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Assessing the Mandarin Language Lecturers' TPACK in Malang City

Jesica Stiphanie Tanisiwa[1)*], Daniel Ginting[2)]

[)*]*Prodi Pendidikan Bahasa Mandarin Universitas Ma Chung,*
221910017@student.machung.ac.id

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Abstract

As a teacher in the 21st century, it is important to have knowledge and skills in utilizing technology in the learning process, according to the curriculum, and to be able to use appropriate teaching strategies that match the characteristics of each student. This article aims to measure the Mandarin language lecturers' proficiency in the city of Malang in mastering the TPACK concept in the learning process. This research is a quantitative study that uses survey methods, with questionnaire and interview instruments. The respondents are Mandarin language lecturers in Malang. Based on the results of this study, the majority of Mandarin language lecturers have moderate TPACK knowledge (78%), with 14% in the high group and 7% in the low group. The implication of this research is the need to enhance the TPACK skills of Mandarin language instructors in Malang's higher education institutions to improve their professional development in integrating technology with effective Mandarin language learning materials and strategies.

Keywords: TPACK, Mandarin Language, Lecturers, Christian education

INTRODUCTION

Learning and mastering the Mandarin language currently offers tremendous benefits. China is one of the largest and strongest countries economically, politically, and militarily, playing a crucial role in the global world. The rapid economic growth of China and its increasing influence, which is becoming more inevitable, provide numerous business and job opportunities for individuals who understand the Mandarin language and Chinese culture (Syahrin, 2018). The ability to speak Mandarin and understand Chinese culture is highly valued by many global companies and can add value to an individual's career. Understanding and mastering Mandarin and Chinese culture can make someone more valuable and appealing to companies, which can help them in their career. In this context, cross-cultural communication plays a strategic role in creating a strengthening effect on the sustainability of skilled labor in pursuing their professional careers (Rahayuningsih, 2017). This ability provides opportunities for someone proficient in Mandarin to work in higher or better positions within global companies operating in China or in companies that use Mandarin as a communication tool.

Lecturers in 21st-century education face challenges and opportunities. As lecturers, they must adapt and adopt technology. Lecturers act as organizers who are capable of creating situations, leading, stimulating, mobilizing, and directing instructional learning activities, where they act as information sources (Ginting, 2018; Paramansyah, 2020). Changes in students' mindset and learning styles in today's era are inevitable. This can occur due to several factors. For example, easy access to information sources and new technologies allows students to have different mindsets and learning styles compared to previous generations. This is done to foster students' creative ideas and train them to understand the digital era (Siahaan, 2021). Students prefer to learn in a more interactive and visual manner. In reality, modern students also have additional learning sources such as videos, podcasts, and blogs that provide new information and insights different from formal learning sources. The

learning process of modern students has been exposed to the digital world from an early age, and they have different ways of learning compared to previous generations. Furthermore, learning Mandarin is not instant and not easy.

Meanwhile, the Mandarin language itself has a large number of characters, and continuous practice is needed for someone to remember the Mandarin characters and understand them well. Therefore, it is essential for lecturers to sharpen their own skills in understanding and mastering TPACK (Technological Pedagogical Content Knowledge). Lecturers should be able to use technology in implementing the learning process through the application of media technology, have knowledge of pedagogical principles to encourage students to think critically and have broad knowledge in specific fields of study. Lecturers with mastery of TPACK make the material more interactive and enjoyable, and they prompt students to develop problem-solving skills (Siahaan, 2021). Conversely, the lack of interest and understanding of students in the content is often due to the lack of lecturers' abilities in mastering technology, pedagogy, and content. In short, lecturers must have the ability to help students prepare for an increasingly complex job market and broaden their skills in the field of technology while being capable of problem-solving.

This research is also highly relevant for Christian teachers. It is expected that the results of this research will provide better insights and understanding regarding the importance of TPACK (Technological Pedagogical Content Knowledge) mastery for Christian teachers. With a better understanding of TPACK, teachers can effectively integrate technology in teaching Christianity, use appropriate learning strategies, and ensure students' understanding of the taught Christian education. Furthermore, when they have a good mastery of TPACK, they can provide a more holistic and contextual religious education, enabling students to understand and apply Christian teachings in their daily lives.

THEORY

The TPACK theory is highly relevant to the profile of 21st-century lecturers. TPACK is a teaching concept that emphasizes the integrated competence mastery of a lecturer, including technology, pedagogical knowledge, and content mastery. This is crucial because the current world is heavily influenced by technology, and lecturers must adapt to these changes to ensure effective student learning. 21st-century educators must face problems and situations that were unimaginable to their predecessors. New technological tools also mean new and different ways to access and process the information needed for teaching and learning (Maglearning, 2021). Lecturers must also understand how students learn and use appropriate learning strategies to facilitate their learning. According to the Interstate New Teacher Assessment and Support Consortium (INTASC), one of the competencies that a teacher must possess is knowledge of student development and learning, meaning that lecturers must understand how students learn and develop in order to provide learning opportunities that support their personal, intellectual, and social development (Slavin, 2011). Furthermore, 21st-century lecturers must have a solid understanding of the subject matter they will teach and ensure that students grasp the fundamental concepts and pedagogical principles.

