensitivity, and institutional guidelines.

The study complied with the ethical standards set by the Research Ethics Committee at two Islamic private universities in Jambi province, Indonesia, and adhered to general principles of research ethics, including informed consent,

confidentiality, beneficence, and respect for human dignity. These measures ensured that all participants were treated with fairness, respect, and care throughout the research process.

RESULTS AND DISCUSSION

Results

Benefits

The sub-theme of benefits in this study was that integrating TPACK into the English classroom can motivate the students, bring an adaptable and enjoyable classroom, and support lecturers' creativity. The following data explained those sub-themes. These findings highlight how the thoughtful integration of technology, pedagogy, and content can enhance the overall learning atmosphere. Moreover, the lecturers' reflections and classroom evidence consistently demonstrated how TPACK contributes to more meaningful and engaging instruction.

Students' Motivation

First, motivating the students was explained in the data shown below. Six participants stated that integrating TPACK in English teaching could boost the motivation of the students. Participant 1 confirmed that by integrating TPACK in teaching, her students were more excited to study. It indicated that the students were motivated to learn. She stated:

apalagi anak-anak eh.. biasanya kalau jam terkait belajar menggunakan teknologi itu akan lebih bersemangat gitu kak untuk belajar (P1, 1st).

Especially children... Usually, when it comes to learning to use technology, they tend to be more enthusiastic about learning (P1 translated).

Participant 2 confirmed that TPACK could increase students' motivation instead of using the conventional method by whiteboard and books only without technology integration. It is shown in the following voice.

jelas itu bisa meningkatkan motivasi mahasiswa kita jadi kalau dengan media-media biasa kalau konvesional cuman papan tulis tu cuma buku-buku aja itu kan mereka jenuh tapi kalau udah menghadap sentuhan teknologi walaupun itu cuman video itu membuat ee motivasi mereka lebih meningkat (P2, 1st).

This can increase our students' motivation. With conventional media, such as blackboards and books, they get bored, but when they are exposed to technology, even if it's just videos, their motivation increases (P2 translated).

Participant 5 also shared the same opinion that TPACK has a big impact on her students in terms of the excitement of doing their project. Her voice appeared as follows.

TPACK ini dalam pengajaran di kelas saya memberikan manfaat yang sangat besar, salah satunya mahasiswa saya itu terlihat jauh lebih excited dalam mengerjakan projek mereka (P5, 1st).

TPACK has greatly benefited my classroom teaching. One of the benefits is that my students seem much more excited about working on their projects (P5 translated).

Participant 6 said that TPACK integration motivated her students to be more curious in learning activities. She stated as follows.

*dan **jadi lebih menantang** buat mereka jadi kalau mereka nggak bisa jawab ada sedikit ee..**hasrat pingin** ee...ee...ini gimana si ketemennya begitu lebih **pengetauan** tau secara mendalam (P6, 2nd).*

and it becomes more challenging for them, so if they can't answer, there's a little bit of... desire to... um... how about their friends who are more eager to know in depth (P6 translated).

Participant 8 also stated that TPACK integration could increase students' motivation. As she shared in the following.

*dan selanjutnya **ehm** meningkatkan motivasi (P8, 1st).*

and then, um, increase motivation (P8 translated).

Additionally, the next benefit of implementing TPACK in English teaching in terms of students' motivation was bringing students to be active and interactive learners. the data can be seen in the following. Participant 1 stated that bringing TPACK into the classroom makes the class more interactive. It could be implied that TPACK creates an interactive classroom to trigger students to be active learners, as well as students' experiences in learning. She stated as follows.

*untuk manfaat TPACK eh...didalam kelas eh...yang pastinya eh.. kelas tu **jadi interaktif** (P1, 2nd).*

For the benefits of TPACK in the classroom, definitely, the class becomes interactive (P1 translated).

Participant 6 also mentioned that by integrating technology, the students not only listened lecturing but also there was interaction in the classroom. For example, the students were encouraged to raise their hands to be involved in teaching and learning activities. It seemed that TPACK leads students to be active learners and increases their experience in learning. As she mentioned below.

*siswa juga nggak cuman duduk dengar pulang gitu nah tapi **ada interaksi disana** begitu ada tunjuk tangan jadi kolaborasi antara TPACK itu ya mereka bakal lebih berpacu untuk belajar begitu (P6, 1st).*

Students don't just sit and listen, but there is interaction there. When they raise their hands, there is collaboration between TPACK, so they will be more motivated to learn (P6 translated).

Participant 4 had the same voice that TPACK encourages interactive learning, not only teacher took a role in the classroom, but also the students took an active role, so their experience in learning had been increased. It could be seen in her statement below.

***mendorong pembelajaran yang lebih interaktif** jadi tidak hanya dari dosen aja tapi ada dua alur ya (P4, 2nd).*

encourage more interactive learning, so it's not just from the lecturer, but the students are also being active (P4 translated).

Adaptable and Pleasant Classroom

Second, the benefit that participants had in English language teaching through TPACK was bringing a classroom that is adaptable and pleasant. Five participants had experienced that TPACK made their classroom adaptable and pleasant. It could be explained by the data shown in the following. Participant 6 argued that the benefit of TPACK in her teaching was helping because the classroom could be more interesting and suitable for the era. In other words, TPACK could make the classroom adaptable and pleasant. Her statement could be seen below.

