TEACHERS' COMPETENCES IN INTEGRATING TECHNOLOGICAL, PEDAGOGICAL, AND CONTENT KNOWLEDGE (TPACK) FRAMEWORK IN TEACHING AND LEARNING PROCESS

(A Quantitative Study on English Teachers at Muhammadiyah Senior High Schools in Makassar)

A THESIS

Muhammad Amin

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**POSTGRADUATE PROGRAM
MAGISTER OF ENGLISH LANGUAGE EDUCATION
MUHAMMADIYAH UNIVERSITY OF MAKASSAR
2023**

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A THESIS

(In Partial Fulfillment of the Requirement

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Magister of English Language Education

Written and Submitted by;

Muhammad Amin
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to

**MAGISTER OF ENGLISH EDUCATION
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APPROVAL SHEET

TEACHERS' COMPETENCES IN INTEGRATING TECHNOLOGICAL, PEDAGOGICAL, AND CONTENT KNOWLEDGE (TPACK) FRAMEWORK IN TEACHING AND LEARNING PROCESS

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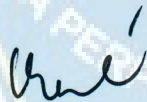
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Has Been Defended
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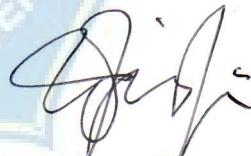and Fulfilled the Requirements

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This is to certify that the thesis entitled **"Teachers' Competences in Integrating Technological, Pedagogical, Content Knowledge (TPACK) Framework in Teaching and Learning Process"** has been examined and approved by the committee of examiners on 27th of February 2023 and has already fulfilled the requirements.

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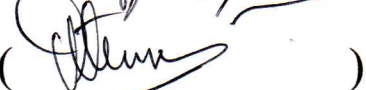Examiner   (   )

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Due to the fact, I am only person who responsible for the thesis and thing out of my thesis discrepancies, I am willing to take the academic punishment in form of repealing my thesis and academic degree.

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MOTTOS;

أَحَسِبَ ٱلنَّاسُ أَن يُتْرَكُوٓاْ أَن يَقُولُوٓاْ ءَامَنَّا وَهُمْ لَا يُفْتَنُونَ

Do men think that they will be left alone on saying, We believe, and not be tried?

Apakah manusia itu mengira bahwa mereka dibiarkan (saja) mengatakan: "Kami telah beriman", sedang mereka tidak diuji lagi

STRIVE FOR PROGRESS, NOT PERFECTION. EACH SMALL STEP COUNTS

Berusahalah untuk berkembang, bukan kesempurnaan. Setiap Langkah memiliki nilai.

ABSTRACT

Muhammad Amin, 2023, Teachers' Competences in Integrating Technological Pedagogical Content Knowledge (TPACK) Framework in Teaching and Learning Process: A Quantitative Study on Muhammadiyah Senior High Schools in Makassar. A Thesis. Postgraduate Student, Magister of English Education Program, Muhammadiyah University of Makassar. Consultants: 1. Nur Qalbi; 2. Syamsiarna Nappu.

This study aimed to find out the English teachers' competences in integrating technology based on Technological Pedagogical Content Knowledge (TPACK) Framework and know the challenged that they encountered in integrating technology in English teaching and learning process. This research used quantitative method. The sample consisted of three English teachers from several Muhammadiyah Senior High Schools in Makassar and were chosen by using purposive sampling technique. To collect the datas, the researcher used observation technique and distributing questionnaire. The findings of teachers' competences in integrating technology based on Technological Pedagogical and Content Knowledge (TPACK) Framework as: T1 got 85,71 % and categorized as Excellent, T2 got 77,38 % and categorize Good, and T3 got 75 % and categorized Good. The average score of all indicators of TPACK Framework was 79,36% and categorized as Good. It indicated that English teachers of Muhammadiyah Senior High Schools in Makassar have an overarching concept of good teaching with technology. Meanwhile, in this study, there are many obstacles encountered by English teachers in integrating technology such as: lack of teachers' skill/training got 80%; attitude/belief towards technology integration got 78,33%; lack of resources or technological tools provided by school to support teaching with technology got 78,33%; limited support of institutional got 81,67%. It illustrated that integrating technology in English teaching and learning process was influenced by many factors. Therefore, the successful of the technology integration depends a lot on teachers' technology-based skills to bring in line with content (material) and teaching method.

Keywords: English Teaching Learning, Challenges, TPACK Framework, Integrating technology.

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Firstly, I would like to thank to Almighty Allah SWT, who has given me His guidance and blessing so that I can accomplish my thesis entitled "Teachers' Competences in Integrating Technological, Pedagogical, and Content Knowledge (TPACK) Framework in Teaching and Learning Process". Salam and shalawat are addressed to the final chosen religious messenger, the prophet Muhammad, S.a.w who has changed the human life.

Secondly, I realized that many hands had given their helps and many suggestions for the completion of this thesis. Therefore, I would like to express my deepest appreciation and sincere thanks to all the individuals who helped me particularly to the following people:

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Hopefully, may Allah SWT always bless those mentioned above and all their sacrifice becomes their merciful deeds to help them gain a success in their future life. The researcher realizes that this research is far from being perfect. Therefore, any constructive criticism and suggestion will be gladly accepted. Finally, it is expected that this thesis will be beneficial for the readers.

The Writer

Muhammad Amin

A. Background of the Research

Education is always developing. Today, rapid developments and advancements in technology, like computers and Internet, create new opportunities for teaching and learning. As we see, technology holds a prominent role in converting the process of education to make it highly progressive and interactive. Educational system desperately needs technology integration to generate and maintain a modern learning atmosphere. Owing to new developments in technology, pedagogies necessarily must adapt to meet the changing needs of students and differing classroom expectations.

The integration of technology into the classroom affects not only the way in which instruction is delivered but also the way of students comprehend the materials and explore their skills to achieve educational goal. In other words, technology should make students are able to provide more input into their learning by participating in interactive, real-world learning situations rather than remaining inactive listeners. Consequently, to continue addressing the needs of students of different learning styles, teachers should consider updating their teaching approaches in order to enable a supportive and creative learning environment for their students. It means that mastering two domains of teaching (pedagogical and content knowledge) is not enough because teachers also must understand and familiar with the integration of technology to support their students on their journey of learning.

Kotrlik & Redmann (2005) defined the integration of technology as "employing the internet, computers, cd ROMs, interactive media, satellites, teleconferencing, and other technological means in instruction to support, enhance, inspire and create learning". Meanwhile, Zipporah (2014) defined technology integration as bringing together technology in teaching and learning process to meet curriculum standards and learning outcomes for each lesson, unit, or activity. Integrating technology into classroom activities is considered a great facilitator in teaching and learning due to some benefits as: can increase the students' English vocabulary (Nappu, 2014), make students more active during learning process (Lolita et al., 2020); encourage language output (Lockley & Yoshida, 2016; Ramanair et al., 2017), teachers have opportunities to design different contexts and learning environment in teaching and learning to suit their learners' level of proficiency(Kasim & Singh, 2017) and flexible in term of place and effectively improving students' writing skill (Nappu et al., 2022).

As many studies have proven that learning with technology is helpful for students' active learning, however, technology alone cannot improve learning effectiveness. The modernization of classroom instruction may bring along stress to the students despite their ability to cope with available technology outside the classroom (Balchin & Wild, 2022). This can occur when teachers have poor (or inadequate) experience using digital technologies for teaching and learning. This means that the overuse of technology, but the lack of careful planning and execution of learning, can actually lead to poor communication, isolation,

frustration, stress and, in some cases, poor learning and teaching performance (Lead, 2011).

Shahin (2011) stated that to be successful in teaching, teachers need to develop and interplay among three main components of teaching such as pedagogies, technology, and content areas individually. When teachers can integrate technology effectively into the classroom, it allows to students to participate in the subjects and finally it is easy to achieve the educational goal. Consider with that, teachers need a systematic knowledge framework to deliver material with technology.

In 2005, Mishra and Koehler proposed Technological Pedagogical Content Knowledge (TPACK) as a theoretical framework to promote teacher's professional development and guide teachers to use technology effectively in various subject domains (Jang & Chen, 2010). They believe that TPACK Framework as a concept to meet the needs of teachers in the context of 21st century for better technology integration and considered as an effective way overcome the problems that arise when using technology tools in the educational process. TPACK framework consists of seven components such as; Technological Knowledge (TK), Pedagogical Knowledge (PK), Content Knowledge (CK), Technological Pedagogical Knowledge (TPK), Pedagogical Content Knowledge (PCK), Technological Content Knowledge (TCK), and Technological Pedagogical Content Knowledge (TPACK).

Many researches asserted that TPACK Framework can develop teachers` competence in integrating technology into teaching and learning process as

conducted by Li and Xia (2016) found that through continual lifelong learning with technology, the lecturer can improve their potential in selecting, controlling, and assessing information technology in their EFL teaching. Other study was conducted by Kasim & Singh (2017) who claimed that implementing TPACK framework is essential for English Second Language teachers to offer a proper learning environment for digitally students.

In Indonesia, there are also many researches about teaching subject with TPACK framework. One of them conducted by Cahyono et al., (2016), this study examined 20 teachers from various secondary schools in the province of East Java and the result showed that moderated TPACK-oriented teaching practice can benefits in improving the quality of their EFL instructional designs and teaching practices. In other research conducted by Mahdum (2015), this study examined 74 in-service English teachers of senior high school in implementing TPACK framework in English Language Teaching in Pekanbaru. The result of questionnaire reliability using Alpha Cronbach's test showed 0.975 and could be categorized as good. Based on some studies above, generally, its implied that the English teachers have had good understanding about TPACK Framework and able to collaborate among three main components of teaching such as technology, pedagogy, and content in English language teaching.

On the other hand, in spite of many researchers have found and proven that integrating technology in teaching with TPACK framework has many benefits on improving quality of teaching but most of them were using self-assessment survey which has been criticized for its limited applications to understand teachers'

knowledge of technology integration in practice. Spector (2015) stated that self-assessment surveys prefer measure teachers perceived general understanding about how to use technology and their perception of confidence in implementing TPACK framework in the classroom than measure someone's self-perceived TPACK and the affordances of technology to support student learning on a specific topic in a specific context.

Regarding on some considerations, there are should be other methods to assess teachers' TPACK which is focus on measuring the teachers' competences to utilize the framework. Hwee et al., (2015) suggested to use several methods to measure teachers' TPACK in order to gain more reliable assessment. Further, Saubern et al., (2020) explained that the instruments created for measuring TPACK should be validated "primarily in relation to the extent to which they represent the knowledge required to use technology effectively for teaching and learning rather than their fidelity to the TPACK diagram".

Brantley-Dias & Ertmer (2013) stated that "constructs about teacher knowledge, such as TPACK, must move the field of teacher education forward in ways that ensure teachers able to meet the challenges of millennial classrooms and 21st century student learning". Besides that, teachers need to trust and instill a mindset that integrating technology will facilitate learning process and engaging learning activities that promote academic achievement (Ertmer, 2005). Unfortunately, many teachers are difficult because they encounter many challenges when integrating technology into daily instruction (Musti-Rao et al., 2014;

Therefore, this paper aims to find out the competences of English teacher of Muhammadiyah Senior High Schools in integrating technology in teaching and learning process based on TPACK Framework by observing teachers' performances and reveal what are the challenges encountered in integrating technology in teaching and learning process.

B. Research Questions

Based on the explanation above, the researcher arranges the research questions as follow:

1. How are the English teachers' competences in integrating technology based on TPACK Framework in teaching and learning process?

2. What are the challenges encountered by the English teachers in integrating technology in teaching and learning process?

C. Objective of the Study

From the formulation of the research questions above, the objectives of the research are:

1. To find out the teachers' competences in integrating technology based on TPACK Framework in teaching and learning process.

2. To find out the challenges encountered by the English teachers in integrating technology in teaching and learning process.

D. Significance of the Study

Theoretically, this research will add information and enrich the literature in the area of using technological pedagogical and content knowledge (TPACK)

in teaching English as foreign language. Practically, this research will give awareness of the importance of mastering technological competence that could be used as an input for teaching implementation such as micro teaching and instructional design to enhance the teachers' learning competence.

E. Scope of The Research

In order to make this research attaints its aim, the researcher needs to limit this study only focus on English teachers' pedagogical competence in integrating technology in teaching and learning process based on TPACK Framework. Mishra & Koehler (2011) categorized five types to measure the teachers' competence in integrating TPACK Framework (i.e., self-report measures, open-end questionnaires, performance assessments, interviews and observations). Among those five methods to measure the teachers' TPACK competence, this study used two instruments such as; observation method to find out teachers' competences in integrating technology in teaching process based on TPACK framework and questionnaire to find out the barriers encountered by the English teachers in integrating technology.

BAB II
REVIEW OF RELATED LITERATURE

This Chapter presents Al-Qur'an and Al-Hadits related to importance of seeking knowledge, Teacher Competences, Technology Integration, Factors Affects Technology Integration, TPACK Framework, and Theoretical Framework.

A. Verses and Hadits Related to The Topic

1. The verse tells us to develop our capabilities. QS. Al - Rahman, verses 33:

بِسْمِ ٱللَّهِ ٱلرَّحْمَٰنِ ٱلرَّحِيمِ

In the name of Allah, the Entirely Merciful, the Especially Merciful.

يَٰمَعْشَرَ ٱلْجِنِّ وَٱلْإِنسِ إِنِ ٱسْتَطَعْتُمْ أَن تَنفُذُواْ مِنْ أَقْطَارِ ٱلسَّمَٰوَٰتِ وَٱلْأَرْضِ فَٱنفُذُواْ لَا تَنفُذُونَ إِلَّا بِسُلْطَٰنٍ

O company of jinn and mankind, if you are able to pass beyond the regions of the heavens and the earth, then pass. You will not pass except by authority [from Allah].