Technology, content, and pedagogy are the main components of Technological Pedagogical Content Knowledge, also known as TPACK. TPACK can be defined as a form of knowledge that synthesizes three types of knowledge: technological knowledge, pedagogical knowledge, and content knowledge (Khoiri, 2017). TPACK represents the knowledge and skills needed to integrate technology into teaching and learning (Suyamto, 2020). TPACK is a highly relevant approach in the current era of online learning. This is because the TPACK approach combines knowledge (K), pedagogy (P), and content (C) with technology (T) to create effective learning experiences (Hasibuan, 2020). According to Saputra (2019), TPACK consists of seven components that teachers should possess: Technological Knowledge (TK), Pedagogical Knowledge (PK), Content Knowledge (CK), Technological Content Knowledge (TCK), Pedagogical Content Knowledge (PCK), Technological Pedagogical Knowledge (TPK), and TPACK. In TPACK, the teacher's knowledge to integrate technology into teaching makes the learning process effective and efficient. The integration of technology is considered an essential component of teaching and is closely related to PCK (Oyanagi & Satake, 2016).

Being a lecturer from the perspective of TPACK means having mastery of technology and using it to help students understand concepts and acquire skills. Furthermore, lecturers must understand how students learn and use appropriate teaching strategies to facilitate their learning. Lecturers are expected to have a command of the subject matter to be taught and ensure that students understand fundamental concepts and principles (Fitriani, 2019). TPACK is the necessary knowledge to integrate technology into the learning process (Rahayu, 2017). The TPACK framework involves packaging teaching materials using appropriate learning models that align with students' characteristics and integrating technology such as animation programs, simulations, or instructional videos as media and learning resources (Robby, 2014; Ginting et al., 2022a; Ginting & Linarsih, 2022).

Based on previous research conducted by Anggraini (2021) on the TPACK (Technological Pedagogical Content Knowledge) skills of science teachers in SMP Muhammadiyah Kota Batu, it was found that the TPACK skills of science teachers in SMP Muhammadiyah were excellent with a score of 84.5. Another research conducted by Fitriani (2019) focused on the Analysis of Technological Pedagogical Content Knowledge (TPACK) skills of prospective Biology teachers at Universitas Islam Raden Intan Lampung. The aim of the study was to describe and assess the TPACK skills of prospective Biology teachers at Universitas Islam Raden Intan Lampung. The results of the study showed that the TPACK skills of prospective Biology teachers were categorized as good.

Effective learning can be achieved when teachers have mastery of technology, subject matter, and effective instructional delivery methods. According to Apriliani (2017), active learning involves students engaging in activities and thinking about what they are doing, such as discovering concepts, solving problems, and applying what they have learned to solve real-life issues. Mastery of information and communication technology enhances the efficiency and effectiveness of learning. The use of information technology in learning should also be able to capture students' attention, thereby increasing their motivation to learn and making the learning process more enjoyable, providing students with more knowledge (Ginting &

Linarsih, 2022). Some examples of information and communication technology used in the learning process include the internet, e-learning platforms, email, PowerPoint presentations, and learning CDs. Considering the benefits of using such technology, teachers need to enhance their competence in utilizing technology for teaching purposes (Ritonga, 2017; Ginting et al., 2022).

Teachers must be capable and knowledgeable in the subject matter they teach, and they should use teaching methods that are appropriate to meet the needs of students and achieve the learning objectives. Methods are used to facilitate learning for educators at all levels of education. A method is a systematic process typically employed to efficiently achieve specific objectives through organized steps (Afandi et al., 2013). If the teaching method used by a teacher is incorrect, students may struggle to acquire information. Even subjects that are inherently easy can become challenging for students if the method used is inappropriate. Therefore, the selection of teaching methods should be suitable for the characteristics of each student, enabling them to understand and master the subject matter. This is expected to facilitate information transfer that supports learning and actively engage learners, making the learning process more efficient through the utilization of information technology (Riadi, 2021).

The purpose of this research is to examine the proficiency of Mandarin language instructors in Malang city in terms of their Technological Pedagogical Content Knowledge (TPACK) abilities. There are two problem statements: first, to what extent do Mandarin language instructors in Malang city possess TPACK skills, and second, how do Mandarin language instructors implement or apply the TPACK concept in Mandarin language classrooms.