TPACK ni sangat membantu karena bisa buat pembelajaran Bahasa Inggris jadi lebih menarik kemudian eh.. cocok ya dengan zaman nya begitu nah (P6, 1st).

TPACK is very helpful because it can make English learning more interesting and, well, it's suitable for this day and age (P6 translated).

Participant 2 also mentioned in a similar vein.

TPACK ini membuat ee.. pengajaran kita itu menjadi lebih menarik terus juga lebih efisien rasanya begitu, sangat-sangat membantu memfasilitasi lah kalo eh dengan pembelajaran yang ada sekarang begitu (P2, 1st).

TPACK makes our teaching more interesting and also more efficient. It really helps facilitate the current learning process (P2 translated).

Participant 4 opined that her classroom becomes more fun, enjoyable, and relaxed. It could be implied that TPACK made her classroom pleasant for their students. She stated the following.

jadi lebih fun dan lebih menyenangkan dan juga lebih apa ya relax (P4, 1st).

so it's more fun and more enjoyable and also more relaxing (P4 translated).

Participant 5 also opined in the same tone that TPACK was matched with the students' era, and the students had a fun class. She mentioned as follows.

anak-anak sekarang itu mereka senang sekali dengan sesuatu yang berbau teknologi sehingga dengan adanya integrasi teknologi dalam pembelajaran Bahasa Inggris bisa menjadi alat untuk daya tarik mahasiswa agar mereka menyenangi proses pembelajaran itu (P5, 2nd).

Students today are very enthusiastic about anything related to technology, so integrating technology into English language learning can be a tool to attract students and make them enjoy the learning process (P5 translated).

Participant 8 also stated the same point as follows.

dengan pengajaran melalui TPACK ini menjadi adalah pilihan mengajar di dalam ruangan kelas itu menjadi asik karena kita bisa langsung berinteraksi dengan mahasiswa itu sendiri aa bagaimana ketika kita berbicara secara langsung melalui teknologi kemudian bagaimana kita bisa menulis aa seperti apa dalam membaca melalui media pembelajaran secara digital kemudian aa bagaimana ketika kita mendengarkan melalui media pembelajaran ketika dalam pemberian perkuliahan aa mahasiswa pun bisa menyimak dan mendengar secara langsung aa sehingga pembelajaran tersebut tidak membosankan (P8,2nd).

By implementing TPACK in teaching, teaching in the classroom becomes fun because we can interact directly with the students themselves. How do we talk directly through technology? How do we write? How do we read through digital learning media? How do we listen through learning media when giving lectures? Students can also listen and hear directly, so that learning does not become boring (P8 translated).

Moreover, another benefit of adopting TPACK in English teaching in terms of building an adaptable and pleasant classroom was giving a place for students to study collaboratively. The data could be seen in the following. Participant 8 argued that TPACK increased involvement and collaboration among students. He mentioned as follows.

meningkatkan keterlibatan antara dosen dan mahasiswa kemudian mendorong pembelajaran mandiri, berkolaborasi satu sama lain (P8, 1st).

enhancing engagement between lecturers and students, thereby encouraging independent learning and collaboration with one another (P8 translated).

Participant 2 also confirmed that technology can be used as an online collaboration tool to enable students to work in teams, doing their projects more easily. It meant technology supported collaborative study. Her statement could be seen as follows.

Misalnya juga kita dapat menggunakan alat kolaborasi online gitu ya supaya nanti memudahkan anak anak untuk bekerja kelompok membuat projek mereka (P2, 2nd).

For example, we can also use online collaboration tools to make it easier for children to work in groups on their projects (P2 translated).

Therefore, five participants had experienced that TPACK brings their classroom adaptability and pleasantness.

Lecturers' Creativity

Third, the benefit that participants had in English language teaching through TPACK was facilitating the lecturer's creativity. It could be explained by the data displayed in the following. Participant 1 declared that integrating technology helped students to understand the materials because there would be enthusiasm and spirit, also there would be interaction during their learning. It could be inferred that TPACK

improved her instructional strategies and students' learning. It showed the participant's creativity to boost students' understanding. It could be seen from her saying below.

dan yang pastinya pemahaman mereka juga akan lebih bagus yah karena adanya antusiasme dan semangat ketika belajar serta adanya interaksi (P1, 1st).

And surely their understanding will also be better because of their enthusiasm and passion when learning, as well as the interaction (P1 translated).

Participant 2 mentioned the same voice. It showed the participant's creativity in how to avoid the boredom of the students while following the class. She said as follows.

TPACK ini sangat penting karena untuk menghindari kejemuhan mahasiswa atau peserta didik kita di dalam kelas misalnya ee selama ini mungkin lebih monoton kelas itu hanya presentasi saja, membaca buku bersama tapi dengan adanya TPACK ini kita bisa meminta anak anak untuk memutar video dari youtube atau film pendek gitu (P2, 2nd).

TPACK is very important because it helps avoid boredom among students or learners in the classroom. For example, classes may have been monotonous until now, consisting only of presentations and reading books together. But with TPACK, we can ask the children to watch videos from YouTube or short films (P2 translated).