This verse challenges the people to be always seeking for knowledge and improve their competences to explore this world. Further, the people especially who work in the fields of science and technology' also suggested to develop their skills to the extent of penetrating (traversing) the corners of earth. However, the Quran warns people to be realistic because no matter how good the plan and the work is, the successful or failure goes beyond the authority of Allah.

2. The verse talks about the importance of seeking knowledge.

Surah Al-Mujadalah (58:11)

يَٰٓأَيُّهَا ٱلَّذِينَ ءَامَنُوٓاْ إِذَا قِيلَ لَكُمْ تَفَسَّحُواْ فِي ٱلْمَجَٰلِسِ فَٱفْسَحُواْ يَفْسَحِ ٱللَّهُ لَكُمْۖ وَإِذَا قِيلَ ٱنشُزُواْ فَٱنشُزُواْ

يَرْفَعِ ٱللَّهُ ٱلَّذِينَ ءَامَنُواْ مِنكُمْ وَٱلَّذِينَ أُوتُواْ ٱلْعِلْمَ دَرَجَٰتٍۚ وَٱللَّهُ بِمَا تَعْمَلُونَ خَبِيرٌ

O you who have believed, when you are told, "Space yourselves" in assemblies, then make space; Allah will make space for you. And when you are told, "Arise," then arise; Allah will raise those who have believed among you and those who were given knowledge, by degrees. And Allah is Acquainted with what you do.

The essence of QS. Al-Mujadilah (11) states that Allah grants privileges to those who believe in Allah and have knowledge by increasing a few degrees. Educational values related to the process of teaching and learning activities such as:

a. Both teachers and students must be always studying in entire life.

b. Allah will give and lift up few degrees for people who believe in Allah and have knowledge.

c. All Muslims must strengthen their faith and deepen their knowledge.

3. Hadith about the Importance of Seeking Knowledge

وَمَنْ سَلَكَ طَرِيقًا يَلْتَمِسُ فِيهِ عِلْمًا سَهَّلَ اللهُ لَهُ بِهِ طَرِيقًا إِلَى الْجَنَّةِ

*"Whoever treads a path in seeking knowledge, Allah will make easy for him the path to Paradise" (**Bukhari**)*

We ask Allah (SWT) all the time for Paradise. Seeking knowledge is one of the things that will surely lead us to Paradise. The Prophet (PBUH)

said: "Whoever follows a path in pursuit of knowledge, Allah makes his way easy to paradise." (Bukhari)

B. Teachers' Competence

1. Definition of Teacher

According to Wiktionary, a teacher is a person who teaches, especially one employed in a school. The term "teacher" or "teachers" embrace all those persons in schools who are responsible for the education of pupils or students (Obi, 2008). Teachers are responsible for the conduct of their lessons. Education is a social process of communication and interaction between teachers and learners aimed at improving the learner's position in the cognitive, emotional and psychomotor domains of learning. The teacher gives instructions, asks questions, and accepts or rejects responses (Denga, 2001).

According to Zamroni (2001: 60), teacher holds a key role in designing the learning strategies that will be implemented. Further, UU No. 14 Year 2005 states (Article 1) regarding teachers and lecturers: "The teacher is a professional education with the primary task of educating, teaching, guiding, directing, train, assess and evaluate learners in formal education, in primary education and secondary education". In simple terms, a teacher is a person who has knowledge, skills and special training in teaching, explaining and educating. A teacher is a person who is capable of imparting knowledge that will help learners to build, identify and to acquire skills that will be used to face the challenges in life.

2. Definition of Competence

According to the Concise Oxford Dictionary, competence (or competency) means 'the ability to do something' or 'the ability to perform a task'. Generally, the term competence is derived from the English competence being equal to competencies and competencies synonymous with ability, power, authority, skill, knowledge, attitude, etc. According to Gupta (1999), competence is defined as "the knowledge, skills, attitudes, values, motivations and beliefs that people need to be successful at work."

According to Mulyasa (2004), competency is a combination of knowledge, skills, values and attitudes that are reflected in habits of thought and action. In the education system, competencies are used to describe a professional ability that highly demonstrates knowledge and conceptualization at a deeper level. According to Pemerintah RI UU tentang Guru & Hosen (14:2005), competence is the set of knowledge, skills and attitudes that teachers need to know, inspire and acquire in order to perform their professional duties.

Based on the various meanings above, teacher competency can be interpreted as a set of skills that teachers must possess, internalize, and master in order to complete certain things and achieve certain goals in the performance of their educational duties.

3. The Concepts of Teacher Competences

Having competencies in teaching are essential in order to be success in carrying out personal and professional activities. Teacher requires specific skills or abilities in order to adequately achieve the goal of the teaching and learning

process. In Indonesia, the Minister of Education and Culture has issued his Law No. 14 of 2005. The law requires all teachers to have the academic background, competence, teaching qualifications, and ability to meet the national educational objectives. It is said that there are four abilities: 1) educational ability, 2) personal ability, 3) social ability, and 4) professional ability.

a. Pedagogy Competence

Pedagogy or teaching ability is the field that deals with the theory and practice of education. Pedagogy is derived from two Greek words "paid and agogos". "paid" means child and "agogos" means leading. The term pedagogy literally means "to lead the child". Therefore, pedagogy can be defined as the art and science of teaching children. Pedagogy is a master plan that includes a detailed analysis of what teachers need to do such as educational strategies, teacher behavior, and teacher judgments and decisions by considering learning theories, understanding students and their needs, and understanding the background and interests of individual students.

According to the National Education Standards Agency (BSNP), pedagogical competence is the skill of a teacher in dealing with learners and includes: (a) insight or understanding of the educational basis; (b) learner comprehension; (c) Curriculum/Syllabus Development. (d) Design Guide. (e) Conducting learning that teaches and interacts; (f) assessment of learning outcomes; (g) training learners to apply different possibilities;

Furthermore, Mulyasa (2009) states that pedagogical competence is the ability of teachers to manage the education of their students, which includes at least 1) the ability to manage learning process, and 2) the comprehension about the need of learners. 3) Design of learning. 4) conducting educational learning and dialogue; 5) utilization of technology in education, 6) assessment of learning outcomes, and 7) development of learners.

b.   Personality Competence

Personality competence is competence related to personal abilities that reflect a solid, stable, mature, wise, authoritative personality as well as being a role model and having noble character.

According to Mulyasa (2009) defined that there are some competences related to the teachers' personality that must be possessed by a teacher namely:

- Having a solid and stable personality, namely acting in accordance with legal norms and social norms, having a sense of pride as a teacher and having consistency in acting according to norms.

- Having a mature personality, showing independence by acting as an educator and having the enthusiasm to work as a teacher.

- Have a wise personality by acting based on the benefits of students, schools and society as well as acting and having an open mindset

- Having an authoritative personality, namely having behavior that is respected and has a positive influence on students.

- Have a noble character and can be an example, namely by acting in accordance with religious norms and behaving worthy of being emulated by students.

c. Professional Competence

The professional standard for this competency is the teacher's ability to master learning material broadly and deeply. Professional competence includes mastery of subject curriculum materials in schools. Not only that, the teacher must also master the scientific substance that covers the material as well as the scientific structure and methodology.

According to Wina Sanjaya in Wibowo and Hamrin (2012:118), professional competence refers to the competence of teacher related to the performance of educational tasks. The characteristics of the teaching materials are wide and deep, and the knowledge of the structure and methods of the natural science disciplines is dominated by technical ability. The material is controlled not just a teaching material that is taught in school or in accordance with a flyer in the school curriculum, but also the material overriding.

The following are sub-competencies in professional competence:

- Able to master the scientific substance related to the field of study, namely understanding the school curriculum teaching materials, understanding the structure, scientific concepts and methods related to teaching materials,

and understanding the relationship between concepts between related subjects and applying scientific concepts in everyday life.

- Able to master the scientific structure and method by mastering the steps of research and critical studies in order to deepen the material in the field of study.

d. Social Competence

The last competence is social competence, which is the teacher's skills in communicating and getting along effectively with students, fellow educators and education staff, as well as parents/guardians of students and the community in the surrounding environment.

According to S. Reitz (2012), social competence is the sum of knowledge and skills of a person that determines the quality of socially competent behaviour. In other words, social competence is the competences of teachers in relation to the environment or the public where they live, in which society needs to communicate and interact with students in and out of school.

According Mulyasa (2009), social competence that is:

- The teacher's ability to communicate and interact effectively with students

- The ability of teachers to communicate and interact effectively with fellow educators and education staff.

- The teacher's ability to communicate and interact effectively with parents/guardians of students and the surrounding community.

4. The 21st Century Teacher

Now in twenty-first-century, the emergence of modern technology has rapidly influenced the nature of teaching and learning across all educational aspects around the world. Teachers must understand technology and its application in the teaching process. Teachers are required to develop the skills that will enable them to maximize the use of the computer as a teaching resource to enhance student learning process. They need to know how to plan courses and deliver learning experiences while successfully integrating the right type of technology into the subject matter.

The use of different technologies in the classroom provides a way for teachers to understand their own and their students' knowledge capacity and explore the extent to which they can work to bring about desired change throughout the teaching and learning process. Techno-pedagogy can be viewed as weaving classroom technology into the learning environment itself (Koehler & Mishra, 2008). From the above description, we can conclude that technology pedagogy is the ability of teachers to effectively use technology in the classroom.

Teachers with technology and pedagogy competence should have knowledge of the complete existence, components, and functions of various technologies used in teaching and learning environments. In techno-pedagogy, there are three ranges of information, specifically, content, pedagogy, and technology. Content is the material to be taught. Pedagogy is a compilation of teaching and learning practices, formats, procedures, methods, and strategies.

C. Technology Integration

1. Definition of Technology Integration

Etymologically, the verb "integrate" is derived from the Latin adjective *integer*, formed by the negative prefix *in-* followed by the root *-tag* (to touch), therefore "untouched", "as in whole": thus, the idea is that of several elements which are no longer independent from one another, nor aggregated, but rather, combined with one another so as to form a whole.

According to Griffin (2003), technology integration as purposeful use of technology in the development and methodology of curriculum delivery. Technology integration is the incorporation of technology into the management of daily life, work, and school. Regarding to teaching and learning process, Hew & Brush (2007) define technology integration in terms of teachers using technology to develop students' thinking skills.

According to Protheroe (2005), technology integration refers to the use of technology to provide opportunities to support new learning models, including opportunities for students to collaborate and build knowledge. Moreover, technology integration is not just about technology, it is primarily about content and effective teaching practices. Shortly, technology integration is not defined by the amount or type of technology used, but by how and why it is used (Holznogel, 2005).

From all the above definitions, technology integration is the wise use of technology in the teaching and learning process to enable students to learn and achieve their learning goals.

2. Principles of technology integration in ELT

Sharma and Barret (2007) state that as technology integration becomes a trend in language teaching, he developed four guiding principles for teachers to teach the use of technology in the classroom.

a. First, it is important to distinguish between the role of educators and the role of technology in the teaching and learning process. Their roles are not synonymous, they complement each other.

b. Second, it is important to integrate technology by considering student needs and ensuring that teaching is not only technology-based, but educationally motivated.

c. Third, it is important that the teacher matches the learning material with the technology.

d. Finally, it is important for teachers to think about how technology tools are used, not the technology tools themselves.
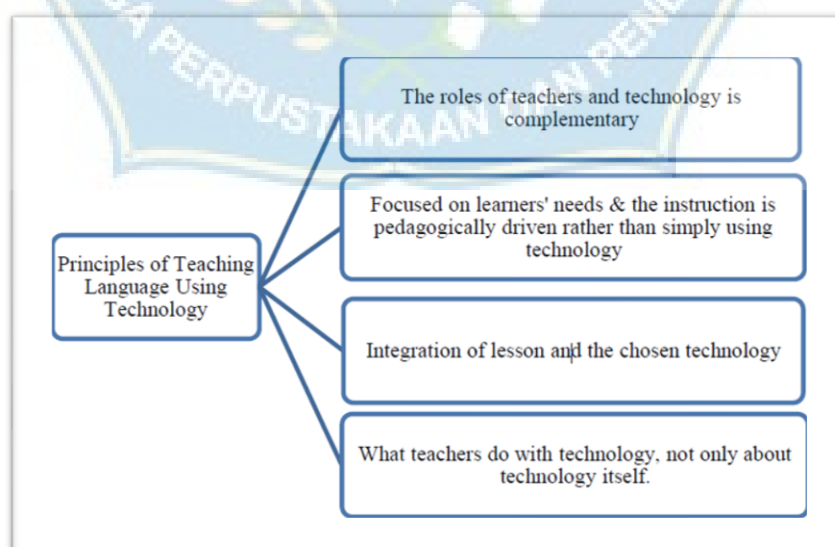
3. Factors Affects Technology Integration

Gorder (2008) stated that successful technology integration is what makes a difference in reforming a classroom. In integrating technology in teaching and learning process, there are several circumstances that affect the proper implementation of technology in classrooms. Foon & Thomas (2007) identified six factors that affect successful technology integration. Those factors are:

- Resources

  The lack of resources may include one or more of the following: (a) technology, (b) access to available technology, (c) time, and (d) technical support. Without adequate hardware and software, there is little opportunity for teachers to integrate technology into the curriculum. Even in cases where technology is abundant, there is no guarantee that teachers have easy access to those resources.

  Time is another resource that is severely lacking. Unfortunately, teachers are finding a decreasing amount of time allowed for preparation while responsibilities increase. This occurs in spite of the fact that technology integration is demanding more time, including searches for appropriate websites, preparing PowerPoint presentations, downloading videos, and more. Therefore, teachers need more time to prepare and they are required to be on-site to provide technical support in order to offer a quick and adequate response when computers fail (Hew, 2007).

- Knowledge and Skills

  The lack of specific technology knowledge and skills, technology-supported pedagogical knowledge and skills, and technology-related-classroom

management knowledge and skills has been identified as a major barrier to technology integration.

Tuson (2000) found that lack of specific technology knowledge and skill is one of the common reasons given by teachers for not using technology. Computers cannot replace teachers because of teachers are the key to whether technology is used appropriately and effectively.