METHOD

Research design

This research uses a survey and quantitative research design. A survey research is a type of research where the researcher collects information from respondents. The instrument used in this research is a questionnaire. According to Sugiyono (2013), the survey method is used to obtain data from a specific population in a natural setting, but the researcher collects data by distributing questionnaires without providing any treatment like in an experiment. The survey asks questions related to the research topic and gathers information about self-beliefs/ abilities.

Research sample

The sample of this research involves thirty Mandarin language instructors in the city of Malang. This research is conducted by administering a questionnaire as the research instrument to collect data. The questionnaire is used to measure technological knowledge, pedagogical knowledge, and content knowledge. The objective of this research is to describe the level of understanding of TPACK (Technological Pedagogical Content Knowledge) among Mandarin language instructors in the city of Malang.

Instrument

The technique and tool used to collect data in this research is through the use of a questionnaire. The questionnaire was created online using Google Forms. The questionnaire consists of respondent's personal information and statements that measure TPACK. The list of statements includes the 7 components of TPACK: CK, PK, PCK, TK, TCK, TPK, and TPACK. The statements assess the instructors' abilities in using technology, employing teaching methods according to students' needs, and acquiring knowledge related to Mandarin language through various sources.

Before distributing the questionnaire, the researcher conducted a pilot project to assess the quality of the instrument. Based on the pilot results, the researcher tested the questionnaire using SPSS software and found that almost all items in the questionnaire were valid. The questionnaire also exhibited a reliability of 0.8, indicating a high level of consistency. Descriptive statistics were used to analyze the data, and the results were presented in the form of graphs and tables to facilitate reader understanding.

Data collection and analysis procedures

The research procedure begins with a literature review on the TPACK abilities of Mandarin language instructors in the city of Malang. Next, the researcher designs a research instrument specifically focused on assessing the TPACK abilities of Mandarin language instructors in Malang. Subsequently, the researcher conducts a pilot test of the research instrument. Before collecting data, the researcher ensures the implementation of informed consent procedures, which involve explaining the purpose, procedures, and presentation of the research findings, respecting the privacy rights of the respondents (using pseudonyms), and obtaining their permission to participate. These steps are essential ethical procedures followed by the researcher (Ginting, 2022).

During the data collection phase, the researcher distributes a questionnaire in the form of a Google Form to the respondents. Subsequently, the researcher analyzes the data using descriptive statistics, focusing on measures such as mean, percentage, mode, and median. The researcher also conducts interviews with three respondents, each representing one of the three TPACK proficiency groups: low, moderate, and high.

RESULT AND DISCUSSION

How far is the TPACK knowledge of Mandarin language instructors in Malang?

This research found variations in the categorization of TPACK knowledge levels among Mandarin language instructors. The majority of respondents in this study have a moderate level of TPACK knowledge (78%). Meanwhile, the high-level group consists of 14%, and the low-level group consists of 7%, as illustrated in Figure 1.

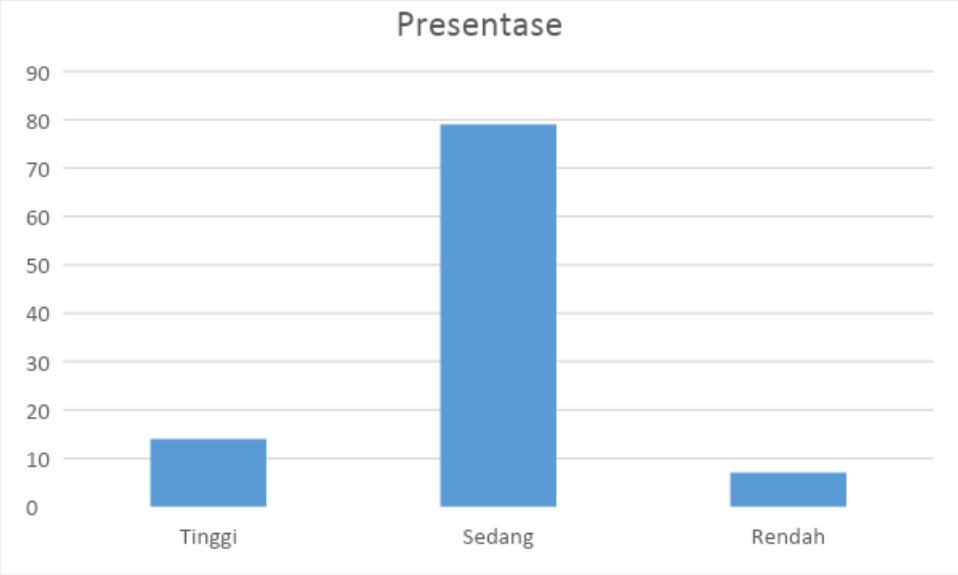

Figure 1. TPACK knowledge levels of Mandarin language instructors.

Description:
High: interval values >129
Moderate: interval values 82-128.
Low: interval values 35-81.

