



Implementation of Technological Pedagogical Content Knowledge (TPACK) in the Malaysian-Indonesian National School

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Abstract

This research is to improve learning outcomes, teacher and student competence. To find out the effects of the TPACK (Technological, Pedagogic, Content Knowledge) strategy, a workshop will be held for teachers and students in schools. This research is intended to help teachers to improve their teaching competence using technology and also help decision makers to see the benefits of training using modern technology-based learning strategies which provide a solution that can be implemented in the PBM process. Apart from that, the application of TPACK is also given to students directly to get and experience the use of technology in all lines of learning up to the evaluation system. Community service was carried out on 23 - 25 July 2023 at the Johor Bahru Indonesian School, Malaysia. This service involved 27 teachers including the school principal and 122 junior high school students. In this activity, the priority is to improve teacher competency and student learning outcomes after implementing TPACK. Starting with pedagogical theory material, continued with the practice of using several learning media including QR codes as a platform for creating barcodes for teachers, Mentimeter and Padlet and continued with conducting evaluations using Kahoot media. All of these media have been given training and practice to teachers and have been given directly to students. The results of the analysis of the implementation of community service have reached a satisfaction rate of 100% with the very satisfied category.

Keywords: *Competence; TPACK*

Introduction

The learning outcomes of students in Indonesia still require improvement for all subjects, this can be seen from the low standard of results of the School Examination (National Examination was abolished) coupled with the results of the Final Semester Examination in semester 6 (six) so that the passing grade is the value of the Semester Final Examination plus the School Examination is divided by two, so the value of the Semester Final Examination has an important role in determining graduation, Semester has an important role in determining graduation which is carried out at the junior high school level when compared to graduation standards in other countries. Based on observations and brief interviews with a

number of teachers in the field, it was found that the learning outcomes of students at the junior high school level were low. The low learning outcomes of students in Indonesia are caused by many factors. The first factor is that the quality of the learning and teaching process is still low. Teachers need to improve the quality of their learning in accordance with current demands. It is expected that with the professional allowance, teachers can improve and maintain their teaching and educational competencies so that the quality of learning and student learning outcomes improve in accordance with the curriculum targets that have been implemented in schools. The second factor is teacher competence. Teachers' competence is still low in using technology as a medium in PBM. Teachers use cellphones and LCDs as teaching aids. The use of technology in the design of learning tools will produce an atmosphere of well being where students and educators can experience fun and efficient learning. Schools in the Makassar city area have an average class size of between 30 and 40 students, while in junior high schools the average is 36 students. This is a curriculum requirement listed in the standard number of learners. However, for mastery of learning outcomes, this amount is quite large for a teacher in the implementation of the teaching and learning process at school. Previous related research states that students still need learning guidance seen from the learning outcomes of students through school exams or the results of previous research, the benchmark is said to have occurred learning if there is a change in the behavior of students towards a more positive direction, and students know and understand the science taught.

The utilization of computer facilities at school tends to be only for ICT subjects. The utilization of computers by students in other subjects is still rare. This may be due to the limited number of computers owned by the school and/or the limited ability of subject teachers to use computers. One of the competencies that teachers must have in learning in the 21st century is the ability to design learning by applying the principle of integrating knowledge of teaching materials, pedagogics, and Information and Communication Technology (ICT) or what is known as TPAC in the current covid-19 pandemic, where the learning process has been transferred from the classroom to the network (online), technology has taken a very important role. Therefore, teachers need to integrate Technology into the PCK approach so that it becomes TPCK. Research by Koh (2013) shows that prospective teachers' perceptions of TPACK are strongly influenced by the experience of attending lectures related to knowledge of technology and knowledge of pedagogy and technology.