- Institution

Torsani (2016) stated that, at a lower level, integration depends also on the choices made by a given educational institution. Institutional barriers may include: (a) leadership, (b) school time-tabling structure, and (c) school planning (Hew,2007).

- Attitudes and beliefs

According to Simpson, Koballa, Oliver, and Crawley (1994), attitudes can be defined as specific feelings that indicate whether a person likes or dislikes something. In the context of technology integration, teacher attitudes toward technology may be conceptualized as teachers liking or disliking the use of technology. Beliefs can be defined as premises or suppositions about something that are felt to be true (Calderhead, 1996; Richardson, 1996).

Ertmer (2005) argued that the decision of whether and how to use technology for instruction ultimately depends on the teachers themselves and the beliefs they hold about technology.

- Assessment

Assessment can be defined as the activity of measuring student learning (Reeves, 2000). The testing can be defined as assessment with serious attached consequences such as promotion or rewards versus sanctions or punishments for schools. This view was corroborated by Butzin (2004) who noted that the pressure to meet higher standards and score high on standardized tests, along with the need to cover vast scope of material within a limited amount of time, creates a daunting challenge for any teacher. Consequently, teachers feel they can cover more material when they are in front of the class talking with every student doing the same thing at the same time, rather than using technology because of the additional technology planning time required to identify and select appropriate software to match lesson objectives (Butzin, 2004).

- Subject culture

Subject culture refers to the ''general set of institutionalized practices and expectations which have grown up around a particular school subject, and shapes the definition of that subject as a distinct area of study'' (Goodson & Mangan, 1995, p. 614). For example, Selwyn (1999) found an art teacher who justified her avoidance of using computers by saying that when painting, one would be more in tune with it if one did it physically with one's own hand; the art teacher believed that using a mouse makes one's mind and hand disjointed. Another art teacher argued that from an aesthetic point of view,

accessing art galleries through a computer can never equal experiencing an actual painting in person.

4. The Advantages of Integrating Technology in EFL Context

Serostanova (2014) elaborated the following merits for using technology in foreign language instruction:

a. Authentic Context: That reflects the way the language will be used in real life, thus providing the purpose and motivation for learning;

b. Cultural Understanding: The possibility to get acquainted with the way of life of the target language community, to visit distant places without leaving home, which makes learning the language part of a cultural experience;

c. Great amount of Tools: For teachers and learners (audio and video devices, television and radio broadcasts, synchronous (video and audio conferences, chatting) and asynchronous (e-mail, forum, web logs, message boards), Internet-based communication, which facilitates improving reading, listening, speaking skills and grammar knowledge;

d. Involvement in Collaboration and Cooperation: Participating in Web-projects and working in a physically-separated team promotes learners' creatively thinking, encourages to solve problems and to make decisions as a team;

e. Removing the Time and Space Limitations: Which allows students to learn more autonomously at different rates and levels, without interruptions, time pressure and social anxiety, and thereby raises self-esteem and confidence;

f. Immediate Feedback and Error Analysis: Which can be provided by the computer and teachers as well, and help the learners ward off their misconception at the very first stage.

5. Technology Integration Models

Technology integration models are theoretical models that are designed to help teachers, researchers, and others in the education field to think about technology integration in meaningful ways. There are many technology integration models that most familiar and widely used by the teachers in teaching and learning process. The most familiar technology integration models are: RAT, SAMR, PICRAT, and TPACK.

1. RAT and SAMR

(Hughes, Thomas, & Scharber, 2006) in Kimmons (2017) stated that RAT is an acronym for replace, amplify, and transform. Based on this model, when technology is used in a teaching setting, technology is either used to replace a traditional approach to teaching (without any discernible difference on student outcomes), to amplify the learning that was occurring, or to transform learning in ways that were not possible without the technology

Whereas, SAMR is an acronym for substitution, augmentation, modification, and redefinition (Puentedura, 2006). The letter S that stands for Subtitution,

which means that technology acts as a direct tool without functional changes. The Letter A stands for Augmentation, which means technology acts as a direct tool with functional improvement. The letter M stands for Modification, which means technology is redesigned for significant enhancement of instruction. And the letter R stands for Redefinition, which means technology allows for creativity in creating new functions of instruction.

RAT and SAMR are very similar technology integration models, though RAT has been used more often by researchers and SAMR has been used more often by teachers. Both of these models assume that the introduction of technology into a learning experience will have some effect on what is happening, and they try to help us understand what this effect is and how we should be using technology in meaningful ways.

The difference between these two models is the rests in the center letters, wherein RAT's amplification is separated into two stages as SAMR's augmentation and modification. All of these stages deal with technology use that functionally improves what is happening in the classroom, but in the SAMR model, augmentation represents a small improvement, and modification represents a large improvement.
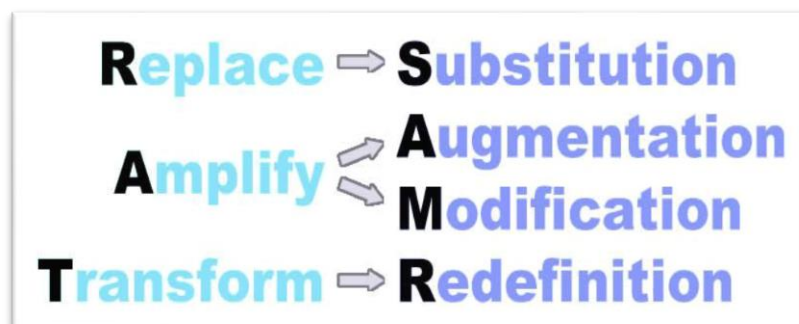
2. PICRAT

Building off of the ideas presented in the models above, we will now provide one final model that may serve as a helpful starting point for teachers to begin thinking about technology integration. PICRAT assumes that there are two foundational questions that a teacher must ask about any technology use in their classrooms. These include:

➢ What is the students' relationship to the technology? (PIC: Passive, Interactive, Creative)

➢ How is the teacher's use of technology influencing traditional practice? (RAT: Replace, Amplify, Transform; cf. Hughes, Thomas, & Scharber, 2006)

The provided illustration maps these two questions on a two-dimensional grid, and by answering these two questions, teachers can get a sense for where any particular practice falls.
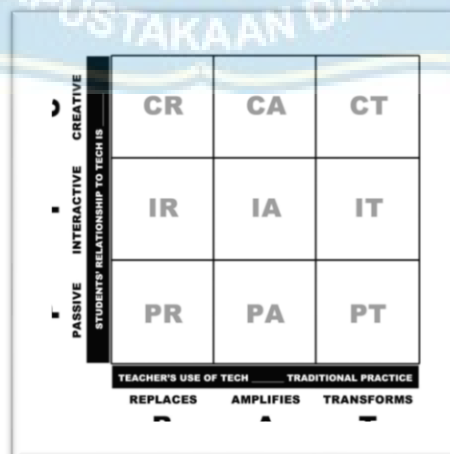
Figure 3. *PICRAT Model*

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3. TPACK

TPACK is the most commonly used technology integration model amongst educational researchers. The goal of TPACK is to provide educators with a framework that is useful for understanding technology's role in the educational process. At its heart, TPACK holds that educators deal with three types of core knowledge on a daily basis: technological knowledge, pedagogical knowledge, and content knowledge. Content knowledge is knowledge of one's content area such as science, math, or social studies. Pedagogical knowledge is knowledge of how to teach. And technological knowledge is knowledge of how to use technology tools.

From the three models of technology integration in teaching and learning, the researcher focuses on TPACK framework.

D. TPACK Framework

1. **Definition of TPACK**

TPACK framework, firstly termed as TPCK, was initially developed upon Shulman's studies (1986) that introduced the construct of Pedagogical Content Knowledge (PCK) applicable to the teaching of specific content. The PCK framework determines the complex relationships between content and pedagogy and how content is presented, adapted, and prepared for effective instruction.

While technology has become an integral component in education field, Mishra and Koehler (2006) proposed to insert technology knowledge as one of the

foundational knowledge components that teachers of 21st century classrooms should be equipped. The conceptualization of Technological Pedagogical and Content Knowledge (TPACK) as a theoretical framework for understanding teacher knowledge required for effective technology integration. In this framework, technology is seen as a tool that enhances the learning process; it is neither the final goal nor does it replace interaction for mastery of the target language.

TPACK framework interplays of three knowledge domains, consisting of technological knowledge (TK), pedagogical knowledge (PK), and content knowledge (CK) as the core components of teacher knowledge which they consider fundamental for effective instructional practices. Furthermore, all these three bodies can be connected in pairs as Pedagogical Content Knowledge (PCK), Technological Content Knowledge (TCK), and Technological Pedagogical Knowledge (TPK). Pedagogical Content Knowledge (TPK) refers to how teachers teach particular content-based material to students. Technological Content Knowledge (TCK) is how teachers select and then use technologies to communicate particular content knowledge, while Technological Pedagogical Knowledge (TPK) mainly addresses how teachers use particular technologies when they are teaching a certain subject matter. Finally, according to Mishra and Koehler (2006), the intersection of the three circles or knowledge domains forms a combination of three knowledge domains, the so-called Technological Pedagogical Content Knowledge (TPCK) or TPACK as depicted in figure below.
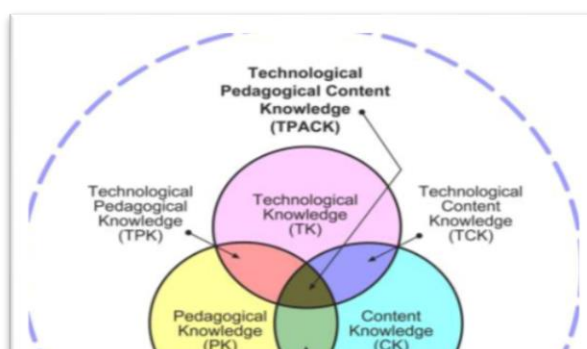
Figure 4. *The TPACK framework and its knowledge categories (Koehler & Mishra, 2006)*

2. **Components of TPACK**

According to Mishra and Koehler in their research, the seven components of TPACK can be explain as follows:

a. Technology Knowledge

Technological Knowledge (TK) refers to teacher's understanding of how to use technology during the teaching learning process. The components of teachers' technology knowledge include:

- The ability to use technologies effectively.

- The teachers' involvement in keeping up with the most recent advances in technology.

- The teacher has essential technology tools for the lesson.

b. Pedagogical Knowledge

Pedagogical Knowledge (PK) is teachers' deep knowledge about the processes and practices or methods of teaching and learning. It refers to

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teacher's understanding of using an appropriate strategy or method during teaching learning process.

Shulman (1986) stated that pedagogical knowledge is the knowledge to:

- Understanding student characteristics

- Organizing social events for the purpose of educating

- Enabling students to reach their full potential (critical thinking, creative thinking, collaboration, communication)

- Interact with students in an accurate, empathic, and respectful manner.

- Conduct method and learning outcome tests and reviews.

c. Content Knowledge (CK)

Content knowledge (CK) is teachers' knowledge about the subject matter to be learned or taught. It refers to teacher's understanding of any subject matter during the teaching learning process. As Shulman (1986) noted, this knowledge includes concepts, theories, ideas, organizational frameworks, evidence and proof, as well as established practices and approaches toward developing such knowledge.

Content knowledge are:

- Understanding of learning concepts, methods and theories and the application of the subject matter.

- The knowledge to develop learning materials.

- Provides pertinent and relevant information about the subject.

- Strengthens the subject lesson by assigning homework to learners.

d. Technological Pedagogical Knowledge

Technological Pedagogical Knowledge (TPK) is an understanding of how teaching and learning can change when particular technologies are used in particular ways. It refers to the knowledge of involving technology to create an appropriate method. The technology used should seek appropriately because some technologies are not designed for educational purposes, they are usually designed for business environment, entertainment, communication, and social networking (Koehler & Mishra, 2009). TPK include (Mishra and Koehler, 2006):

- The courage to use technologies to facilitate learning experiences.
- The tendency to use technologies to promote students' individuality and collaboration.
- The potential to use technologies to enhance students' cognitive abilities (critical and creative thinking).
- The teacher's use of technologies to introduce ideas (from basic to complex) in interactive teaching approaches to educating students.

e. Technological Content Knowledge

Technological Content Knowledge (TCK) is an understanding of the manner in which technology and content influence and constrain one another. It refers to the knowledge of incorporating technology in understanding content in subject area. How the existing of technology during the teaching learning process can modify the subject matter in upgrading the level of understanding

(Bostancıoğlu & Handley, 2018). Mishra & Koehler (2006) describe technological content knowledge as the ability to:

- Use technology to reflect the information.

- Using technologies to create instructional materials.

- To assists students to use technology by the teacher

f. Pedagogical Content Knowledge

Pedagogical Content Knowledge (PCK) refers to "an understanding of how particular topics, problems, or issues are organized, represented, and adapted to the diverse interests and abilities of learners, and presented for instruction" (Shulman, 1986, p.8). According to Shulman (1987), pedagogical material awareness is teachers' understanding of what is to be understood and how it is to be taught, as well as the knowledge to teach it (Mishra and Koehler, 2006):

- Create instructional materials that support students' potential (critical and creative thinking, collaboration, communication).

- Full learning experiences focused on science learning resources.

g. Technological Pedagogical Content Knowledge

Technological Pedagogical Content Knowledge (TPCK) is posited as an overarching concept of good teaching with technology. TPCK requires an "understanding of the representation of concepts using technologies; pedagogical techniques that use technologies in constructive ways to teach content; knowledge of what makes concepts difficult or easy to learn and how technology can help redress some of the problems that students face; knowledge of students' prior knowledge and theories of epistemology and

knowledge of how technologies can be used to build on existing knowledge and to develop new epistemologies or strengthen media which use common media for teaching practice. TPACK contains the following (Mishra and Koehler, 2006):

- The teacher teaches a lesson that effectively incorporates subject matter, innovations, and instructional methods (didactic and/or PBL).

- The ability to successfully carry out technology-based learning tasks while contributing to the learning materials.