The findings of this study imply the urgency for Mandarin language instructors in universities in Malang to enhance their TPACK competencies. The improvement of TPACK competencies is expected to enhance the professional development of instructors in integrating technology with effective Mandarin language materials and teaching strategies. TPACK is crucial for teachers as it enables them to design and deliver more effective and relevant learning experiences in the digital era. Mastering TPACK is essential for teachers to enrich the learning experience. Teachers with sufficient TPACK competencies can create more engaging and interactive learning experiences for students, encouraging active participation and enhancing motivation to learn. When teachers utilize technology appropriately and integrate it into teaching, they can create more engaging and interactive learning experiences for students. When students experience more engaging and interactive learning experiences, they become more actively involved in learning, and their motivation to learn increases. Ultimately, motivated students who have a better understanding of the taught content can be achieved.

How do Mandarin language instructors implement the TPACK concept in Mandarin language classes?

Technology knowledge

In the next section, the researchers asked the respondents about their technology knowledge. Technology knowledge is related to the proficiency in using technology for teaching and learning purposes to enhance the quality of instruction and learning. In terms of their ability to handle technical issues on computers, the majority of the instructors claimed to

have sufficient technology knowledge. About 17.4% stated that they have a high level of mastery, while 47.8% claimed to have an adequate level of mastery. However, 34.8% expressed that they do not have sufficient technology knowledge to teach. The research findings indicate that although the majority of the instructors claimed to have good technology knowledge, a small portion of them still feel that their technology knowledge is not sufficient for teaching.

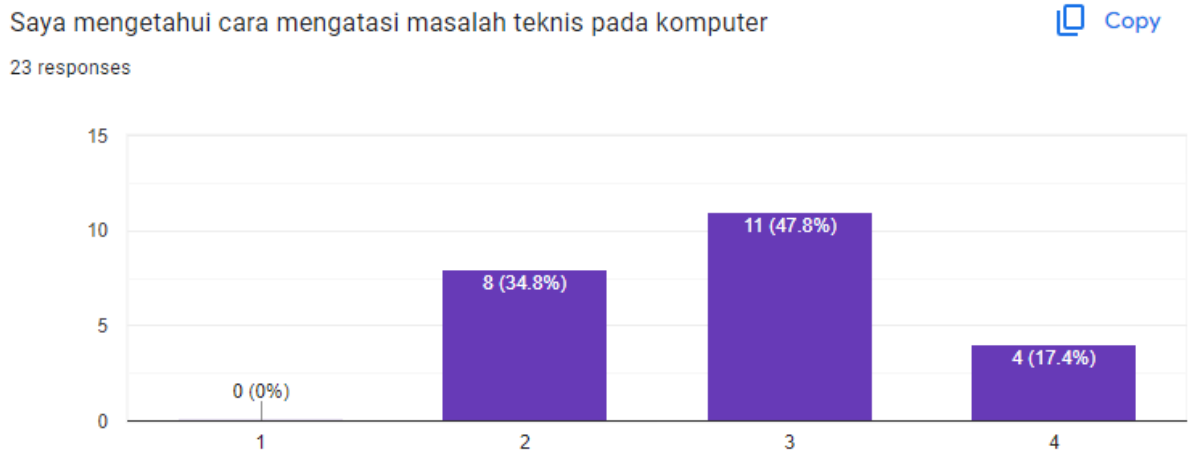

Figure 2.. Knowledge of Technology

Here are some comments expressed by key informants in this research:

A (lecturer with high TPACK) stated:

"When encountering technical issues for the first time, I will search for solutions on the Internet before trying to solve them myself. However, if the problem cannot be resolved, I will ask colleagues or the IT department for assistance." (Lecturer A - high TPACK group)

B (lecturer with moderate TPACK) stated:

"I solve technical problems by finding solutions through various sources such as the Internet, books, and others. Additionally, I may also consult with technicians on how to resolve technical issues." (Lecturer B - moderate TPACK group)

C (lecturer with low TPACK) stated:

"I deal with technical problems on the computer by asking technicians for assistance on how to resolve them or by learning through YouTube tutorials." (Lecturer C - low TPACK group)

The three lecturers above have different approaches in addressing technical problems on the computer. For example, Lecturer A with high TPACK tends to be more independent and has the ability to find solutions on their own through the Internet before seeking help from others. However, if the problem proves difficult to solve, they are not hesitant to seek assistance from colleagues or IT technicians. On the other hand, Lecturer B with moderate TPACK also has the ability to find solutions through the Internet and other information sources. However, they also recommend consulting with technicians on how to address technical issues.

Meanwhile, Lecturer C with low TPACK relies more on technicians or YouTube video tutorials to address technical problems on the computer. The difference in approach highlights how high TPACK proficiency can help individuals become more independent in addressing technical problems on the computer. Fuada et al. (2020) also emphasize that independence is an important factor in problem-solving.