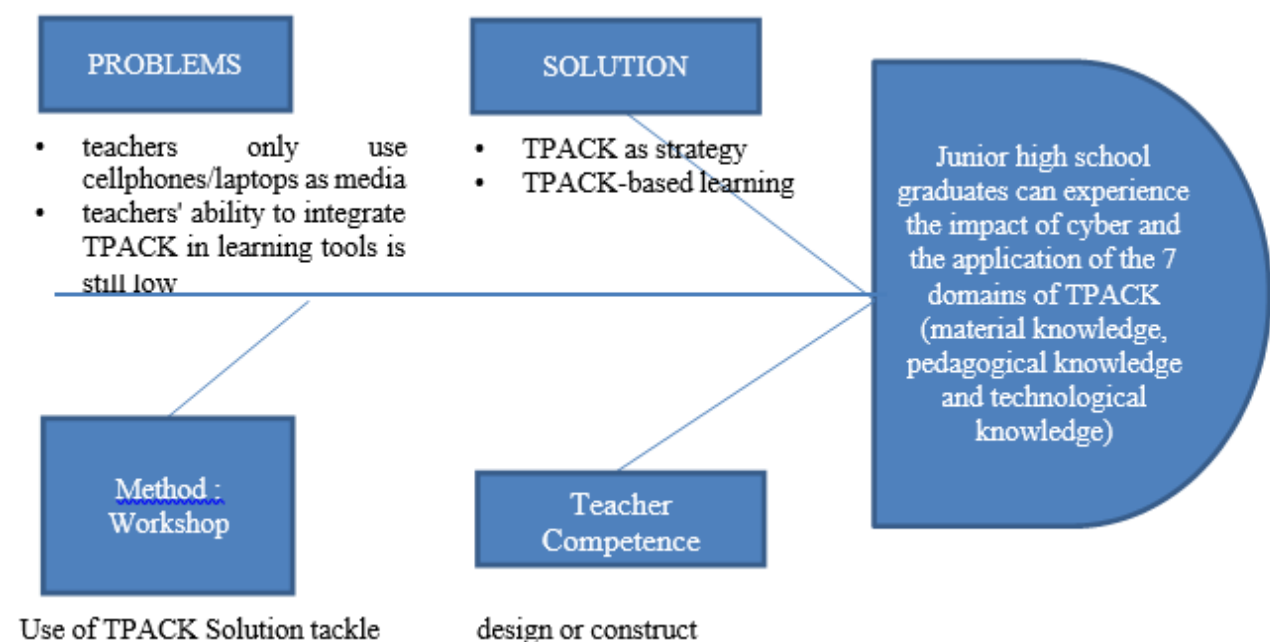


Figure 1. Activity Stages and Design

The use of Technological Pedagogical Content Knowledge (TPACK) can be used as a solution in dealing with large classes and to see the results of developing TPACK-based learning tools for mastering teacher competencies. For this reason, this service wants to provide solutions related to the problems experienced by teachers in making innovative learning tools so that teachers in Makassar city become charming teachers: inspiring, creative, attractive, capable in terms of content knowledge, friendly to liven up the learning atmosphere and can generate motivation and enthusiasm for learning for students. So that the lesson will be more interesting if presented with pictures in the form of a movie or drama story, rather than lecturing in front of the class with the results that have been made to integrate TPACK-based learning objectives.

Method

This service is a descriptive research that will describe teachers' ability to use learning technology to see the quality of learning outcomes, teacher and student attitudes, learning and teaching processes, and learning facilities. This research used several approaches. The use of qualitative and quantitative data in service can improve the scope, strength, and depth of research. The quantitative approach is applied to obtain data from a wider and more comprehensive data source so that a comprehensive description can also be formulated of the phenomenon or situation properly. The qualitative approach is dedicated to understanding the experiences of the research subjects from their point of view. The concept related to this research is the use of TPACK in designing devices that can positively affect learning outcomes, attitudes, and the learning process, attitude is the tendency of a person towards someone or something, the learning process is the process of learning, attitude is a person's tendency towards someone or something, the learning process is a process of interaction between teachers and students in achieving learning outcomes that have been formulated. Group discussion conducted by the teacher. Interviews to obtain detailed information on learning outcomes, teacher and student attitudes towards large class sizes. Documentation is used to find information presented in the form of documents such as formative and summative exam results and school exams.

Results and Discussion

This community service was carried out on July 23-25, 2023 at the Indonesian School Johor Bahru, Malaysia. This service involved 27 teachers including the principal and 122 junior high school students. In this activity, the priority is to improve teacher competence and student learning outcomes after the application of TPACK. Beginning with pedagogic theory material, followed by with the practice of using several learning media including qr code as a platform for creating barcodes for teachers, mentimeters and padlets and continued with evaluating using kahoot media. All of these media have been given training and practice to teachers and have been given directly to students.

The results of the analysis of the implementation of community service have reached a satisfaction rate of 100% with a very satisfied category. In the TPACK learning process, the use of media has also been implemented by all teachers and has subsequently become a new and fun learning media innovation for teachers and students in learning. 12 teachers were involved, covering all subjects in the school. The following is the data of subject teachers who participated in TPACK training in supporting the ICT-based learning process.