- The opportunity to generate and disseminate knowledge about valuable technology-based learning experiences.

- The teachers' prevention (having a lesson plan) and capabilities to use technologies to present information that is important to the students.

3. **TPACK in English Foreign Language Context**

For English language teacher, the basic knowledge of TPACK involves the knowledge of different types of technology, their underlying theoretical frameworks, the required technology, and types of activities. This also means to be able to integrate this knowledge into teaching macro (listening, speaking, reading, and writing) and micro skills (vocabulary, pronunciation, grammar) using appropriate teaching methodology. The table shows a highlight on how to construct TPACK in English Foreign Language Class.

Table 1. TPACK in English Foreign Language Class

EFL TPACK Constructs	Definition	Examples
CK	Knowledge of the subject matter without consideration about teaching the subject matter	English language proficiency
PK	Knowledge about the students' learning, instructional methods, different educational theories, and learning assessment to teach a subject matter without references towards content	Knowledge of generic teaching strategies, beliefs, and practices along with support knowledge, the knowledge of the various disciplines that would enrich teachers' approach to the teaching and learning of English (e.g. educational psychology, second language acquisition), such as knowledge of

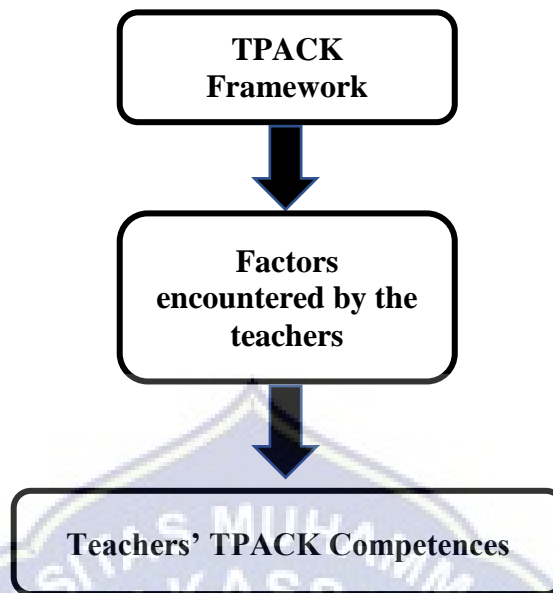|		using metacognitive strategies to enhance learning
PCK	Knowledge of representing content knowledge and adopting pedagogical strategies to teach English	The specialized knowledge of language teaching and learning; how to represent English as a foreign language in the classroom and how language learners come to understand English in the context of real teaching; discovering the students' problems and ways to overcome those problems by considering all variables related to their language learning (teaching materials, assessment procedures, parents, etc.), such as knowledge of conducting group activities to improve students' learning
TK	Knowledge about how to use ICT hardware and software and associated peripherals	IT literacy, knowledge of technology in general, knowing about basic computer applications (software), devices (printers, scanners, digital cameras), and environment (www)
TPK	Knowledge of the existence and specifications of various technologies to enable teaching approaches without reference towards subject matter	IT integration literacy, the ability to use technologies to teach and interact with students
TCK	Knowledge about how to use technology to represent/research and create the content in different ways without consideration about teaching	Knowledge of CALL at the level of technology use and content preparation
TPACK	Knowledge of using various technologies to teach, represent, and facilitate knowledge creation of specific subject content	Knowledge of CALL teaching/learning: using multimedia software/games as a tool to enrich teaching language macro skills (listening, speaking, reading, writing) and components (grammar, vocabulary, pronunciation); class management and assessing students' learning; presenting content via appropriate language teaching strategies by using proper technological tools intermingled with appropriate language teaching methodology/ instructional materials

The EFL TPACK Components (Adapted from Rahimi & Pourshahbaz, 2017)