Moreover, TPACK also facilitated participants' creativity to lead to various opportunities to develop multimodal products. It could be explained by the data that appeared in the following. Participant 5 conveyed that when she integrated technology, the result of the students' project was more than her expectations; it was much better than what she had imagined. She found that her students were in their world. They were very excited and could develop their own project. It could be inferred that TPACK leads to various opportunities in developing multimodal products. She opined below.

Ketika saya mengintegrasikannya dengan teknologi, hasil projek yang mereka kerjakan itu di luar dari ekspektasi saya gitu jadi lebih bagus dari apa yang saya bayangkan dan mereka tu bisa mengembangkannya sendiri (P5, 1st).

When I integrated it with technology, the results of their project exceeded my expectations. It was better than I had imagined, and they were able to develop it themselves (P5 translated).

Participant 6 mentioned that she used video, learning applications, or even interesting games to help her students understand vocabulary and grammar. It could be implied that by integrating technology, it could facilitate her creativity to improve her instructional strategies and students' learning. She confessed:

misalnya kita bisa pakai video, apliksai belajar, atau games-games seru untuk bantu siswa untuk lebih paham kosa kata dan grammar (P6, 1st).

For example, we can use videos, learning applications, or exciting games to help students better understand vocabulary and grammar (P6 translated).

Participant 3 experienced that by integrating TPACK in her classroom, the students became tech-savvy, and they dealt with technology in their learning. In other words, the technology helped her to explore her creativity to enhance students' learning. Her statement could be seen as follows. She depicted:

kemudian mahasiswa juga jadi melek teknologi jadi mahasiswa terbiasa dan dealing saat pembelajaran itu menggunakan teknologi (P3, 1st).

Then students also become tech-savvy, so they are accustomed to and comfortable with using technology in their learning (P3 translated).

Participant 8 claimed that learning access became easier through TPACK and that integrating technology supported learning improvement. It could be implied that integrating TPACK improved lecturers' creativity in terms of accommodating learning access and learning environment. She opined as follows.

Yang jelas dengan adanya TPACK bisa mempermudah akses terhadap pembelajaran dan mendukung pengembangan pembelajaran (P8, 1st).

What is clear is that TPACK can facilitate access to learning and support learning development (P8 translated).

He also mentioned as follows.

Dosen menyesuaikan strategi pengajaran dengan karakter mahasiswa dan materi ajarnya seperti apa kemudian bisa mendorong inovasi inovasi dalam pembelajaran aa bisa mungkin melalui youtube sebagai sumber pembelajaran yang aa tentunya kita bisa terus belajar dan berinovasi (P8, 2nd).

Lecturers adjust their teaching strategies to suit the characteristics of their students and the subject matter, which can then encourage innovation in learning. This can be done through YouTube as a learning resource, which we can certainly use to continue learning and innovating (P8 translated).

Participant 4 explained that TPACK could increase creativity in teaching. Therefore, she could employ a video, application, or quiz platform to create interesting and varied materials. Her saying could be seen in the following. She revealed:

meningkatkan kreatifitas pengajaran jadi kita bisa memanfaatkan video atau aplikasi atau platform quiz sehingga membuat materi lebih menarik dan variative (P4, 1st).

enhance teaching creativity so that we can utilize videos, applications, or quiz platforms to make the material more interesting and varied (P4 translated).

Participant 7 also opined in the same tone. He said as follows.

TPACK ini *ada respon dengan kebutuhan siswa misalnya untuk ee.. pembelajaran vocabulary, kalau untuk listening bisa menggunakan ee.. podcast-podcast atau video-video yang ada ee.. di youtube*. TPACK ini tidak hanya sebagai alat tambahan tapi benar-benar menunjang pemahaman bahasa dan keterampilan komunikatif ee.. mahasiswa (P7, 2nd).

TPACK responds to student needs, for example, for vocabulary learning, while for listening, you can use podcasts or videos on YouTube. TPACK is not just an additional tool but really supports students' language comprehension and communication skills (P7 translated).

Furthermore, building lecturers' creativity that appeared in this study helped lecturers create real-world scenarios using technologies. Participant 2 clarified that using an online program, students' communicative skills can be improved. Here, participant 2, as a lecturer, created real-world scenarios by bringing together students from other countries as their peers to practice communication. So, it could train their speaking skill more easily. Her statement could be seen in the following. She reported:

dengan menggunakan TPACK itu bisa mengembangkan keterampilan komunikasi mahasiswa itu bisa jadi kayak apa lebih luas gitu ee misalnya ee selain mahasiswa itu belajar di kelas ee kami juga ada program dengan widord itu ee sudah memasukkan TPACK di sana jadi mereka berkomunikasi dengan mahasiswa dari luar negeri membahas ee materi yang ee sudah disepakati nah di sana kan sudah melatih speaking mereka (P2, 2nd).

By using TPACK, students' communication skills can be developed more broadly. For example, in addition to learning in class, we also have a program with Widord that incorporates TPACK, so they communicate with students from other countries to discuss agreed-upon material. This trains their speaking skills (P2 translated).