Subject Teacher
12 answers

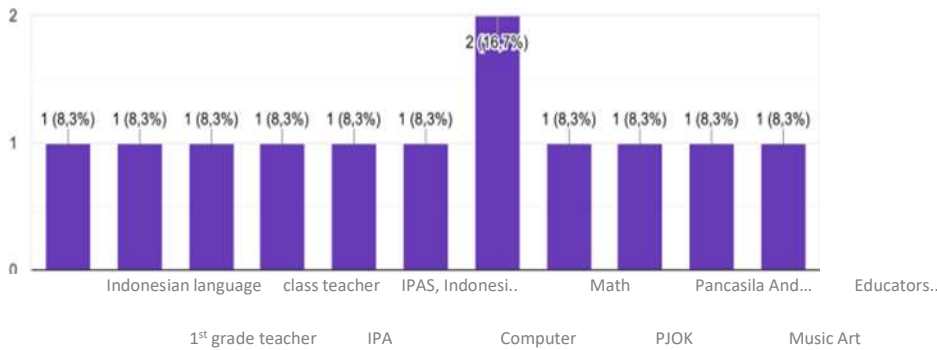


Figure 2. SIJB Malaysia TPACK Learning Satisfaction Questionnaire Data

By implementing TPACK learning, it is seen that teachers teach cheerfully and pleasantly instead of dictating students with a number of knowledge and skills that must be mastered. With smiles, greetings, laughter, and familiarity, and a willingness to help students anytime and anywhere. Teachers should not keep their distance from students, so that students finally dare to ask questions and convey their problems. Varied teaching methods will eliminate student boredom and boredom of students. Learning takes place in two directions, students are seen as individuals who have knowledge and the teacher directs students to dare to argue and be critical of new knowledge. Active learning places students as learning subjects who must be active, creative, moving, and thinking, through exploration and elaboration activities. Referring to the ideal model of a teacher, it is also necessary to consider other aspects that will affect a good learning process. Among them are school management, teacher academic competence, learning facilities, learning facilities and infrastructure and last but not least the condition of the learners themselves (students).

PBM will run efficiently, effectively and interestingly if students follow it with pleasure, joy and comfort. The teacher is serious and focused on supervising and guiding each student who is learning. Each individual learner will feel fulfilled in their right to receive instruction. One of the indicators is that there are still many students who skip class during PBM.

TPACK Media Usage Satisfaction Questionnaire

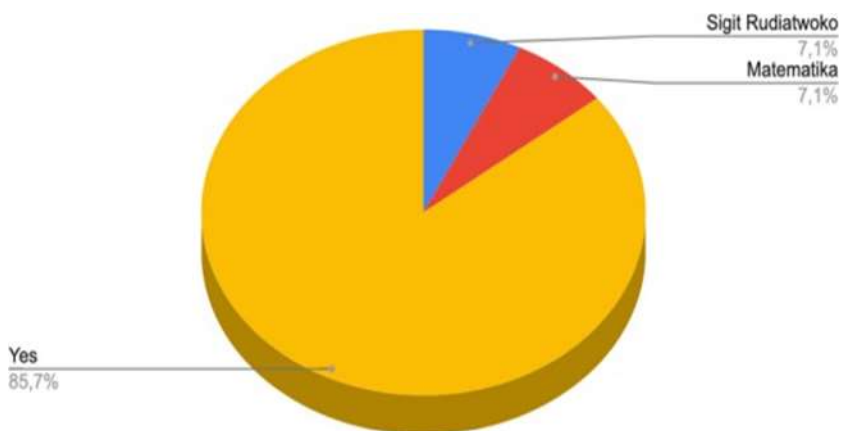


Figure 3. SIJB Malaysia TPACK Learning Satisfaction Questionnaire

Based on the results above, 100% of respondents (teachers and students) stated that they were very satisfied with the learning process using TPACK. This proves that learning with the help of TPACK provides new variations in the use of learning media and is an interesting innovation to increase student motivation and learning outcomes at school.

The achievement of the learning process through TPACK in Indonesian schools in Johor Bahru, Malaysia provides the development of learning tools for the mastery of teacher competencies. Problems that previously occurred can be overcome through TPACK learning strategies that have a positive impact on the progressive growth of student understanding. The use of Technological Pedagogical Content Knowledge (TPACK) can be used as a solution in overcoming large class sizes. However, teachers should be careful not to make computer-based learning become teacher-centered again, for example by using PowerPoint and LCD too often to explain concepts. If this happens often, then the teaching and learning process will appear modern because it uses information technology facilities, but actually the teaching is very conventional because the teacher only relies on lectures (through PowerPoint and LCD) and the students' activities are mostly listening. Therefore, this service wants to provide solutions related to the problems experienced by teachers in making innovative learning tools so that teachers in Makassar city become charming teachers: inspiring, creative, attractive in appearance, capable in terms of content knowledge, friendly to liven up the learning atmosphere and can generate motivation and enthusiasm for learning students.

Conclusion

This dedication shows that there are 100% respondents (teachers and students) expressed very satisfied with the learning process using TPACK. 100% satisfaction rate with a very satisfied category. In the TPACK learning process, the use of media has also been implemented by all teachers and has subsequently become a new and fun learning media innovation for teachers and students in learning.

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