E. CONCEPTUAL FRAMEWORK

Teaching & Learning Process

Teachers' Pedagogy Competence

```
┌─────────────────────┐
│      TPACK          │
│    Framework        │
└─────────────────────┘
          │
          ▼
┌─────────────────────┐
│     Factors         │
│ encountered by the  │
│     teachers        │
└─────────────────────┘
          │
          ▼
┌─────────────────────────────────┐
│   Teachers' TPACK Competences   │
└─────────────────────────────────┘
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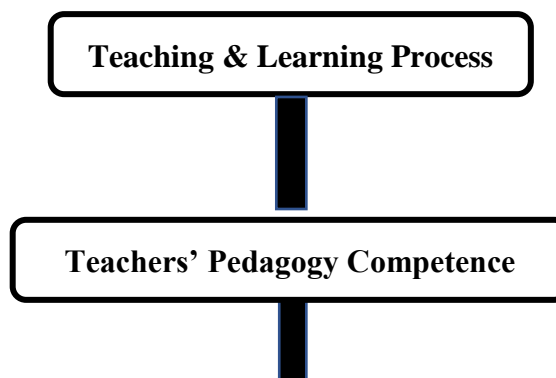
Figure 5. Conceptual Framework

Technology Integration in education refers to the meaningful use of technology to achieve learning goals. Integrating technology in classrooms is a complex issue that requires a broader and deeper understanding of complicated interactions among multiple components (Koehler, Mishra, & Yahya, 2007). Technological Pedagogical Content Knowledge (TPACK) as a framework to guide the investigation of teachers' technology integration in their classrooms. TPACK allows teachers to consider what knowledge is required to integrate technology into teaching and how they might develop that knowledge within themselves. In integrating technology in teaching and learning process, there are several circumstances that affect the proper implementation of technology in classrooms such as resources, the skill of the teacher, teachers' attitude/belief, institution and time.

BAB III
RESEARCH METHOD

Chapter III describes research design, populations and samples, research instruments, data collection methods and data analysis.

A. Research Design

In this study, the researcher used quantitative research as this study was related to numerical and statistical data. Creswell (2014) states that quantitative research identifies research problems based on the explanatory needs encountered. It means that quantitative research is the empirical study of observable phenomena using mathematical, statistical or computational techniques. The quantitative research design was used in this study because it was aimed to find out the teachers' competences in integrating technology based on TPACK framework and know the factors encountered by the teachers in teaching process with technology.

B. Population and Sample

The population of this study consists of 10 teachers who were the English teacher in three Muhammadiyah Senior High Schools in Makassar. Muhammadiyah Senior High Schools in Makassar were; SMA Muhammadiyah 1 UNISMUH Makassar, MA Muallimin Muhammadiyah, and SMA Muhammadiyah Makassar. Those Muhammadiyah Senior High schools were considered had sufficient technological tools to support teaching and learning process.

In this research, the researcher used purposive sampling design. Purposive sampling is a type of sampling where the members of the sample are chosen based on their traits and characteristics needed in the study. The sample of this study consists of three English teachers. The sample chosen should meet three criteria: (a) had five years or more of teaching experience, (b) familiar with technology support teaching and (c) understand about TPACK framework.

C. Research Instruments

1. Observation

Mishra & Koehler (2011) categorized five methods by which teachers' competence in integrating the TPACK framework could be measured (i.e. self-report assessment, performance assessment, open-ended questionnaire, observation and interview). To acquire the data, researchers used an observational checklist as a tool. According to Johnson and Christensen (2014), observation is the process of gathering data by participating in a process and observing someone obtain information in context. The aim of the observation was to obtain data on the integration of

technology in the teaching and learning process in relation to pedagogy and content knowledge.

The instrument contained seven components of TPACK Framework and consisted of 21 observational indicators to explore the domains in accordance with the teachers' TPACK in teaching and learning process. The instrument was adopted from MEIS (Michigan Information Education System).

2. Questionnaire

A questionnaire was used to collect the necessary data on the factors English teachers encounter as they integrate technology into their teaching and learning processes. The questionnaire consisted of 16 statements and was adapted from (Li & Walsh, 2010). Some statements have been modified from the original questionnaire to suit the purpose of the current study.

D. **Technique of Data Collection**

According to Mishra and Koehler (2008), the way to examine the teachers' TPACK framework by seeing the teaching learning process directly in the classroom to represent the authentic teaching tasks. Therefore, the researcher came to the classroom to observe teaching and learning process.

1. Observation

Observations carried out 1 meeting for each teacher. So, the researcher conducted 3 observations. The steps during observations:

a. The researcher observed the teacher's performances by sitting in the classroom during teaching and learning process.

b. While observing, the researcher gave the mark/score based on indicator in observation checklist.

c. The criteria of scoring the teacher's competences in integrating TPACK Framework would be categorized into four levels including (1 = *Poor*, 2 = *Good*, 3 = *Very Good*, 4 = *Excellent*).

d. The criteria of scoring is adapted from Harris et al. (2009). *Testing a TPACK-based technology integration assessment instrument*.

2. Questionnaire

To obtain the data in the questionnaire procedure, researchers applied the following procedures.

a. Create a questionnaire consisting of 20 items related to her research theme.

b. Distribute the questionnaires to English teachers.

c. Respondents were asked to respond to remarks based on their own opinion.

b. The researcher gave the respondents 60 minutes to read and respond to the questionnaire.

E. **Data Analysis Technique**

After having the data from the observational checklist and questionnaire, researchers analyzed the data as follows:

1. Observational Checklist

   a. The teachers' responses were counted and a percentage of each teacher's ability was accumulated using the following formula:

$$p = \frac{f}{n} \, x100$$

Notes:

p   = percentage
f   = frequency of each questionnaire answer
n   = ideal score

(Arikunto, 2005).

   b. To analyze the teacher's ability in integrating TPACK, the researchers aggregated all questions in percentage form to determine the teacher's competence. Results were transformed using the Likert scale as follows:

Table 2*. Likert Scale to determine the teachers' competence*

Percentage	Category
0 – 20%	Very Low
21 – 40%	Low
41 – 60%	Average
61 – 80%	Good
81 – 100%	Excellent

(Sugiyono:2015)

2. Questionnaire,

a. To analyze the factors encountered by English teachers' in integrating technology in teaching and learning process, the researcher used Likert scale as the checklist answer. Respondents were asked to choose one of five answers or descriptors of level of agreement such as: strongly disagree (1), disagree (2), neutral (3), agree (4), and strongly agree (5).

Table 3.   *Likert Scale to know the*

Answer	Score
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

teachers' response

(Sugiyono:2017)

b. To analyze the teacher's responses on the challenges they encountered in integrating technology in teaching and learning process, the researchers aggregated all questions in percentage form. Results were transformed using the Likert scale as follows:

Table 2. *Likert Scale to determine the teachers' agreement*

Percentage	Category
0 – 20%	Strongly Disagree
21 – 40%	Disagree
41 – 60%	Neutral
61 – 80%	Agree
81 – 100%	Strongly Agree

(Sugiyono:2015)

BAB IV
FINDING & DISCUSSION

This chapter consists of two sections, the findings of the research and the discussions of the findings.

A. Findings

1. The English Teacher's Competences in Integrating TPACK Framework in Teaching and Learning Process

This research covered seven components of English teachers' competences in integrating TPACK Framework. The components are; 1) Technological Knowledge (TK), 2) Pedagogical Knowledge (PK), 3) Content Knowledge (CK),

4) Technological Pedagogical Knowledge (TPK), 5) Pedagogical Content Knowledge (PCK), 6) Technological Content Knowledge (TCK), and 7) Technological Pedagogical and Content Knowledge (TPCK).

In this research, the researcher observed the English teachers' competence of Muhammadiyah Senior High Schools in Makassar. in integrating technology based on TPACK Framework during teaching and learning in class. Then given a percentage in accordance with the results of data analysis from observation checklist. The results of analysis of English teachers' competence in integrating TPACK Framework in teaching and learning process can be elaborated as follows:

a. Technological Knowledge (TK)

Technological Knowledge (TK) refers to teacher's understanding of how to use technology during the teaching learning process which can be see the description in the following table:

No	Technological Knowledge (TK)	Teachers' Score		
	Indicators	T1	T2	T3
1	The teacher has essential technology tools for lesson	4	4	3
2	The teacher uses technology to support instructional strategies	4	3	3
3	The teacher uses technology tools without any problems	3	3	3

Total Score	11	10	9
Percentage	91,67 %	83,33%	75%
Category	Excellent	Excellent	Good
Average Score/Category	83,33 % (Excellent)		

Table 5. Teachers' Score of Technological Knowledge (TK)

Table 5 showed that based on the three indicators of technological competence, teacher 1 has 91,67 percent and categorized as "excellent", teacher 2 has 83,33 percent and categorized "excellent", and the teacher 3 has 75 percent and categorized as Good. The average score of three English teachers on Technological knowledge is 83,33 percent and categorized as Excellent.

Chart 1. Teachers' score of Technological Knowledge (TK)

b. Pedagogical Knowledge (PK)

Pedagogical Knowledge (PK) refers to teacher's understanding of using an appropriate strategy or method during teaching learning process which can be see the description in the following table:

No	Pedagogical Knowledge (PK)	Teachers' Score		
	Indicators	T1	T2	T3
1	The teacher knows essential pedagogical approaches for the lesson preparation and presentation (Direct instruction, collaborative learning, PBL, etc.)	3	3	3
2	The teacher demonstrates an understanding of different styles of student learning	4	4	3
3	The teacher structures the lesson to promote student learning	3	3	3
	Total Score	10	10	9
	Percentage	83,33%	83,33%	75%
	Category	Excellent	Excellent	Good
	Average Score/Category	80,56% (Excellent)		

Table 6. Teachers' Score of Pedagogical Knowledge

Table 6 illustrated that based on the three indicators of pedagogical competence, teacher 1 has 83,33 percent and categorized as "Excellent", teacher 2 has 83,33 percent and categorized as "excellent", and the teacher 3 has 75 percent and categorized as "good". The average score of three English teachers on Pedagogical knowledge is 80,56 percent and categorized as Excellent.

Teachers' score of Pedagogical Knowledge (PK)

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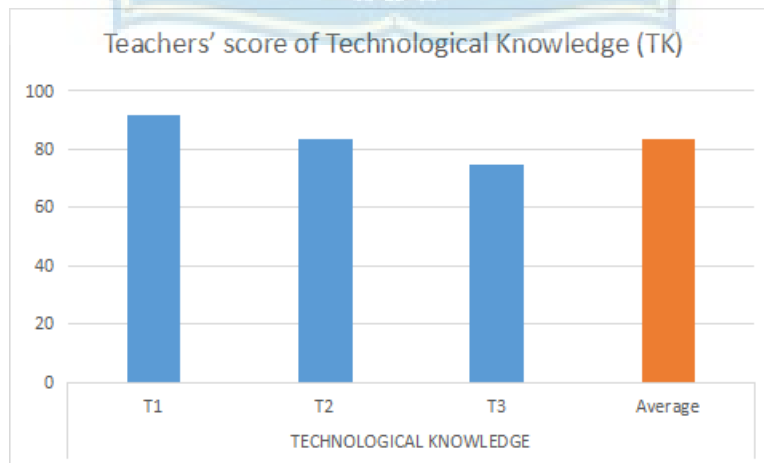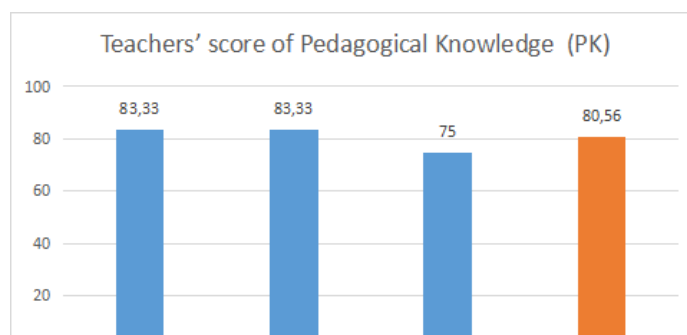**Chart 2**. Teachers' score of Pedagogical Knowledge (PK)

c. Content Knowledge (CK)

Content knowledge (CK refers to teacher's understanding of any subject matter during the teaching learning process which can be see the description in the following table:

No	Content Knowledge (CK)	Teachers' Score		
	Indicators	T1	T2	T3
1	The teacher exhibits a good mastery of subject matter knowledge	4	4	4
2	The teacher provides a variety of references for the students to gain relevant content in EFL subject	4	4	4
3	The teacher reinforces the topic lesson by providing assignments to students	4	4	3
	Total Score	12	12	11
	Percentage	100%	100%	91,66%

Category	Excellent	Excellent	Excellent
Average Score/Category	97,22 % (Excellent)		

Table 7. Teachers' Score of Content Knowledge (CK)

Table 7 showed that based on the three indicators of content knowledge, teacher 1 has 100 percent and categorized as "excellent", teacher 2 has 100 percent and categorized as "excellent", and the teacher 3 has 91,66 percent and categorized as excellent. The average score of three English teachers on Content knowledge is 97,22 percent and categorized as Excellent.
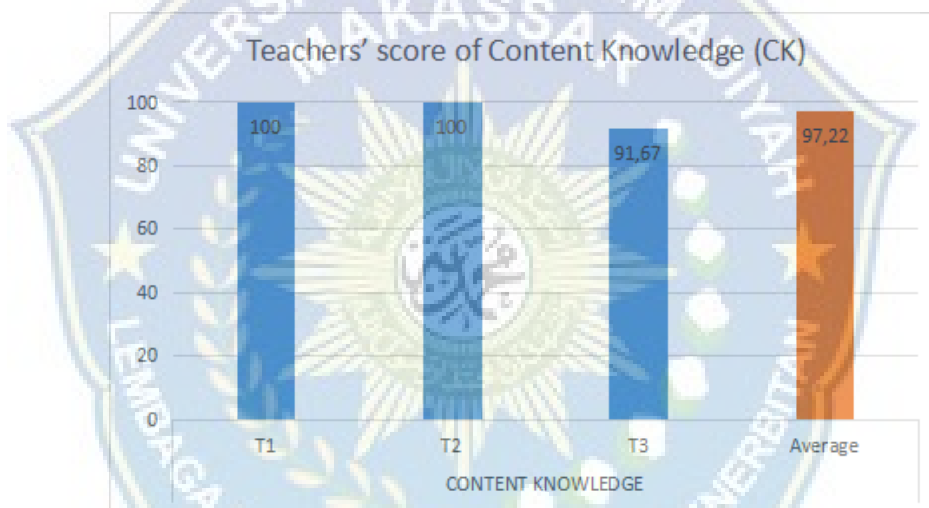
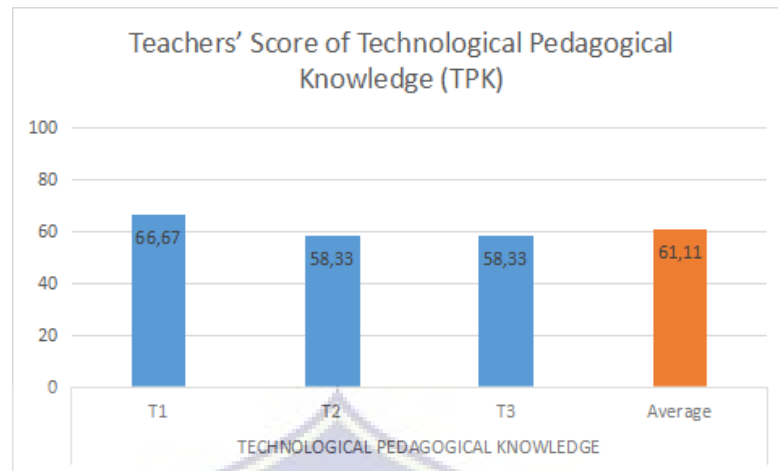**Chart 3.** Teachers' Score of Content Knowledge (CK)

d. Technological Pedagogical Knowledge (TPK)

Technological Pedagogical Knowledge (TPK) is an understanding of how teaching and learning can change when particular technologies are used in particular ways. It refers to the knowledge of involving technology to create an appropriate method which can be see the description in the following table:

Table 8. Teachers' Score of Technological Pedagogical Knowledge (TPK)

No	Technological Pedagogical Knowledge (TPK)	Teachers' Score		
	Indicators	**T1**	**T2**	**T3**
1	The teacher uses technology to interact and collaborate with students in different teaching and learning activities	3	2	2
2	The teacher uses technology for introducing concepts (from simple to complex) in didactic approaches for teaching students	2	2	2
3	The teacher adapts the use of technology to promote PBL approaches in teaching and learning activities	3	3	3
	Total Score	8	7	7
	Percentage	66,66%	58,33%	58,33%
	Category	Good	Average	Average
	Average Score/Category	61,11 % (Good)		

Table 8 illustrated that based on the three indicators of technological pedagogical knowledge, teacher 1 has 66,66 percent and categorized as "good", teacher 2 has 58,33 percent and categorized as "average", and the teacher 3 has 58,33 percent and categorized as "average". The average score of three English teachers on Technological pedagogical knowledge is 61,11 percent and categorized as Good.

Chart 4. Teachers' Score of Technological Pedagogical Knowledge (TPK

e. Pedagogical Content Knowledge (PCK)

Pedagogical Content Knowledge (PCK) refers to an understanding of how particular topics or problems are organized to the diverse interests and abilities of learners, and presented for instruction which can be see the description in the following table:

Table 9. Teachers' Score of Pedagogical Content Knowledge (PCK)

No	**Pedagogical Content Knowledge (PCK)**	**Teachers' Score**		
	Indicators	**T1**	**T2**	**T3**
1	The teacher selects effective teaching approaches to guide student thinking and learning	4	3	3
2	The teacher makes her/his own lesson plan	4	4	4
3	The teacher makes difficult lesson easier for students to understand	4	3	3
	Total Score	12	10	10
	Percentage	100%	83,33%	83,33%
	Category	Excellent	Excellent	Excellent
	Average Score/Category	88,89% (Excellent)		

Table 9 showed that based on the three indicators of pedagogical content knowledge, teacher 1 has 100 percent and categorized as "excellent", teacher 2 has 83,33 percent and categorized as "excellent", and the teacher 3 has 83,33 percent and categorized as "excellent". The average score of three English teachers on Pedagogical Content knowledge is 88,89 percent and categorized as Excellent.