Participant 4 also mentioned the same experience that TPACK helped lecturers create real-world scenarios using technologies. She said integrating technology, like giving them an article, song, or even a podcast, makes the students exposed to English from a native speaker. It was inferred that technology integration helped her as a lecturer to create real-world scenarios. Her saying can be seen below. She commented:

mempermudah ee menjelaskan real world English di kelas, seperti berupa artikel, lagu, atau podcast sehingga siswa banyak terpapar Bahasa Inggris asli dari native eee (P4, 1st).

memang ee ini membuat mereka lebih tertarik untuk belajar Bahasa Inggris karena belajarnya dari penutur asli native speaker (P4 translated).

Participant 8 said that TPACK brings contextual learning. He said below.

keterlibatan mahasiswa dengan teknologi bisa lebih.. aa mereka lebih tertarik karena aa dengan media melalui metode digital bisa lebih bervariatif dan kontekstual selain itu juga bisa meningkatkan efektifitas dalam pembelajaran (P8, 2nd).

Student engagement with technology can be greater... They are more interested because digital media can be more varied and contextual, and it can also increase the effectiveness of learning (P8 translated).

As the data above, eight participants had experienced that TPACK facilitated lecturers' creativity.

Challenges

From the data gathered, there were three challenges that the participants had in integrating TPACK in English language teaching. The challenges were the supporting system, digital literacy, and time constraints. Addressing these challenges was therefore essential to ensure that TPACK integration becomes sustainable and pedagogically meaningful.

Supporting System

First, lecturers experience difficulties in the support system due to the availability of digital tools and stable internet access. Participant 6 argued that the challenge was that the internet was inaccessible in the classroom, so she should provide it by herself before teaching. Her statement could be seen below.

tantangannya support system teknologi ini yang agak masih jadi PR dan eh..ada sedikit mengeluarkan modal begitu ya untuk membeli wifi atau atau ya eh..data begitu. kemudian eh..tuh terus juga internet ya eh..internet kadang di kampus nggak ke cover buat download-download video atau segala macam (P6, 2nd).

The challenge is that this technology support system is still a work in progress, and, well, it requires a bit of capital to purchase Wi-Fi or data. Then, well, the internet connection at the campus is sometimes not sufficient for downloading videos or other things (P6 translated).

Participant 8 also mentioned the same experience that the challenge comes from limited technology as facilities and internet access. He stated the following.

kemudian dari teknologi dan fasilitas yang terbatas. kemudian kalo tiba-tiba em sinyalnya kurang nah itu tantangannya (P8, 1st).

then, from limited technology and facilities. Then, if suddenly the signal is weak, that's the challenge (P8 translated).

Participant 4 assumed that proper technical infrastructure or internet access is not available on all campuses, so it could be a challenge. She confessed:

akses fasilitas karena tidak semua kampus memiliki internet yang memadai atau hape yang memadai atau aa teknologi yang memadai sehingga aa terkadang bermasalah tu kuota internet ya sehingga kadang-kadang aa menjadi hambatan (P4, 1st).

access to facilities because not all campuses have adequate internet or adequate cell phones or adequate technology, so sometimes there are problems with internet quotas, which can sometimes be an obstacle (P4 translated).

Participant 7 argued that the facility of technology is unavailable optimally, especially internet access in the classroom. So far, he was accustomed to using the students' devices. He relies on their students to have their own internet access. Unfortunately, some students did not have a trendy device. Besides that, he argued that internet access in remote areas sometimes couldn't be relied on. It could be a challenge. As he stated in the following.

fasilitas ee sampai saat ini kampus belum maksimal dalam memfasilitasi ee teknologi di ruang kelas ee wifinya kadang bagus kadang tidak (P7, 2nd).

the campus has not been able to fully facilitate technology in the classroom. The Wi-Fi connection is sometimes good and sometimes not (P7 translated).

He also pointed that

ee.. keterbatasan fasilitas juga bisa menjadi tantangan yang krusial (P7, 1st).

ee.. Limited facilities can also be a crucial challenge (P7 translated).

Participant 3 also mentioned, as in the following.

Tantangannya dalam menggunakan TPACK dalam pengajaran Bahasa Inggris yaitu ee bila berkaitan dengan jaringan internet maka kadang ada gangguan sinyal (P3, 1st).

The challenge in using TPACK in English teaching is that when it comes to the internet, there are sometimes signal disruptions (P3 translated).

Participant 2 said that internet access could be a challenge in rush hour when every classroom used the internet access, and on rainy days. It was a common happening in her daily teaching.

tantangan jaringan nah biasanya kalau sekelas lagi makai semua itu kadang wifi jadi agak lambat (P2, 1st).

network challenges, usually when everyone in class is using it, the wifi sometimes becomes a bit slow (P2 translated).

Based on the data presented above, there were six out of eight participants who mentioned that school technical infrastructure, such as the availability of digital tools and stable internet access, is a challenge in implementing TPACK in the English teaching classroom.

Second, the supporting system challenge of implementing TPACK in the English language classroom is the professional development and training. Participant 8 argued that below.

kampus sendiri belum pernah mengadakan pelatihan TPACK ini karena dengan teknologi untuk mengajar bisa aa pastinya meningkatkan minat dan partisipasi mahasiswa itu sendiri (P8, 2nd).

The campus itself has never held TPACK training because technology for teaching can certainly increase student interest and participation (P8 translated).