However, regardless of TPACK level, the ability to find solutions through information sources like the Internet and books is crucial. Asking colleagues or technicians can also help address challenging problems.

When asked about their proficiency in using Microsoft Word, 52.2% claimed to be highly proficient, while 43.5% stated that they were sufficiently proficient, and 4.3% expressed a lack of proficiency in Microsoft Word. Therefore, the results indicate that the majority of lecturers consider themselves highly proficient in Microsoft Word, and some feel sufficiently proficient in the program.

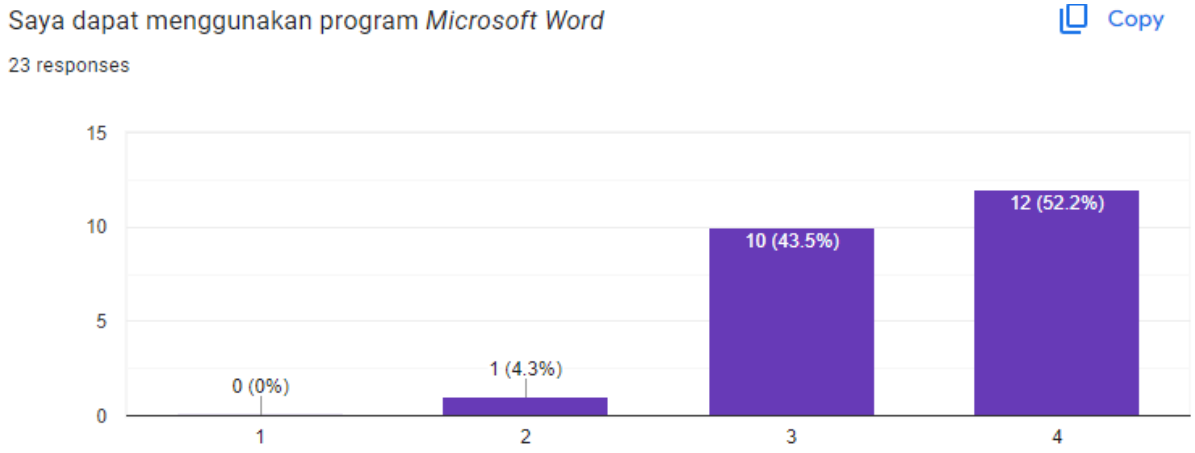

Figure 3. Knowledge of Microsoft Word program

A (lecturer with high TPACK) in this case said,

"I usually use Microsoft Word to create exam questions and correct student assignments/projects/theses. However, currently, I use Google Docs more because it can be accessed by all students simultaneously."

B (lecturer with moderate TPACK) in this case said,

"I use Microsoft Word to help compile teaching materials. Microsoft Word greatly facilitates the process of expediting assignment checking, but I don't fully master all the features available in Microsoft Word."

C (lecturer with low TPACK) in this case said,

"I usually use Microsoft Word for general tasks such as creating materials and lesson plans. However, I face difficulties in understanding certain features within Microsoft Word."

These three lecturers have different experiences in using Microsoft Word. Lecturer A, who has high TPACK, uses Microsoft Word to create exam questions, correct student assignments/projects/theses, but relies more on Google Docs because it can be accessed by all students simultaneously. Lecturer B, with moderate TPACK, uses Microsoft Word to compile teaching materials and expedite the assignment checking process but admits not fully mastering all the features available in Microsoft Word. Lecturer C, with low TPACK, only uses Microsoft Word for general tasks and faces difficulties in understanding certain features. The implication of these differing experiences is that the ability to use Microsoft Word and other applications depends on the individual's TPACK level. Lecturers with high TPACK can use various applications effectively and efficiently, while those with low TPACK tend to have limited usage. Therefore, efforts are needed to increase lecturers' TPACK levels to optimize the use of technology in the learning process. In this case, Elvina, (2021) also asserts that teaching in the classroom depends on technology, and the achievement of maximum learning outcomes depends on a lecturer's TPACK proficiency.

This finding implies the need for the provision of training programs and technology competency development for lecturers who feel insufficient in their technological knowledge. With this training, it is expected that lecturers can acquire better technological skills and knowledge to teach more effectively and efficiently. Meanwhile, lecturers who claim to have sufficient mastery of technology can serve as role models for other lecturers who still need to develop their technological competence. Proficient lecturers in technology can also assist their colleagues in overcoming technological challenges. Furthermore, it is important for universities to continuously update their technology and supporting infrastructure to provide sufficient support for lecturers in teaching, enabling them to easily and effectively utilize technology in the learning process.