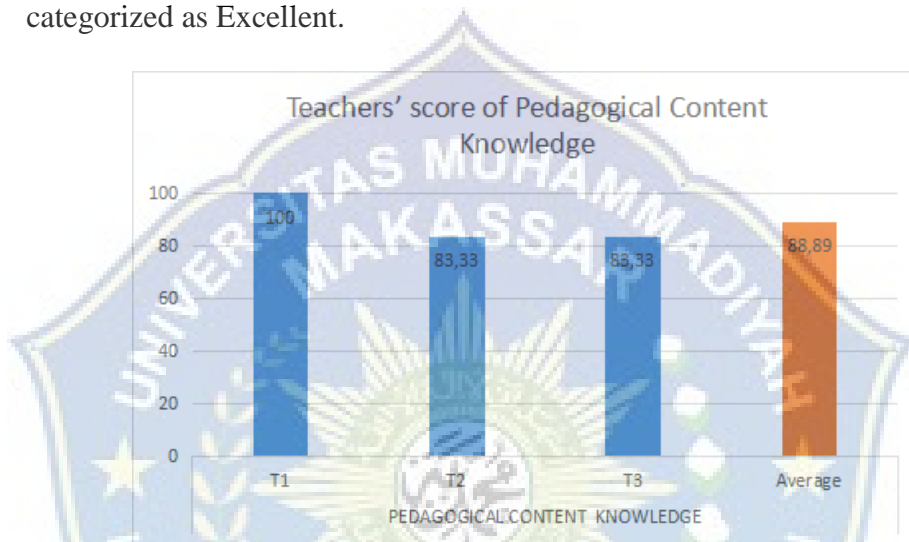
Chart 5. Teachers' Score of Pedagogical Content Knowledge (PCK)
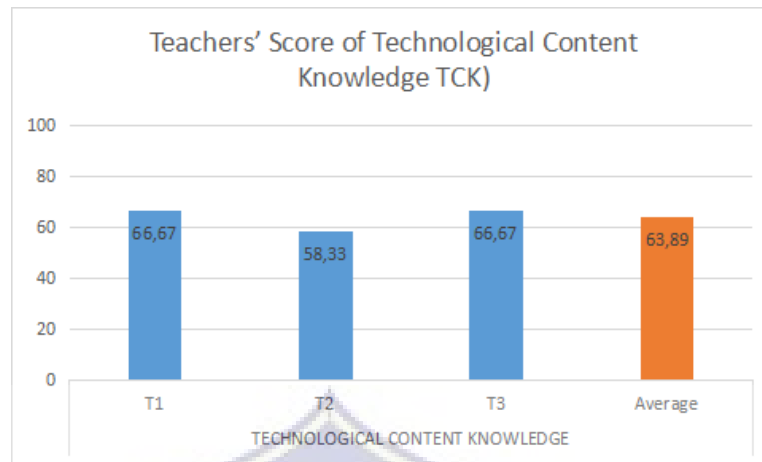
f. Technological Content Knowledge (TCK)

Technological Content Knowledge (TCK) is an understanding of the manner in which technology and content influence and constrain one another. It refers to the knowledge of incorporating technology in understanding content in subject area which can be see the description in the following table:

Table 10. Teachers' Score of Technological Content Knowledge (TCK)

No	Technological Content Knowledge (TCK)	Teachers' Score		
	Indicators	**T1**	**T2**	**T3**
1	The teacher uses technology to demonstrate complex ideas that would otherwise be difficult to learn	3	3	3
2	The teacher assists students to use technology to investigate and construct meaning of the complex ideas they are learning	3	2	2
3	All teaching aids including digital resources are attractive (layout) and support the theme/content of the lesson	2	2	3
	Total Score	8	7	8
	Percentage	66,67 %	58,33%	66,67 %
	Category	Good	Average	Good
	Average Score/Category	63,89% (Good)		

Table 10 illustrated that based on the three indicators of technological content knowledge, teacher 1 has 66,67 percent and categorized as "good", teacher 2 has 58,33 percent and categorized as "average", and the teacher 3 has 66,67 percent and categorized as "Good". The average score of three English teachers on Technological Content knowledge is 63,89 percent and categorized as Good.

Chart 6. Teachers' Score of Technological Content Knowledge (TCK)

g. Technological Pedagogical Content Knowledge (TPCK)

Technological Pedagogical Content Knowledge (TPCK) is posited as an overarching concept of good teaching with technology. The teachers' prevention (having a lesson plan) and capabilities to use technologies to present information is important to the students which can be see the description in the following table:

Table 11. Teachers' Score of Technological Pedagogical Content Knowledge

No	Technological Pedagogical Content Knowledge (TPCK)	Teachers' Score		
	Indicators	T1	T2	T3
1	The teacher teaches a lesson that appropriately combines subject content, technologies and teaching & learning approaches (didactic and/or PBL)	4	3	3
2	The teacher uses technology to support student learning approaches for the lesson taught	3	3	3
3	The teacher is well prepared (having lesson plan) and able to operate technology to present a relevant lesson content.	4	3	3
	Total Score	11	9	9
	Percentage	91,67%	75%	75%
	Category	Excellent	Good	Good
	Average Score/Category	80,56% (Excellent)		

Table 11 showed that based on the three indicators of technological pedagogical content knowledge, teacher 1 has 83,33 percent and categorized as "excellent", teacher 2 has 75 percent and categorized as "good", and the teacher 3 has 75 percent and categorized as "good". The average score of three English teachers on Technological Pedagogical Content knowledge is 80,56 percent and categorized as Excellent.
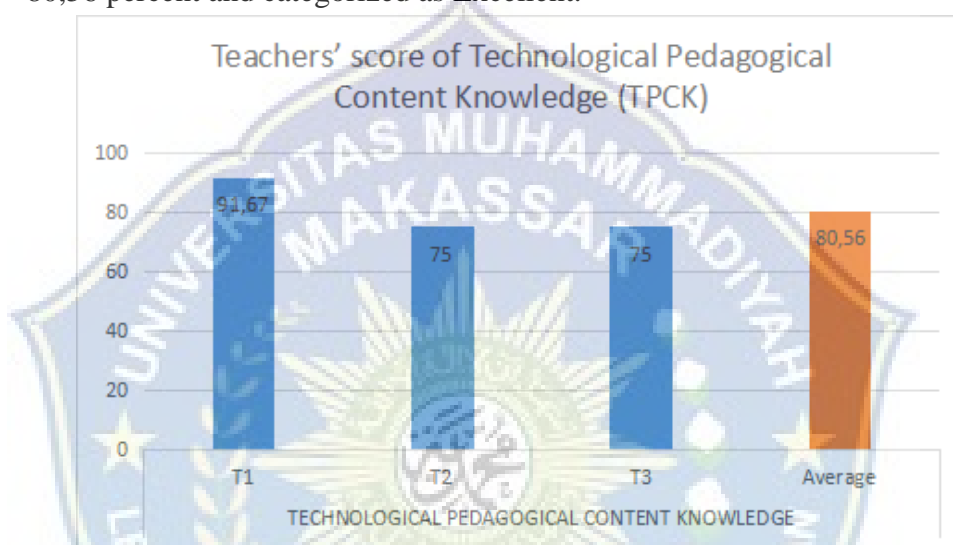
Chart 7. Teachers' Score of Technological Pedagogical Content Knowledge

h. Overall Indicators of Technological Pedagogical and Content Knowledge (TPACK)

From all the seven components of TPACK above, the recapitulation of the teachers' scores as the following table:

Table 12. Teachers' Score of Overall indicators of Technological Pedagogical and Content Knowledge (TPACK)

No	Technological Pedagogical and Content Knowledge (TPACK)	Teachers' Score			Total Score per each Indicator	Percen tage
	Indicators	T1	T2	T3		
1	Technological Knowledge (TK)	11	10	9	30	83,33%
2	Pedagogical Knowledge (PK)	10	10	9	29	80,56%
3	Content Knowledge (CK)	12	12	11	35	97,22%
4	Technological Pedagogical Knowledge (TPK)	8	7	7	22	61,11%
5	Pedagogical Content Knowledge (PCK)	12	10	10	32	88,89%
6	Technological Content Knowledge (TCK)	8	7	8	23	63,89%
7	Technological Pedagogical and Content Knowledge (TPCK)	11	9	9	29	80,56%
	Total Score	72	65	63		
	Percentage	85,71%	77,38%	75%		
	Category	Excellent	Good	Good		
Average Score/Category		**79,36% (Good)**				

Table 12 showed that based on the twenty-one indicators of technological pedagogical and content knowledge, teacher 1 has 85,71 percent and

categorized as "excellent", teacher 2 has 77,38 percent and categorized as "Good", and the teacher 3 has 75 percent and categorized as "good".

In another view of seven TPACK components, the score of English Teachers of Muhammadiyah Senior High Schools can be illustrated as: first is Technological Knowledge (TK), the English teachers got 83,33 percent and categorized as Excellent; then, Pedagogical Knowledge (PK), the English Teachers got 80,56 percent and categorized as Good; then, Content Knowledge (CK), the English Teachers got 97,22 percent and categorized as Excellent; next, Technological Pedagogical Knowledge (TPK), the English Teachers got 61,11 percent and categorized as Good; then, Pedagogical Content Knowledge (PCK), the English Teachers got 88,89 percent and categorized as Excellent; the sixth is Technological Content Knowledge (TCK), the English Teachers got 63,89 percent and categorized as Good; and last components is Technological Pedagogical and Content Knowledge (TPCK), the English Teachers got 80,56 percent and categorized as Good. The average score of three English teachers on all indicators of Technological Pedagogical Content knowledge is 79,36 percent and categorized as "good".
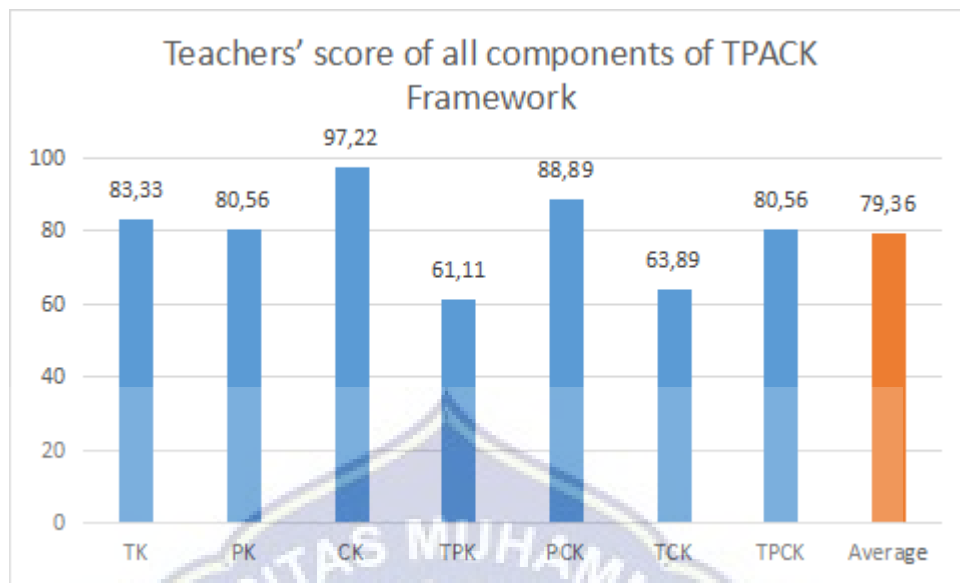
Chart 8. Teachers' Score of Overall indicators of Technological Pedagogical and Content Knowledge (TPACK)

2. Challenges Encountered by The English Teacher in Integrating Technology

Considering the teachers' score in the observation stage of the English teachers' competence in integrating TPACK Framework, the researcher assumes that there are always be factors influenced. Hew (2007) identified that there are some factors affect successful technology integration in classroom such as: lack of resources (time, access to technology and technical support); lack of specific knowledge and skills (training & classroom management), institutional structures (time-tabling, leadership); teacher attitudes and beliefs toward technology. The result of English Teachers' response on challenges encountered in integrating technology can be elaborated as follows:

a. Skill/Training

   Lack of specific technology knowledge and skills is one of the common
   reasons given by teachers for not using technology. Teachers do not
   attempt to use any technology-related activities until they had developed
   basic skills such as basic word processing, logging onto the network,
   opening and closing applications.

   The responses of English Teachers' of Muhammadiyah Senior Schools
   on the challenges they encountered in integrating technology in teaching
   and learning process showed that showed that 80 % percent of the
   English teachers are Strongly Agree that lack of Skill/Training is one of
   the barriers in integrating technology in classroom instruction. The
   responses of the teachers can be illustrated in the following table:

Table 13. Teachers' Responses on Lacks of Skill/Training as challenges in
integrating technology in teaching process

No	Indicators	Teachers' Response (5 Levels of Agreed Scales)			Average
		T1	**T2**	**T3**	
1	Technology helps me to change the way I teach	5	4	5	4,67
2	It is difficult to find any relevant software packages to use them in teaching	2	3	3	2,67
3	Insufficiency of in-service training programs on effective use of technology	4	5	5	4,67
4	It is easy to get promoted when you teach using technology	4	4	4	4
	Total	15	16	17	16,01
	Percentage	75 %	80 %	85 %	80 %
	Category	A	A	SA	A

Notes: (SD=Strongly Disagree;D=Diagree;N=Neutral;A=Agree;SA=Strongly Agree)

b. Attitude/Belief

Teachers' beliefs refer to internal constructs that help teachers interpret experiences and that guide specific teaching practices (Pajares 1992). In the context of technology integration, teacher attitudes toward technology may be conceptualized as teachers liking or disliking the use of technology. Whereas, teachers' beliefs may include their educational beliefs about teaching and learning their beliefs about technology.

The responses of English Teachers' of Muhammadiyah Senior Schools on the challenges they encountered in integrating technology in teaching and learning process particularly the attitude/belief was 78,33 %. It can be illustrated in table 14.

Table 14. Teachers' Responses on Teachers' Attitude/Belief as challenges in integrating technology in teaching process

No	Indicators	Teachers' Response (5 Levels of Agreed Scales)			Average
		T1	T2	T3	
1	Language learning will become easy by using technology	5	5	5	5
2	New technology is not as simple and easy to understand as older technology	4	4	2	3,33
3	I am not confident enough to use technology in front of my students	3	2	3	2,67
4	The interaction between teachers and students is becoming more enthusiastic when using technology	5	4	5	4,67
	Total	17	15	15	15,67

	Percentage	85 %	75 %	75 %	78,33 %
	Category	SA	A	A	A

Notes: (SD=Strongly Disagree;D=Diagree;N=Neutral;A=Agree;SA=Strongly Agree)

c. Resources

There is little opportunity for teachers to integrate technology into the curriculum without adequate hardware and software. Access to technology is more than the availability of technology in a school, it also involves providing the proper amount and right types of technology in locations where teachers and students can use them.

The responses of English Teachers' of Muhammadiyah Senior Schools on the challenges they encountered in integrating technology in teaching and learning process showed that showed that 78,33 % percent of the English teachers are agree that lack of resources is the barrier in integrating technology in classroom instruction. The result can be seen in table 15.

Table 15. Teachers' Responses on Lacks of resources as challenges in integrating technology

No	Indicators	Teachers' Response (5 Levels of Agreed Scales)			Average
		T1	**T2**	**T3**	
1	There are a lots of software packages available for me to use in teaching English to my students	4	3	4	3,67
2	School does not provide free public internet to be accessed by students and teachers	4	3	5	4
3	Lack of technician support in my school	4	4	4	4
4	Technology provides numerous	4	4	4	4

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		16	14	17	15,67
	authentic materials for language learning				
	Total	16	14	17	15,67
	Percentage	80 %	70 %	85 %	78,33 %
	Category	A	A	SA	A

Notes: (SD=Strongly Disagree;D=Diagree;N=Neutral;A=Agree;SA=Strongly Agree)

d. Institution

Hew (2006) stated that institutional barriers may include; leadership, school time-tabling structure, and school planning. Effective technology integration that supports student learning requires school and district policies to ensure the appropriate behaviour, safety, and equitable treatment of all students. Roblyer (2006) explained that teachers need system-wide support to implement technology. This would mean that the school, district, local community, and the state share with teachers a commitment to using technology to support teaching and learning.

The responses of English Teachers' of Muhammadiyah Senior Schools on the challenges they encountered in integrating technology in teaching and learning process showed that 81,67 % percent of the English teachers are strongly agree that lack of support of the institutions is challenge in integrating technology in classroom instruction. It can been in the following in table 16.

Table 16. Teachers' Responses on Lacks support from institution as challenges in integrating technology in teaching process

No	Indicators	Teachers' Response (5 Levels of Agreed Scales)			Average
		T1	T2	T3	
1	Lack of encouragement from school leaders	3	4	4	3,67
2	Lack of access to a computer lab	4	4	4	4
3	Inappropriateness of the curriculum for	5	4	5	4,67

	effective use of information technologies				
4	Our school is very supportive in using technology in the classroom	4	4	4	4
	Total	16	16	17	16,34
	Percentage	80 %	80 %	75 %	81,67 %
	Category	A	A	A	SA

Notes: (SD=Strongly Disagree;D=Diagree;N=Neutral;A=Agree;SA=Strongly Agree)

In Sum, the responses of English teachers of Muhammadiyah Senior High Schools in Makassar related to challenges they encountered in integrating technology in classrooms are: a) Skill/Training got 80 %; b) Attitude/Belief got 8,33 %; c) Resources got 78,33 %; and d) Institution got 81,67 %. The findings of the teachers' responses can be illustrated in the chart below:
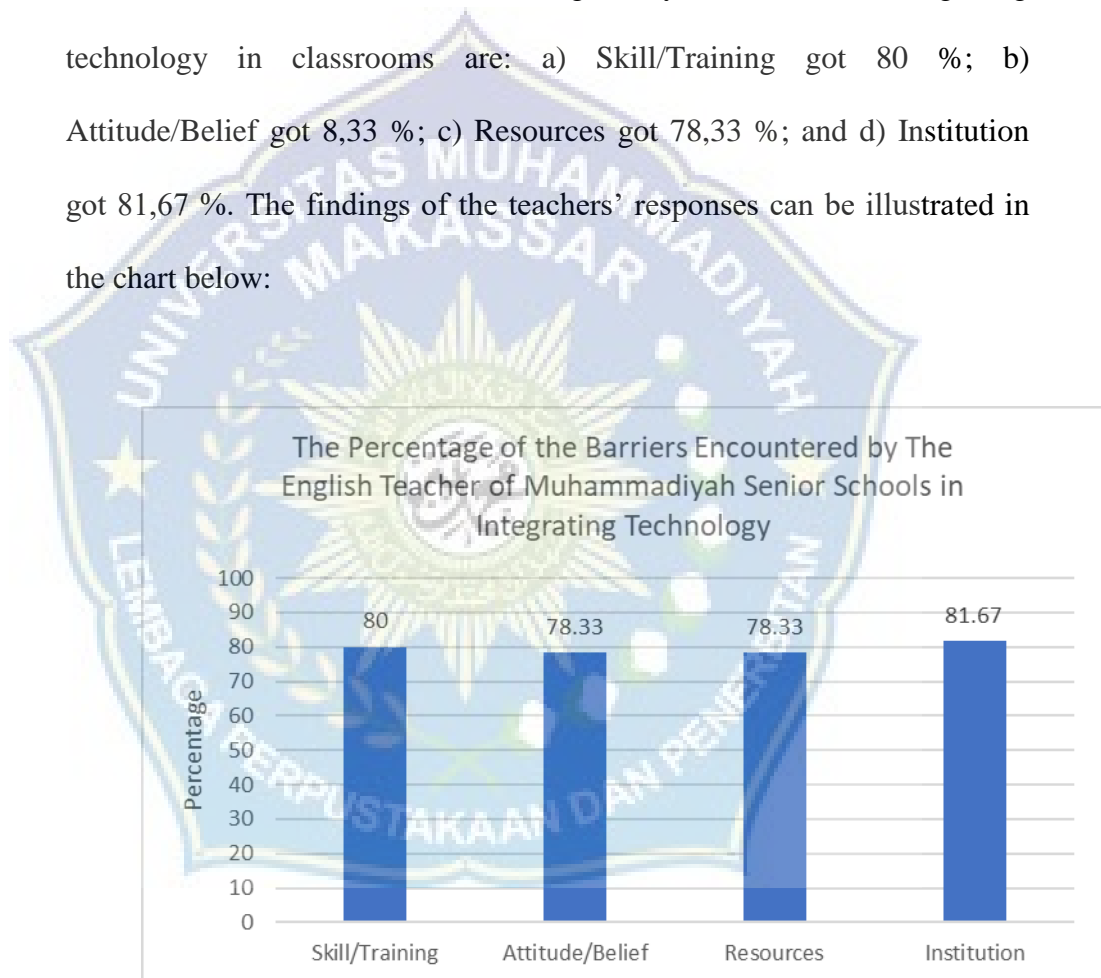
Chart 9. The responses of English teachers related to factors in integrating technology in classrooms

B. Discussion

1. The English Teacher's Competence in Integrating TPACK Framework in Teaching and Learning Process

In this part, the discussion covers the interpretation of the research findings derived from the result of the English teacher competence in integrating TPACK Framework in teaching and learning process. The following information was gathered based on the study's findings:

a. Technological Knowledge (TK)

The analysis of technological knowledge of three English teachers in managing technology as learning tools to support teaching and learning has an average score of 83,33% and can be categorized into Excellent.

Based on the result of observation in the table 5, it indicates that all English teachers have proficient understanding about the integrating technology into teaching and learning process. Especially, T1 is familiar with some applications in education which always used to support online learning whereas the T2 and T3 only using WhatsApp.

This finding is higher than research conducted by Pangket (2022) on his research of 25 English language teachers of Junior and Senior High Schools in Bontoc in integrating technology in their classes. The survey

result showed that English language teachers are very much competent and reflect that there are certain skills in each domain that teachers acknowledge what they lack. They may have knowledge, experience, and confidence, but they still need advice from others to carry-out relevant tasks confidently and consistently. It is similar with Mahdum (2015), in his research of English teachers in Pekanbaru showed that the mean of TK scores is in 'good' category. It implies that, English teachers of Muhammadiyah Senior High Schools in Makassar have already had basic knowledge about technology and effectively implemented it in teaching and learning process.

The finding also similar with (Nawzad et al., 2018), in their study on 50 students in Shahid Abdul Razaq primary school. They found that teacher who have sufficient technological knowledge can improve students' achievement scores and makes students easier to do their homework. When technology used properly, it will offer many benefits. In the application of technology, this knowledge is translated into knowledge of computer hardware and operating systems, including the ability to master various software that suitable to use in certain methods of teaching.