Participant 5 said that she got no training.

karna kita tidak ada apa namanya.. tidak ada training-training atau apa gitu tapi kita belajarnya sendiri gitu (P5, 1st).

because we don't have any training or anything like that, but we learn on our own (P5 translated).

Participant 3 argued that she found difficulty in applying TPACK in her teaching. She opined that she needs professional development support, such as training to improve her capability in integrating technology in her classroom. She stated the following.

tidak adanya pelatihan sehingga kurangnya dukungan professional (P3, 2nd).

lack of training resulting in insufficient professional support (P3 translated).

Therefore, three participants mentioned that they need professional development and training as a supporting system to implement TPACK in their classrooms.

In addition, the supporting system challenge of implementing TPACK was institutional support. It could be a challenge, like providing guidelines or modules. Participant 4 opined as follows.

dalam pengajaran TPACK harus juga di persiapkan infrastrukturnya misalnya infrastruktur nya modul yang seperti apa sih yang pas yang di pakai untuk TPACK. Kampus juga memfasilitasi modul-modul yang pas yang memang untuk di TPACK (P4, 1st).

In teaching TPACK, the infrastructure must also be prepared, for example, what kind of module infrastructure is suitable for TPACK. The campus also facilitates modules that are suitable for TPACK (P4 translated).

Participant 6

kita kurang dukungan ya cara menggabungkannya dalam kurikulum. Kurikulumnya ini tapi materimya tuh agak beda yang kita dapatkan yang kita cari di luar itu kadang kita terpaksa mencreate sendiri (P6, 1st).

We lack support in terms of how to integrate it into the curriculum. The curriculum is there, but the material is a bit different from what we find outside, so sometimes we are forced to create it ourselves (P6 translated).

Furthermore, the supporting system challenge of implementing TPACK was students' readiness and access. Participant 7 opined that students' readiness and access

are as in the following. So far, he was accustomed to using the students' devices. He relies on their students to have their own internet access. Unfortunately, some students did not have a trendy device.

terkait dengan device ee memang sejauh ini ee saya masih mengandalkan device yang dimiliki oleh ee masing-masing mahasiswa. Nah kendalanya ee adalah jika ada mungkin diantara mahasiswa yang memiliki device yang agak sedikit bole dikatakan kurang kekinian aa mungkin itu yang menjadi sedikit hambatan (P7, 1st).

Regarding devices: So far, I still rely on the devices owned by each student. The problem is that some students may have devices that are a little outdated, which may be a slight obstacle (P7 translated).

He also mentioned that

Ini tantangan yang saya hadapi ee terletak pada level literasi digital mahasiswa yang berbeda-beda, ada yang cepat beradaptasi dengan teknologi, ada yang lambat (P7, 2nd).

This challenge I face lies in the varying levels of digital literacy among students; some adapt quickly to technology, while others are slow (P7 translated).

Participant 3 also mentioned that the challenge is coming from the students when they don't have their own internet access or an unsupportive device, so they cannot use some learning applications that are used in the classroom. She explained below.

terkadang keterbatasan dari mahasiswa itu sendiri misalnya tidak punya paket data atau mereka handphone nya kurang supportive untuk menggunakan aa beberapa teknologi pembelajaran ataupun aplikasi yang kita pakai dalam pembelajaran (P3, 2nd).

Sometimes the limitations lie with the students themselves, for example, they don't have a data plan, or their cell phones are not compatible with some of the learning technologies or applications that we use in teaching (P3 translated).

Participant 1 reported that the students need enthusiasm to design learning media by using specified applications.

terus tantangan lainnya adalah bagaimana kita eh.. menemukan semangat anak-anak untuk dia mau mencoba eh..mendesain media pembelajaran menggunakan aplikasi-aplikasi yang sudah kita tentukan (P1, 1st).

Another challenge is how we can motivate children to try designing learning media using the applications we have specified (P1 translated).

Participant 2 reported:

ada satu tantangan nya adalah kalau kita memakai media itu kan mereka jadi aktif ya jadi semangat akhirnya mungkin kelasnya jadi agak rebut gitu kalau mereka sangat antusias biasanya kan kalau mengerjakan tes

dengan quiziz mereka liat score nya kan bisa jadi teriak-teriak karena misalnya mereka bener jawabannya tuh mungkin itu tantangannya aja (P2, 2nd).

One challenge is that when we use this medium, they become active and enthusiastic, so the class can become a bit rowdy. When they are very enthusiastic, usually when they take a quiz, they see their scores and they might shout because, for example, they got the answers right. Maybe that's the only challenge (P2 translated).

Participant 4 opined that learning destruction because of internet browsing. She said:

Terus aa yang selanjutnya kalo siswa kita kasih hal-hal yang aa exercise dengan membuka youtube atau yang lain mereka gampang terdistraksi ee buka yang lain akhinya terbenam ke yang lain eh malah terbuka aplikasi lain bahkan main ke game jadi manajemen waktu juga menjadi sangat apa terganggu la terhadap yang sudah kita tetapkan misalnya waktunya 30 menit membahas ini tapi karena mereka eksplor ini ekplor ini jadi kadang kadang aa mengganggu konsentrasi focus (P4, 2nd).