Pedagogical knowledge

Regarding pedagogical knowledge, the researcher found that 43.5% stated that they have a very good understanding of how to assess students' performance in the classroom. Meanwhile, 30.4% claimed to have a sufficient understanding of assessing students' performance in the classroom at certain times. On the other hand, 21.7% admitted to having a limited understanding of providing assessment on students' performance in the classroom, and 4.3% stated that they have a very poor understanding of assessing students' performance in the classroom.

Figure 4. Ability to assess students' performance in the classroom.

A (lecturer with high TPACK) in this case stated,

"Regarding the assessment of student performance, it depends on the specific course. The assessment I do is often daily, such as observing their daily activities when using the Mandarin language."

B (lecturer with moderate TPACK) in this case stated,

"The assessment of students in class is related to the teaching materials. I usually conduct face-to-face assessments. I ask each student about the newly taught material, and I also assess them through assignments I give."

C (lecturer with low TPACK) in this case stated,

"I often assess students through written exams."

Based on the comments from these three lecturers regarding the assessment of student performance, it can be concluded that Lecturer A (with high TPACK) takes into consideration the context of the course and conducts daily assessments based on the students' daily activities in using the Mandarin language. Lecturer B (with moderate TPACK) conducts direct face-to-face assessments and also assigns tasks as part of the assessment. On the other hand, Lecturer C (with low TPACK) assesses students through written exams.

The implication of these different approaches is that the assessment approaches used by each lecturer may not be suitable for the needs and characteristics of the classes they teach. Lecturer A uses a more contextual assessment approach, which is suitable for language classes, while Lecturers B and C may need to adapt their assessment approaches to the different characteristics of their classes. In this case, lecturers with high TPACK can leverage technology and other innovative teaching strategies to assist in the assessment process and optimize students' learning experiences. Nuryasana & Desiningrum, (2020) emphasize that each lecturer conducts assessments in different ways, with some adjusting the assessments according to the needs and characteristics of their classes, while others may not align with the needs and characteristics of their classes.

These findings imply the need for each lecturer to better understand the needs and characteristics of their students in the class and be able to choose appropriate assessments accordingly.

Furthermore, regarding pedagogical knowledge, the researcher found that 43.5% stated that they are capable of designing their own questions to measure student understanding. However, 26.1% stated that they are not capable of creating test questions on their own, and only 4.3% feel completely incapable of creating questions to measure student understanding of the teaching material.

Figure 5. Ability to create questions that measure students' understanding of the teaching material.

A (lecturer with high TPACK) in this case states,

"In writing classes, I usually create questions by scrambling words/sentences, while in research methodology classes, I present articles and ask students to analyze them. In speaking classes, I create questions based on the themes being studied and relate them to real-life or daily situations."

B (lecturer with moderate TPACK) in this case states,

"The questions I create are in the form of multiple-choice and essay. The questions can be story-based, where students are asked to answer questions based on the story text. Additionally, there are questions that require students to create sentences based on given pictures."

C (lecturer with low TPACK) in this case states,

"The questions I create to measure students' understanding of the teaching material are in the form of multiple-choice and essay questions, selecting questions related to the taught material."

It can be concluded that the three lecturers provide information about the types of questions they create to measure students' understanding of the teaching material. Lecturer A with high TPACK focuses more on varying the types of questions for each type of class, such as random questions in writing classes, article analysis in research methodology classes, and theme-based questions in speaking classes. Lecturer B with moderate TPACK uses question types like multiple-choice, essay, and story-based questions related to story texts or pictures. On the other hand, Lecturer C with low TPACK uses both multiple-choice and essay questions, selecting questions related to the taught material. The three lecturers have different approaches to creating questions. However, all the methods they use have positive implications for assessing students' understanding because they employ a variety of question types that can better measure students' comprehension. Therefore, it is important for lecturers to consider the variety of question types to be used in assessing students' understanding of the

teaching material. Hidayat, (2018) emphasizes that providing a variety of question formats in each lesson will promote better understanding as it facilitates students' comprehension. These findings imply the need for lecturers to create varied questions to enhance students' comprehension abilities. By creating diverse questions, lecturers should look at examples of question formats found in books, the internet, or journals.

Content knowledge

Regarding the mastery of teaching methods for Mandarin, Table 5 shows a variation in the data distribution where the majority of Mandarin language teachers (47.8%) feel sufficiently proficient in those methods. However, another group of teachers (14.4% do not possess mastery and 8.7% lack mastery significantly) still feels less familiar with the issue.