b. Pedagogical Knowledge (PK)

The analysis of pedagogical knowledge of three English teachers in performing instructional methods during teaching and learning has an average score of 80,56% and categorized as Good. It indicates that all English teachers have deep knowledge about the processes or methods

should be used to have effective teaching and learning process. All teachers demonstrate different teaching style based on the students' condition and classroom environment.

This result is similar to a study conducted by Aniq & Drajati (2019) that investigated the perceptions of 20 professional EFL teachers in Indonesia on TPACK framework. Particularly on Pedagogical Knowledge (PK) component, majority of teachers showed excellent level. They were shown to be able to manage teaching and learning processes in the classroom, including planning, implementation of learning, assessment of learning outcomes, and encouraging the potential of students.

This finding is also in line with Destiani (2020), in her research of 30 English teachers in West Java with different school locations, genders and teaching experiences, she found that more than 10% teachers were classified as very high in the area of pedagogical knowledge. It means that more than half of them were able to assess student performance, adapt teaching to what students currently understand, adapt teaching styles to different learners, assessing students' learning and improve student performance in different ways.

This pedagogical knowledge is fundamental for teachers to convey concepts that can be accepted by students with appropriate teaching methods. A good pedagogical teacher understands how to encourage students to increase their knowledge, develop thinking skills, and acquire skills. Teachers can design collaborative and interactive online learning

to provide new relationships between teachers and students through innovation in the learning process (Ferdig, 2006).

c. Content Knowledge (CK)

The analysis of content knowledge of three English teachers in understanding the learning concepts and theories and the application of the subject matter during teaching and learning has an average score of 97,22% and categorized as Excellent. It indicates that all English teachers have deep knowledge about concepts, theories, learning material and the application to subject matter. All teachers exhibit a good mastery of the subject matter and provide variety of references for the students to reinforces the lesson.

The finding is in line with research conducted by Pangket (2022) on his research of 25 English language teachers of Junior and Senior High Schools in Bontoc. The survey result showed that English language teachers were very much competent in using existing knowledge about English subjects. They were also very much competent in their ability to decide on the order and scope of English subjects to be covered; and to explain objectives of English subjects by level.

In another research, this finding is higher than research conducted by Alnajjar (2019). In research conducted by Alnajjar on study of 69 full-

time English language teachers in UNRWA schools in Zarqa Governorate, he found that the mean scores of all items in Content Knowledge (CK) were 3.93 with a standard deviation of 0.63 and categorized as Good. It implies that the teachers were *very good* for managing class and assessing student performance. Whereas, teachers were *good* on eliminating individual differences, using different evaluation methods and techniques, applying different learning theories and approaches (ex., Constructivist Learning, Multiple Intelligence Theory, Project based Teaching") and being aware of possible student learning difficulties and misconceptions.

Teachers who have a good understanding of concepts can map and simplify concepts so they are better understood by students. The data obtained show that teachers not only understand concepts, but are also able to judge how far and how deep concepts should be conveyed. This is important to avoid duplication with the following subject areas so that students can map and study concepts appropriate to their level (Liu & Lee, 2013).

d. Technological Pedagogical Knowledge (TPK)

The analysis of Technological Pedagogical Knowledge of three English teacher in understanding of how particular aspects of the subject matter are organized, adapted, and represented for instruction during teaching and learning has an average score of 61,11% and categorized as Good. It indicates that technology selected by all the English teachers in teaching

and learning process is marginally appropriate and partially support the students' potential.

It is also the same with Mahdum (2015), in his study of English teachers in Pekanbaru, the finding showed that the mean TPK scores of Pekanbaru English teachers were in the "good" category. It was indicated by the English teachers were already aware of the various technologies and able to combine technological knowledge for educational purposes.

This finding is higher than research conducted by Pangket (2022) on 25 English teachers at secondary and secondary schools in Bontoc. The result of the study showed that TPK Online Domain English teachers was fairly competent as reflected in following three areas of competencies, such as: 1) the ability to provide students with online environments that contribute to their knowledge and skills; 2) Ability to apply different methods and approaches during online teaching; 3) Ability to facilitate online learning for students. This is also happened in English teacher of Muhammadiyah senior High school which T2 & T3 are still confuse to select the best technology tools and seems monotonous.

Mishra & Koehler (2006) stated that applying common technologies to specific educational purposes requires understanding the context. By proposing learning design activities where each group has different members, goals, resources, and target groups, a different context is created for each learning activity. Therefore, Teachers are expected to be

creative and flexible in designing teaching and learning activities, and thus to be able to choose the right technology for the right approach.

e. Pedagogical Content Knowledge (PCK)

The analysis of Pedagogical Content Knowledge of three English teacher in understanding of how particular topics, problems, or issues are organized, represented, and adapted to the diverse interests and abilities of learners, and presented for instruction during teaching and learning has an average score of 86,11% and categorized as Excellent. It indicates that all English teachers have proficient understanding in making their own lesson plan. Then, all the teachers able to select effective teaching approaches to support students' potential.

This finding is similar with a research conducted by Pangket (2022) on his research of 25 English language teachers of Junior and Senior High Schools in Bontoc. The survey result showed that English language teachers were very competent in explaining the advantages of using technology in teaching English. The teachers show that they were competent in the four other areas of competency, such as the ability to use flash animations and graphical drawings, the ability to make multimedia or presentations, and the ability to search the web for subjects and concepts related to English.

Nevertheless, this research finding is higher than a research conducted by Mahdum (2015), in his research of English teachers in Pekanbaru

showed that mean of the PCK score of English teachers in Pekanbaru is in 'very good' category. It implies that English teachers in Pekanbaru have implemented their PCK well, especially in making their own lesson plans by concerning on the appropriate learning strategy and material characteristics.

f. Technological Content Knowledge (TCK)

The analysis of Technological Content Knowledge of three English teachers in understanding of integrating technologies to influence their insight into a particular concept during teaching and learning has an average score of 63,88% and categorized as Good. It indicates that technology selected by all the English teachers in teaching and learning process is align with the curriculum goal but partially support the students' potential.

This finding is lower than a study conducted by Destiani (2020) among 30 English teachers in West Java, which taken from various teaching location, gender and teaching experience, and more 70% respondents had high levels in TCK domain. It can be proven by the tools and media they use to improve your understanding and use of English. Teachers used not only books but also other resources such as YouTube and English websites.

In another research, the findings are similar to a study conducted by Aniq & Drajati (2019) that investigated the perceptions of technological content knowledge (TCK) of her 20 professional her EFL teachers in

Indonesia. The result showed that TCK levels were sufficient for the majority of participants. It showed that the English teachers not only able to select key competency materials for learning English that are suitable for teaching technology but also use appropriate technology with multimedia resources and carry out the learning process with technology media.

Moreover, this finding is in line with Harris (2009) found that technology assistance enables the discovery of new content or descriptions of content. Therefore, effective teaching requires understanding how different technologies can be used to modify learning content. Teachers need to understand which technologies are best suited for their subject matter, how content determines or shapes the use of specific educational technologies, and vice versa.

g. Technological Pedagogical Content Knowledge (TPCK)

The analysis of Technological Pedagogical Content Knowledge of three English teachers to understand the concepts using technology, pedagogical technique that uses technology in a constructive way to convey content, and knowledge of what makes concepts difficult or easy to master in teaching and learning has an average score of 80,55% and categorized as Good. It indicates that all English teachers teach a lesson that effectively incorporates the components of TPACK. Teachers can incorporate subject matter and technology-based learning into instructional methods.

Teachers with good TPACK skills will provide learning materials that can be accessed by students to be studied individually or discussed in groups (Mahdum, 2015)

h. Overall TPACK

The analysis of overall components of Technological Pedagogical and Content Knowledge of three English teacher during teaching and learning has an average score of 79,36% and categorized as Good. It indicates that all English teachers have an overarching concept of good teaching with technology. All teachers understand of the representation of concepts using technologies; pedagogical techniques that use technologies in constructive ways to teach content; knowledge of what makes concepts difficult or easy to learn and how technology can help redress some of the problems that students face.

This research finding is similar to Pangket (2022) on his research of 25 English language teachers of Junior and Senior High Schools in Bontoc. The survey result showed that the grand mean score of 2.70. It illustrated that English language teachers were competent in Technological Pedagogical and Content Knowledge.

The other research and has similar result with this research is conducted by Mahdum (2015), in his research of English teachers in Pekanbaru showed that mean of TPACK score of English teachers in Pekanbaru was in 'good' category. It implied that the teachers have already implemented the TPACK well. It is mainly shown the ability to appropriately combine

literacy, technologies, and teaching approaches. However, teachers still expected to maintain cooperation to support each other in developing TPACK.

This finding is also line with A. Djuanda (2021) stated that on the understanding and skills in using computer-related technology will be more appropriate and meaningful. Teachers are demanded to create learning integrated with ICT to enhance the learning process to be creative and innovative. Teachers' learning needs to incorporate technology, curriculum, and the learning environment into the TPACK framework.

2. **The Challenges Faced by The English Teacher of Muhammadiyah Senior High Schools in Integrating Technology**

Gorder (2008) found that successful technology integration makes a big difference in classroom innovation. In integrating technology in teaching and learning process, there are several circumstances that affect the proper implementation of technology in classrooms. Based on the finding of teachers' responses in chart 9, the obstacles faced by the English teacher integrating technology in teaching and learning process can be elaborated as follows:

a. Skill training

According to Hughes (2005), teachers must have a foundation of technology-enabled pedagogy knowledge and skills when planning to

integrate technology into the classroom. Technology integration is more effective when teachers are trained to use technology before entering real-world classroom situations. In this study, the respondents considered that skill/ training in integrating technology is important. It can be seen from the percentage of the teachers' responses were 80% agree teachers that lacks of training are barriers for teachers in integrating technology.

The result is in line with Ghavifekr et al., (2016) he stated that the greatest challenge is the lack of training that shows teachers how to convey lessons using technology, which results in discouraging teachers in using it all together.

It indicates that the teachers should increase their skill by joining some trainings or seminars related to the technology integration. Teacher training is therefore crucial to promoting learners' successful manipulation of multiple literacies (Merkley and Schmidt, 2001:220). Given teachers a trained to use technology before entering a real situation setting for teaching will raise the effectiveness of technology integration.

b. Attitudes/Beliefs

In the context of technology integration, teacher attitudes toward technology can be interpreted as teachers liking or disliking the use of technology whereas beliefs can be conceptualized as premises or suppositions about something that are felt to be true (Calderhead, 1996). Ertmer (2005) argued that the decision of whether and how to use technology for instruction ultimately depends on the teachers themselves and the beliefs they hold

about technology. In this study, the respondents considered that attitude or belief toward the integration of technology is important. It can be seen from the percentage of the teachers' responses were 70.83 % agree that teachers' belief impacts the ability to effectively integrate technology into daily lessons.

Newhouse (2001) surveyed student and teacher perceptions of the use of portable computers in Australian secondary schools and found that the majority of teachers believe computers do not improve comprehension or speed up learning.