Then what happens next if we give our students things like exercises by opening YouTube or other platforms? They easily get distracted, open other things, and end up getting lost in other things, even opening other applications or playing games, so time management also becomes very disrupted. For example, we set 30 minutes to discuss this, but because they explore this and that, sometimes it disrupts their concentration and focus (P4 translated).

Participant 3 said that:

kemudian ada juga mahasiswa yang belum bisa menguasai teknologi karena mereka ee karena mereka kemampuannya dalam menggunakan teknologi masih terbatas apalagi mahasiswa yang masih tinggal di pelosok pelosok (P3, 1st).

Then there are also students who have not yet mastered technology because their ability to use technology is still limited, especially students who still live in remote areas (P3 translated).

Therefore, there are five participants who mentioned that students' readiness and access could be a challenge when implementing TPACK in their classrooms. Finally, from the data presented above, seven out of eight participants opined that the supporting system could be a challenge they have in implementing TPACK in the English classroom. The supporting system that was found, such as technical infrastructure, was availability of digital tools and stable internet access, professional development and training, institutional support, and students' readiness and access.

Digital Literacy

Second, this study found that digital literacy is one of the challenges. The data can be explained in the following. Participant 1 said that as a lecturer, she should explore or keep finding the technology or applications that are appropriate with the class because not all applications can be used for all classes. It is implied that digital literacy, or the

capability to find and choose technological use in the classroom, should be improved in English teaching. She mentioned as follows.

oke tantangan nya sih eh.. sebagai dosen memang harus eh.. apa yah sering-sering ngulik-ngulik yah sering-sering ngulik-ngulik eh... apa aplikasi-aplikasi apa yang sesuai seperti itu kak kadang kan nggak semua nya tu bisa kita gunakan di mata kuliah tertentu seperti itu (P1, 1st).

Okay, the challenge is, well... as a lecturer, you have to, well... what is it? You have to explore often, explore often, eh... what applications are suitable for that? Sometimes we can't use all of them in certain courses like that (P1 translated).

Participant 5 opined that deciding technological use that is suitable in her class is challenging. From her explanation, it could be inferred that digital literacy could be a challenge to integrate technology into English teaching. It could be seen as follows.

menentukan teknologi apa yang harus digunakan dalam ee.. pembelajaran kita yang sesuai itu apa itu cukup sulit. menentukan kira-kira teknologi apa yang cocok untuk kelas kita nah itu juga suatu tantangan yang besar juga (P5, 1st).

Determining which technology to use in our learning is quite difficult. Determining what technology is suitable for our class is also a big challenge (P5 translated).

Participant 5 also strengthened her opinion by saying as follows.

TPACK ini juga cukup sulit di implementasikan secara konkret dikelas karena yah keterbatasan pengetahuan yang kita miliki juga dalam pengimplementasiannya (P5, 2nd).

TPACK is also quite difficult to implement concretely in the classroom due to the limitations of our knowledge in its implementation (P5 translated)

Participant 4 mentioned that the challenge could be limited technological literacy. Not all lecturers feel comfortable using digital devices. She opined that some lecturers who have technological challenges must be forced to use a platform or digital device, or even online applications. Her saying inferred that digital literacy is a challenge when integrating TPACK in the classroom. She stated as in the following.

keterbatasan literasi teknologi ya, tidak semua guru nyaman menggunakan perangkat digital aa dan bagi guru-guru yang gaptek harusnya dipaksa untuk aa menggunakan platform atau perangkat digital atau aplikasi online (P4, 2nd).

The first challenge is definitely limited technological literacy. Not all teachers are comfortable using digital devices, and teachers who are technologically challenged should be forced to use digital platforms or devices or online applications (P4 translated).

She also mentioned that

sementara pas kita create sendiri kita kurang aa kita gaptek la istilahnya, itu sedikit tantangan (P4, 1st).

When we create it ourselves, we lack the necessary skills, so to speak, which is a bit of a challenge (P4 translated).

Participant 7 opined that one of the challenges when he integrates technology in his classroom is the lecturer's skill in mastering technology. It could be implied that digital literacy is a challenge to be mastered when integrating technology in teaching. His voice stated as follows.

bagaimana pun juga tantangan nya pasti ada, misalnya keterampilan dosen dalam menguasai teknologi (P7, 1st).

However, there will always be challenges, such as lecturers' skills in mastering technology (P7 translated).

Participant 8 opined that one of the challenges that lecturers could face is that not all lecturers can master digital technology. It could be inferred that digital literacy should be mastered when implementing the TPACK framework in the classroom.

Tantangannya itu tidak semua dosen itu mampu menguasai teknologi digital (P8, 1st).

The challenge is that not all lecturers can master digital technology (P8 translated).

Therefore, there were six out of eight participants who stated that digital literacy is a challenge in integrating technology in the teaching of the English classroom.

Time Constraints

Third, this study found that time constraints are one of the challenges. This was partly because integrating technology is a complicated process that requires time. Some lecturers lack the confidence and readiness. The data was shown in the following. Participant 5 mentioned that one of the challenges is that learning new educational technology use is a complicated process, so it takes more time, and sometimes she doesn't know where she can learn the new technological use. And she said that having an appropriate technological use for her class is also a challenge. Her opinion was displayed below.

karena banyaknya aplikasi-aplikasi pada dasarnya yang bisa kita manfaatkan tapi kita terbatasi oleh waktu untuk mempelajarinya (P5, 1st).

because there are so many applications that we can basically use, but we are limited by time to learn them individually (P5).