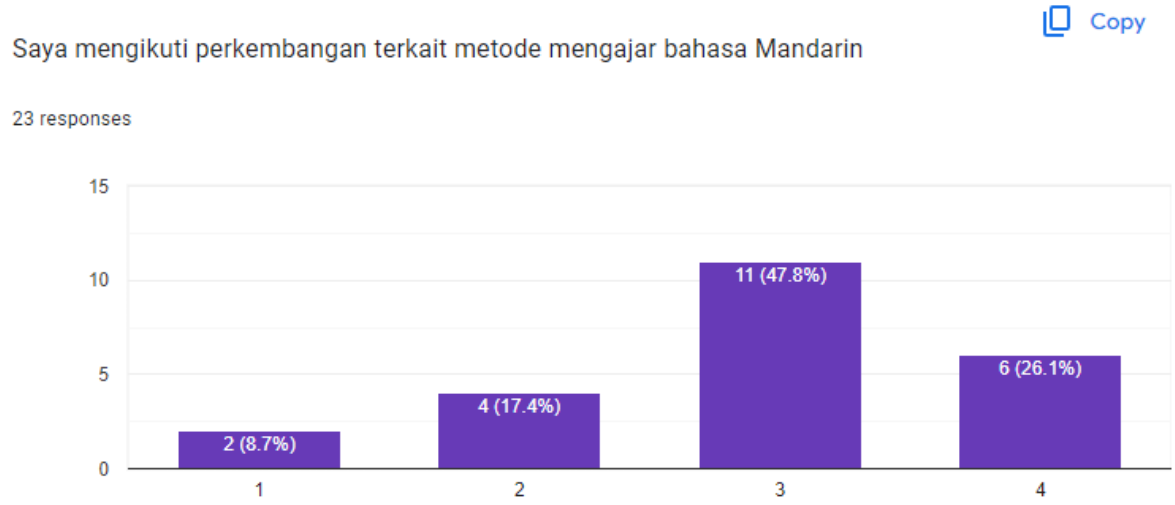

Figure 6. Knowledge about teaching methods

A (a lecturer with high TPACK) in this case says,

"I use various methods. It can be through several games (word guessing, 听写, or continuing sentences). Additionally, I also utilize videos available on YouTube and others. For example, in the translation course, I usually use example translation videos, hoping that students can directly understand the material being learned by imagining through the displayed videos. If it's only based on theory, they can easily forget. As for the speaking class, the commonly used method is role play."

B (a lecturer with moderate TPACK) in this case says,

"I usually use lecture methods in the process of teaching Mandarin to students. Additionally, I also employ vocabulary memorization methods, and only after that, I engage in question-and-answer sessions with students regarding the vocabulary they have learned."

C (a lecturer with low TPACK) in this case says,

"The method I use to teach Mandarin is through lectures with the aid of a whiteboard as a teaching medium, where I explain the material orally. Usually, students sit and listen to the explained material."

From the comments of these three lecturers, it can be concluded that they have different approaches in teaching Mandarin. Lecturer A with high TPACK is more creative in using various methods and teaching media, including games, videos, and role plays, to facilitate understanding of the material and enhance student engagement in the learning process. Lecturer B with moderate TPACK uses lecture methods and vocabulary memorization, but still involves interactive question-and-answer sessions with students. Meanwhile, Lecturer C with low TPACK primarily relies on lecturing with the aid of a whiteboard as the only teaching method. The implication of these differences is that the use of creative and varied methods can help improve understanding and student engagement in learning Mandarin. Additionally, direct interaction and the use of various teaching media can enhance the quality of Mandarin language learning. On the other hand, limitations in the use of teaching methods and media can reduce the effectiveness of learning and decrease student interest and motivation in learning Mandarin. Setyowati & Fimansyah (2018) emphasize that the creativity of lecturers in using various methods and diverse teaching media can make learning more interactive and improve learning outcomes.

This finding implies the need for lecturers to provide varied teaching methods and media. However, even when using varied teaching methods, lecturers should still consider the strengths and weaknesses of each method, and their use should be tailored to the characteristics of students, the classroom situation, and the objectives of each learning activity. The choice of teaching media should also be adapted to the needs of the students.

Furthermore, the researchers asked about how Mandarin language instructors use information sources to update their knowledge content. Table 6 shows that the majority of Mandarin language instructors (43.5%) feel that they adequately utilize information. However, a group of instructors (17.4%) do not master and understand this issue.

Figure 7. Sources of Information

A (lecturer with high TPACK) in this case says,

> *"In improving my teaching techniques in Mandarin, I attend various workshops and training sessions organized by institutions in Indonesia and China. Additionally, I often gather new teaching techniques through discussions with colleagues who also work in the field of education. We share information about effective teaching methods,*

> *including the use of instructional media. For example, currently, I use Purple Culture, and I obtained information about it from a colleague who attended a training session before."*

B (lecturer with moderate TPACK) in this case says,

> *"One teaching technique I have found is to expose students to Mandarin sentences by playing Chinese movies with Mandarin subtitles. I also learn and adopt teaching techniques from other Mandarin language teachers through platforms like YouTube and other social media. I observe their teaching methods closely and learn to apply them appropriately."*

C (lecturer with low TPACK) in this case says,

"I have been using various sources of information to enhance my teaching techniques in Mandarin, such as books, the internet, and journals. I also incorporate reading and writing activities for the students."