On the contrary, in another research conducted by Backfish (2021) on his research on 67 teachers in German Secondary School. The result showed that teachers' technology-related utility beliefs as a crucial facet in integrating technology in classroom instruction. It means that teachers' self-efficacy influences their ability to effectively integrate technology into daily lessons. If a teacher feels confident utilizing technology, then integrating technology will be easy. If teachers do not consider themselves efficient in utilizing technology, the implementation will not be effective (Pan & Franklin, 2011).

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c. Resources

Fabry & Higgs, (1997) stated that access to technology is not only the availability of technology in a school but also providing the proper amount and right types of technology in locations where teachers and students can

use them. In this study, the respondents considered that resources of technology to support teaching process is important. It can be seen from the percentage of the teachers' responses were 78.33 % agree that lack of resources can be affected the integration of technology.

It indicates that without adequate hardware and software, there is little opportunity for teachers to integrate technology into the curriculum. This finding is similar with the former study conducted by Ghavifekr (2016) in his study on 100 teachers in Malaysia. The result of his study showed that the key issues of the challenges of technology integration is resources such as limited accessibility and network connection.

Even with the abundance of technology, there is no guarantee that teachers will have easy access to these resources. Teachers need the right technical support so they can use different technologies. Employing a limited number of technical support staff in schools severely discourages teachers from using technology. Often these technical support staff were overwhelmed with requests from teachers and were unable to respond quickly or adequately (Cuban et al., 2001).

d. Institution

Institutional factors such as lack of management planning further impede technology integration (Hew, 2006). In this survey, respondents believed their institutions played a key role in technology integration. In this study, the respondents considered that the role of Institutions to support technology is important. It can be seen from the percentage of the teachers' responses

were 78.33 % agree that lack of management planning can hinder to support technology integration.

The result is in line with Hsu (2016) in her study on 152 teachers in United States. Based on her observation, the finding showed that there were four barriers concerning technology integration and one of them is the lack of support from educational leaders and the technological department.

This suggests that the level of acceptance of a technology depends entirely on the support an institution shows for that technology. The level of troubleshooting and connectivity support a school offers affects teacher and student perceptions. Schools should offer teachers a wide range of training and development opportunities. Schools should also ensure that the technologies teachers choose to implement are consistent with the school curriculum and that they have a stable infrastructure for using the chosen technologies. While it is often good practice for companies to appoint a technical committee to plan the school's technology introduction policy, schools should let teachers decide how, when and which technologies to introduce (Himes , Pugah, and Staples, 2005).

BAB V
CONCLUSION & SUGGESTION

A. Conclusion

Based on the findings of a study conducted at Muhammadiyah Senior High Schools in Makassar, the researcher came to the following conclusions:

1. The English Teachers' Competence in Integrating TPACK Framework in Teaching and Learning Process are in good category. The analysis of overall components of Technological Pedagogical and Content Knowledge of three English teacher during teaching and learning has an average score of 79,36% and categorized as Good. The score of English teachers in integrating TPACK in teaching and learning process based on all the indicators related to technological pedagogical content knowledge as follows: T1 got 85,71 % and categorized as Excellent, T2 got 77,38 % and categorize Good, and T3 got 75 % and categorized Good. It indicates that all English teachers have an

overarching concept of good teaching with technology. All teachers understand of the representation of concepts using technologies; pedagogical techniques that use technologies in constructive ways to teach content; knowledge of what makes concepts difficult or easy to learn and how technology can help redress some of the problems that students face.

2. In integrating technology in teaching and learning process, based on the English teachers' responses, the researcher found there were some obstacles faced by the English teachers. Those factors were: Teachers' Skill/training, attitude/belief towards technology integration, resources or technological tools provided by school to support teaching with technology, and institutional factors. In this study, the finding showed that the percentage level of agreement related to factors faced by English teachers were: teachers' skill/training got 80%; attitude/belief towards technology integration got 78,33%; resources or technological tools provided by school to support teaching with technology got 78,33%; and institutional factors got 81,67%. It implies that the English teachers of Muhammadiyah Senior High Schools in Makassar considered that all the obstacles faced by the teachers in integrating technology such as: *lack of training, lack of attitude towards technology, lack of resources, and lack of support of institutional* should be given more attention by the educational stakeholders to overcome the barriers in order to have effective teaching with technology.

B. Suggestion

In 20ty century, teachers should be creative and use every opportunity to combine among pedagogy, technology tools, and framework for better results. Current research provides fascinating insight into the use of technology with TPACK framework in the English teaching context. There are limitations regarding field research such as limited number of participants and short time in observations. Therefore, further research is needed in different areas of education to improve our understanding of the framework. Second, in this research has only three participants which makes arguments do not vary. Therefore, further research on the number of participants is needed to present different arguments because even though working on the same topic, everyone has different experiences. Lastly, investigation from a different angle is needed to provide more perspective on the TPACK framework particularly in English teaching context. Despite still are any weaknesses, this research is a good input for English teachers, institutions, and researchers themselves in terms of integrating the TPACK framework into teaching and learning processes.

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Name :

Class :

Day/Date :

Circle your rating of the English Teacher's TPACK application

TPACK Observation Checklist		Score				Comments/ Evidence
No	Components of TPACK	Excellent	Very Good	Good	Poor	
Technological Competence (TK)						
1	The teacher has essential technology tools for lesson	4	3	2	1	
2	The teacher uses technology to support instructional strategies	4	3	2	1	
3	The teacher uses technology tools without any problems	4	3	2	1	
Pedagogical Knowledge (PK)						
4	The teacher knows essential pedagogical approaches for the lesson preparation and presentation (Direct instruction, collaborative learning, PBL, etc.)	4	3	2	1	
5	The teacher demonstrates an understanding of different styles of student learning	4	3	2	1	
6	The teacher structures the lesson to promote student learning	4	3	2	1	
Content Knowledge (CK)						
7	The teacher exhibits a good mastery of subject matter knowledge	4	3	2	1	
8	The teacher provides a variety of references for the students to gain relevant content in EFL subject	4	3	2	1	
9	The teacher reinforces the topic lesson by providing assignments to students	4	3	2	1	
Technological Pedagogical Knowledge (TPK)						
10	The teacher uses technology to interact and collaborate with students in different teaching and learning activities	4	3	2	1	
11	The teacher uses technology for introducing concepts (from simple to complex) in didactic approaches for teaching students	4	3	2	1	
12	The teacher adapts the use of technology to promote PBL approaches in teaching and learning activities	4	3	2	1	

Pedagogical Content Knowledge (PCK)						
13	The teacher selects effective teaching approaches to guide student thinking and learning	4	3	2	1	
14	The teacher makes her/his own lesson plan	4	3	2	1	
15	The teacher makes difficult lesson easier for students to understand	4	3	2	1	
Technological Content Knowledge (TCK)						
16	The teacher uses technology to demonstrate complex ideas that would otherwise be difficult to learn	4	3	2	1	
17	The teacher assists students to use technology to investigate and construct meaning of the complex ideas they are learning	4	3	2	1	
18	All teaching aids including digital resources are attractive (layout) and support the theme/content of the lesson	4	3	2	1	
Technological Pedagogical Content Knowledge (TPACK)						
19	The teacher teaches a lesson that appropriately combines subject content, technologies and teaching & learning approaches (didactic and/or PBL)	4	3	2	1	
20	The teacher uses technology to support student learning approaches for the lesson taught	4	3	2	1	
21	The teacher is well prepared (having lesson plan) and able to operate technology to present a relevant lesson content.	4	3	2	1	

Adapted from: TPACK Observation Checklist – MEIS (Michigan Information Education System) https://studylib.net/doc/6828389/section-1--tpack-observation-checklist---meis

The Challenge Factors in Integrating Technology in Teaching Process

No	Factors of Technology Integration in Teaching Process	Indicators	
1	Skill/Training	a)	Technology helps me to change the way I teach
		b)	It is difficult to find any relevant software packages to use them in teaching
		c)	Insufficiency of in-service training programs on effective use of technology
		d)	It is easy to get promoted when you teach using technology
2	Attitude/Belief	e)	Language learning will become easy by using technology
		f)	New technology is not as simple and easy to understand as older technology
		g)	I am not confident enough to use technology in front of my students
		h)	The interaction between teachers and students is becoming more enthusiastic when using technology
3	Resources	i)	There are a lots of software packages available for me to use in teaching English to my students
		j)	School does not provide free public internet to be accessed by students and teachers
		k)	Lack of technician support in my school
		l)	Technology provides numerous authentic materials for language learning
4	Institution	m)	Lack of encouragement from school leaders
		n)	Lack of access to a computer lab
		o)	Inappropriateness of the curriculum for effective use of information technologies
		p)	Our school is very supportive in using technology in the classroom

Adapted from: (Li & Walsh, 2010)

Tabulating The Percentage of Teachers' Score on TPACK Framework

Sample \\ Components	Teacher 1		Teacher 2		Teacher 3		Average	
Technological Knowledge (TK)	P	= $\frac{11}{12}$ x 100	P	= $\frac{10}{12}$ x 100	P	= $\frac{9}{12}$ x 100	P	= $\frac{30}{36}$ x 100
	p	= 91,67 %	p	= 83,33 %	p	= 75 %	p	= 83,33 %
Pedagogical Knowledge (PK)	P	= $\frac{10}{12}$ x 100	P	= $\frac{10}{12}$ x 100	P	= $\frac{9}{12}$ x 100	P	= $\frac{29}{36}$ x 100
	p	= 83,33 %	p	= 83,33 %	p	= 75 %	p	= 80,56 %
Content Knowledge (CK)	P	= $\frac{12}{12}$ x 100	P	= $\frac{12}{12}$ x 100	P	= $\frac{11}{12}$ x 100	P	= $\frac{35}{36}$ x 100
	p	= 100 %	p	= 100 %	p	= 91,67 %	p	= 97,22 %
Technological Pedagogical Knowledge (TPK)	P	= $\frac{8}{12}$ x 100	P	= $\frac{7}{12}$ x 100	P	= $\frac{7}{12}$ x 100	P	= $\frac{22}{36}$ x 100
	p	= 66,67 %	p	= 58,33 %	p	= 58,33 %	p	= 61,11 %
Pedagogical Content Knowledge (PCK)	P	= $\frac{12}{12}$ x 100	P	= $\frac{10}{12}$ x 100	P	= $\frac{10}{12}$ x 100	P	= $\frac{32}{36}$ x 100
	p	= 100 %	p	= 83,33 %	p	= 83,33 %	p	= 88,89 %
Technological Content Knowledge (TCK)	P	= $\frac{8}{12}$ x 100	P	= $\frac{7}{12}$ x 100	P	= $\frac{8}{12}$ x 100	P	= $\frac{23}{36}$ x 100
	p	= 66,67 %	p	= 58,33 %	p	= 66,67 %	p	= 63,89 %
Technological Pedagogical & Content Knowledge (TPCK)	P	= $\frac{11}{12}$ x 100	P	= $\frac{9}{12}$ x 100	P	= $\frac{9}{12}$ x 100	P	= $\frac{29}{36}$ x 100
	p	= 91,67 %	p	= 75 %	p	= 75 %	p	= 80,56 %
Overall Indicators of TPACK	P	= $\frac{72}{84}$ x 100	P	= $\frac{65}{84}$ x 100	P	= $\frac{63}{84}$ x 100	P	= $\frac{200}{252}$ x 100
	p	= 85,71 %	p	= 77,38 %	p	= 75 %	p	= 79,36 %

Tabulating The Percentage of Teachers' Response on Factors that Challenges the Integration of Technology in Teaching and Learning Process

Sample Challenges	Teacher 1		Teacher 2		Teacher 3		Average	
Skill / Training	P	$= \frac{15}{20} \times 100$	P	$= \frac{16}{20} \times 100$	P	$= \frac{17}{20} \times 100$	P	$= \frac{48}{60} \times 100$
	p	$= 75\ \%$	p	$= 80\ \%$	p	$= 85\ \%$	p	$= 80\ \%$
Attitude / Belief	P	$= \frac{17}{20} \times 100$	P	$= \frac{15}{20} \times 100$	P	$= \frac{15}{20} \times 100$	P	$= \frac{47}{60} \times 100$
	p	$= 85\ \%$	p	$= 75\ \%$	p	$= 75\ \%$	p	$= 78{,}33\ \%$
Resources	P	$= \frac{16}{20} \times 100$	P	$= \frac{14}{20} \times 100$	P	$= \frac{17}{20} \times 100$	P	$= \frac{47}{60} \times 100$
	p	$= 81{,}25\ \%$	p	$= 75\ \%$	p	$= 85\ \%$	p	$= 78{,}33\ \%$
Institution	P	$= \frac{16}{20} \times 100$	P	$= \frac{16}{20} \times 100$	P	$= \frac{17}{20} \times 100$	P	$= \frac{49}{60} \times 100$
	p	$= 68{,}75\ \%$	p	$= 75\ \%$	p	$= 85\ \%$	p	$= 81{,}67\ \%$

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CURRICULUM VITAE

MUHAMMAD AMIN, I was born on June 08th, 1988. I grew up in the small village about 200 km from Makassar namely Tibona. I was the first child from the marriage of Rappe (father) and Ratna (mother). I began my study at SD N 238 Mattoangin in 1993 and graduated in 1999. I continued his study to Islamic Boarding School of Babul Khaer Kalumeme Bulukumba and graduated in 2002. After finished my study in Junior High School for three years, I continued my study in Senior High School in SMA N 1 Bulukumpa and graduated in 2005.

I was very interested in English and my parents hoped me to become a teacher. So, in 2005, I continued

my study in Muhammadiyah University of Makassar, Faculty of teacher training and education and chose English department and graduated on April 2010 as S.Pd.

For many years, I focused on working and developing my career as an employee at Makassar Government Office but there was a little dream still waiting to be gained. I would become a lecturer. So, in 2018, I continued my study on Post graduate Program, Magister of English Education, UNISMUH Makassar and finished 2023.