Participant 4 also had the same voice; she said that she needed more time to prepare the right materials that match technological use. She needed more preparation, so it required more time. It could be implied that she lacks readiness. Integrating technology was a complicated process that required time. Her opinion could be seen as follows.

pastinya perlu waktu persiapan yang lebih banyak jadi ketika kita menjelaskan misalnya satu sub tema tertentu berati kita harus siapkan

dulu mencari dulu di internet ini aa platform mana yang cocok atau materi mana yang cocok kadang kadang gak pas materinya. Kadang kadang perlu combine materi ini sama materi ini sehingga perlu waktu persiapan yang lebih banyak (P4, 2nd).

It definitely requires more preparation time, so when we explain a specific sub-theme, for example, we have to prepare in advance by searching the internet to find the right platform or material, which sometimes isn't suitable. Sometimes we need to combine this material with that material, so it requires more preparation time (P4 translated).

Participant 6 commented:

sehingga memang perlu waktu ya aa untuk mendapatkan itu dan mengatasi masalah teknis di kelas (P6, 1st).

So, it does take time to acquire these skills and overcome technical problems in the classroom (P6 translated).

In a similar vein, participant 3 mentioned that time constraints could be a challenge, as she stated in the following.

salah satu tantangan nya mempelajari teknologi yang baru itu cukup sulit dan butuh waktu yang lama (P3, 1st).

One of the challenges is that learning new technology is quite difficult and takes a long time (P3).

Based on the data explained above, four participants stated that one of the challenges was integrating technology was a complicated process that requires time.

Discussion

Benefits

This study revealed three sub-themes of the benefits of TPACK that are integrated by EFL lecturers in the English teaching classroom. In other words, the findings revealed several pedagogical and affective benefits of TPACK integration in English teaching. These include increasing students' motivation, creating adaptable and pleasant classrooms, and facilitating teacher creativity.

First, the TPACK framework can increase students' motivation. It is also mentioned that the use of technology in the foreign language classroom can undoubtedly have a positive effect on increasing students' motivation and eventually lead them to better learning outcomes (Panagiotidis & Arvanitis, 2023). Through the appropriate integration of technology with pedagogical practices and content knowledge, educators can improve students' motivation and academic achievement (Reethumol & Scholar, 2024). Multimedia technology can increase students' motivation and focus for learning. In addition, motivation was repeatedly emphasized by participants. Participant 2 stated that TPACK "can increase students' motivation compared to conventional methods using only whiteboards and books." Likewise, Participant 5 found that "students were more excited in doing their projects." This aligns with (Al-Mekhlafi et

al., 2025), who found that multimedia-supported instruction significantly enhances learner motivation and engagement.

Second, technology integration brings a classroom that is adaptable and pleasant. Technology integration in the classroom has great potential as it encourages students to be more attentive in class and more eager to learn. Moreover, technology can help teachers as well as students in making the classroom a fun and interactive place to learn (Taopan et al., 2020). Moreover, the integration of TPACK contributed to creating adaptive and pleasant learning environments. Participant 4 noted that classes became "*fun, enjoyable, and relaxed*", while Participant 6 commented that technology made learning "*more interesting and suitable for the era*." This supports Wang and Lam (2024), who state that technology-enriched classrooms are more interactive, promoting comfort and adaptability for digital-native learners.

Third, facilitating lecturers' creativity. The lecturers' TPACK movement fosters more innovative thinking and enhances initiatives to raise the standard of English instruction. Additionally, TPACK facilitates learners' involvement in helping students meet learning objectives (Ilahude et al., 2023). Furthermore, TPACK improved instructional strategies and student learning outcomes. Participant 1 observed that "*students' understanding became better because of their enthusiasm and interaction during learning*." Participant 8 also stated that "*TPACK facilitates easier access to learning and encourages continuous innovation*." These findings support (Harris & Hofer, 2025) model, which emphasized that technology integration can enhance instructional strategies by diversifying materials and assessment methods.

Besides that, TPACK brings lecturers' creativity to lead various opportunities to develop multimodal products. Students have the chance to create and generate multimodal products through the assigned work, utilizing technology (Trifonova & Kiryakova, 2025). Furthermore, several lecturers found that TPACK promoted collaborative learning and multimodal product creation. Participant 5 reported that "*students developed projects beyond expectations*", while Participant 2 observed that "*online collaboration tools made group work easier*." These results resonate with (Novanti & Suprayogi, 2021), who found that technology integration promotes creativity and teamwork, encouraging learners to produce multimodal, project-based outputs. It brings students to be active learners and gives students more experiences in learning. The study examined how technology can be used in English language instruction, focusing on research that highlights how technology can enrich students' learning experiences. Besides that, this study claimed that technology, pedagogy, and content knowledge (TPACK) alignment has been demonstrated to be essential for increasing student engagement and academic success.