In summary, A (lecturer with high TPACK) has a wealth of experience and continuously seeks to enhance their teaching techniques through various sources of information and exchanging ideas with colleagues. This demonstrates their commitment to improving the quality of their teaching to provide better learning experiences for their students. B (lecturer with moderate TPACK) is actively trying to develop their teaching techniques by observing and learning from other Mandarin language teachers through online sources of information. Although they may have limited experience, they are aware of the need to learn and grow in order to deliver effective teaching. On the other hand, C (lecturer with low TPACK) appears to have limited sources of information and teaching techniques. While they mention using books, the internet, and journals, they do not mention adopting new and emerging teaching techniques. This suggests the need for them to actively seek and acquire knowledge and skills in teaching in order to provide innovative and effective instruction to their students. Novitasari & Riani, (2017) emphasize that the internet is an important source of information for enhancing Mandarin teaching techniques, as it offers accessible and easily available resources to improve one's qualifications. These findings imply the importance for lecturers to expand their teaching techniques not only by relying on the internet, books, and journals but also by participating in webinars aimed at improving their own teaching skills.

RECOMMENDATIONS FOR RESEARCH AND DEVELOPMENT

Recommendations for teachers and university leaders are to provide training and development related to TPACK, facilitate access to relevant resources and information, and support collaboration among teachers with different levels of TPACK to share experiences and knowledge. This can help improve teachers' TPACK abilities and enrich the learning experience for students. In the context of Christian religious education, this research emphasizes the importance of using technology and pedagogical understanding by teachers to enhance the quality of learning. By utilizing appropriate technology, teachers can create more interactive, dynamic, and engaging learning experiences for students. The use of technology media such as videos, digital presentations, or interactive simulations can help students better

understand concepts of Christian religion. Additionally, the appropriate use of technology can also increase student engagement in Christian religious education. By leveraging technology and suitable pedagogical approaches, Christian religious education teachers can create an engaging learning environment and motivate students to actively participate in the learning process.

CONCLUSION

The majority of teachers have a moderate level of TPACK knowledge (78%), with only a small percentage falling into the high (14%) and low (7%) categories. Therefore, efforts are needed to enhance teachers' TPACK abilities in integrating technology with effective Mandarin language teaching materials and strategies. This can help teachers improve their professionalism and create more engaging and interactive learning experiences for students, encouraging active participation and increasing motivation to learn. Additionally, it is important for teachers to develop self-reliance in troubleshooting technical issues on computers by using information sources such as the internet and books. However, seeking assistance from colleagues or technicians can also help solve difficult problems. Experience in using applications such as Microsoft Word also influences the level of TPACK among teachers. Teachers with high TPACK can effectively and efficiently utilize various applications, while those with low TPACK tend to have limited application usage. Therefore, there is a need to enhance teachers' TPACK abilities to optimize the use of technology in the teaching and learning process.

The implications for Christian teachers in this context include recognizing the importance of aligning technological proficiency with the principles of Christian education. Emphasizing the TPACK concept aligns with the Christian principles of continuous improvement and dedication to providing quality education. Christian teachers could benefit from professional development programs that specifically address the integration of technology in Mandarin language instruction, fostering a holistic approach to education that aligns with their faith-based values. The findings suggest a need for collaborative efforts among Christian educators to share best practices and support each other in enhancing their TPACK skills, contributing to a community of practice that values both technological innovation and Christian principles in education.

BIODATA

Jesica Stiphanie Tanisiwa was born in Ambon on January 7, 2002, as the third child of three siblings. The author's residential address is Jl. Mr. Chr Soplanit RT 003/RW 004 Rumah Tiga Ambon. The author completed primary education at SD Negeri 76 Wayame for six years, graduating in 2013. Secondary education was pursued at SMP Katolik Xaverius Ambon for three years, graduating in 2016. High school education was completed at SMA Negeri 1 Ambon for three years, graduating in 2019. And

then, the author enrolled in Ma Chung University, majoring in Mandarin Language Education, from 2019 until now.

Jesica Stiphanie Tanisiwa
Surel: 221910017@student.machung.ac.id

Daniel Ginting obtained a doctoral degree in English Language Teaching from a State University in Malang in 2015. He is a member of the IMOOC (Indonesian Massive Open Online Course) Module development team, initiated by the Regional Language Official (RELO) of the U.S. Embassy in 2016-2017. In 2018, he was a specialist responsible for facilitating IMOOC instructors. Currently, Daniel is a faculty member in the English Literature Study Program, Faculty of Language and Arts, Ma Chung University, Indonesia.

Prof. Dr. Daniel Ginting
Surel: daniel.ginting@machung.ac.id

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