Finally, bringing lecturers' creativity in teaching is when English lecturers must be creative in their approach to teaching and learning the language to meet the demands of the twenty-first century (Artini & Padmadevi, 2020). In this context, TPACK brings lecturers to create real-world scenarios using technologies. In order to relate learning to the actual world and bring the true world into the classroom, the teachers used creative strategies by tying instructional material to real-world situations. These educators created real-world scenarios using technologies like the internet and wiki spaces (Dewi et al., 2022). Therefore, lecturers emphasized that TPACK encouraged teacher creativity. Participant 4 claimed that TPACK "*increases creativity in teaching by using videos, apps, and quiz platforms to make lessons more interesting*." This echoes the findings of Koehler

and Mishra (2009), who argued that teachers with strong TPACK competencies demonstrate higher levels of instructional innovation and adaptability.

Challenges

This study revealed three challenges of TPACK that were integrated by EFL lecturers in English teaching. Despite its benefits, this study identified several challenges faced by lecturers: supporting systems, digital literacy, and time constraints.

First, the most prevalent issue was inadequate infrastructure. Participant 6 admitted that "*the internet is not accessible in the classroom, so I have to use my own Wi-Fi.*" Similarly, Participant 8 mentioned "*limited facilities and unstable signals.*" Such constraints are consistent with the findings of (Mustafa et al., 2024), who highlighted infrastructural barriers as key obstacles to technology integration implementation in developing educational contexts.

Second, digital literacy, since the TPACK framework focuses on integrating technology with pedagogy and teaching topic knowledge, digital literacy has an impact on how the framework is implemented while teaching English (Mishra & Koehler, 2006). The second challenge concerned digital literacy and professional readiness. Participant 5 confessed that "*determining what technology to use is difficult because there are many applications, and I have to learn them individually without training.*" Participant 4 also noted that "*not all lecturers are comfortable using digital devices.*" These statements confirm previous studies (e.g., Voogt et al., 2013) & (Al-mekhlafi et al., 2025) which found that limited digital literacy and a lack of institutional support hinder effective technology integration.

Third, lack confidence and readiness. According to (Ertmer, 1999) teachers encounter significant obstacles when attempting to incorporate technology into instructional activities. Moreover, the majority of educators lack the confidence and readiness to utilize technology in the classroom (Taapan et al., 2020). In addition, integrating technology is a complicated process that requires time. As (Salam et al., 2023) confirmed that when using technology to teach English, there are several challenges, including a lack of time, limited access to technological resources, trouble using the tools, and inadequate teacher training.

In other words, the third challenge was time management and readiness. Participant 4 stated that "*integrating TPACK requires more time to prepare materials that match the technology.*" This is consistent with (Chai et al., 2013) who observed that teachers often struggle with lesson preparation time and alignment between technology and pedagogical content. Furthermore, Lastly, some lecturers mentioned student-related challenges, such as distraction from unrelated online activities and varying access to devices. Participant 4 remarked that "*students get distracted by browsing other sites during class,*" while Participant 3 noted that "*some students lack supportive devices or data packages.*" These realities underline that digital devices affect many educational institutions in Indonesia (Prasetya & Irwanto, 2025).

CONCLUSION

First, this study depicted that the benefits of integrating TPACK in the classroom are increasing students' motivation, building an adaptable and pleasant classroom, and facilitating lecturers' creativity. The study found that TPACK integration provided multiple benefits for both lecturers and students. It increased students' motivation and

participation, created enjoyable and adaptive classrooms, improved instructional strategies, and enhanced learning outcomes. Furthermore, TPACK encouraged collaborative learning, teacher creativity, and the production of multimodal learning products. These outcomes affirm that technology integration enriches both teaching and learning processes in higher education EFL contexts.

Second, this study revealed that the challenges of integrating TPACK in the classroom are supporting system, digital literacy, and time constraints. In other words, despite the positive impacts, lecturers faced several challenges: limited facilities and unstable internet connections, varying levels of digital literacy, lack of training and professional support, and time constraints in lesson preparation. Some lecturers also mentioned that students' limited access to devices and distractions during online learning hindered the effectiveness of TPACK integration.

Institutional and policy implications, the challenges suggested that universities need to provide institutional support for effective TPACK implementation. This includes improving digital infrastructure, offering continuous professional development programs, and integrating technology principles into curriculum design and teacher evaluation systems. Without such support, even lecturers with strong pedagogical skills may struggle to fully utilize technological tools in their teaching.

Therefore, institution regulations must encourage fair access to technology for all pupils both in the classroom and outside the class in the campus environment, and instructors must receive training on how to use it successfully. In this sense, technology has the potential to significantly improve education by equipping the next generation to take advantage of possibilities and overcome obstacles in this digital age. Technology may be an effective tool to improve learning and get the young generation ready for a future that is becoming more digital if used properly.

Implications for professional development, the findings imply that lecturers should embed TPACK training, continuous workshops, peer mentoring, and collaborative learning communities to enhance lecturers' digital literacy and pedagogical innovation. This reinforces the need for structured, ongoing professional growth opportunities. Based on the findings and implications, the following recommendations are proposed for lecturers, institutions, and future researchers. Lastly, there is a recommendation for future research. The next study should focus on student perspectives, which further research could explore how students perceive in terms of benefits and challenges of adopting TPACK and respond to based learning, which would enrich understanding of its classroom impact.

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