

Development of TPACK Integrated Learning Tools on Aqidah Akhlak Learning Materials for Class XII Madrasah Aliyah Students

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ABSTRACT

One of them is learning that must be integrated with existing science and technology so that it becomes a demand for teachers to improve their competence, especially using technology in learning. One type of learning that includes the interaction of teachers, students, and technology is the TPACK (Technology, Pedagogical, Content, Knowledge) learning model. The research aims to determine the design and feasibility of the TPACK integrated learning tool in the Aqidah Akhlak lesson material for Class XII MAN 3 and MA Al-Bairuny students. This research uses a development research method according to the 10 stages of Brog and Gall. This research is limited to 5 stages and does not reach the implementation stage. Data was collected using a validation sheet which was assessed by 5 validators and data analysis was carried out through product feasibility testing. The research results showed that the TPACK integrated learning tools in the form of RPP and LKPD were very suitable for use according to the product validation results of 87%. There needs to be improvements related to adjusting time allocation in learning. Researchers hope that in the future further research can be carried out to see the effectiveness of this learning tool in the classroom.

Keywords: Learning Tool; TPACK; Aqidah Akhlak

INTRODUCTION

The current development of science and technology is the basis for the development of other fields, including education. One of them is learning that must be integrated with existing science and technology so that it becomes a demand for teachers to improve their competence, especially using technology in learning. 21st-century teachers must have the knowledge and skills to use various technological devices, both traditional and modern, to facilitate learning and improve learning outcomes (Hayani & Utama, 2022; Rahmadi, 2019).

(Undang-Undang Republik Indonesia Nomor 14 Tahun 2005 Tentang Guru Dan Dosen, 2005) states that teachers are required to have academic qualifications, competencies, educational certificates, be physically and spiritually healthy, and have the ability to realize the goals of national education in article 8 and explained in article 10 paragraph 1 reads: Teacher competence as referred to in Article 8 includes pedagogical competence, personality competence, social competence and professional competence obtained through professional education.

The problem experienced in the field is that the design of the RPP and LKPD that students have is not suitable for developing concepts and opening up generalizations of existing problems. One of them is not attractive to students in terms of appearance or content which is not varied. The lack of teacher skills in designing learning makes learning monotonous and ineffective in improving students' ability to understand the material. Not using technology is also the basis for learning to become boring. Therefore, there is a need for a learning model that allows effective and conducive learning by using technology as a learning tool.

One type of learning that includes the interaction of teachers, students, and technology is the TPACK (Technology, Pedagogical, Content, Knowledge) learning model. The TPACK (Technological, Pedagogical, Content Knowledge) framework is a framework that combines three forms of knowledge, which include technological, pedagogical, and content knowledge (Koehler et al., 2013). TPACK is an integration of technology, materials, and pedagogy that interact with each other to produce ICT-based learning (Mairisiska et al., 2014). The TPACK framework is in accordance with 21st-century education where the use of technology is very necessary in the learning process (Pujiriyanto, 2019).

Research results (Wardani et al., 2022) state that the application of TPACK is very necessary for RPP because it will create a learning design that is in line with current developments, namely integrating technology, pedagogy, and content in the process of learning activities. According to (Mansur et al., 2020), TPACK is a learning design arrangement that will later be used by teachers when learning activities take place which includes planning for the use of technology, determining models or ways of managing learning activities, and the learning content used. TPACK can combine several technologies in one material and enable learning to be more conducive and students to be more active. Research results (Ristati et al., 2021) state that TPACK-integrated lesson plans use several technologies including the Zoom Meeting Application, WhatsApp, Google Meet, Google Classroom, and Google Form in the learning process. Therefore, the teacher's mastery of TPACK can be seen from the teacher's learning implementation plan.

Based on the explanation above, this research aims to determine the design of the TPACK integrated learning tool and the feasibility of the TPACK integrated learning tool in the Aqidah Akhlak Phase X Madrasah Aliyah lesson material. It is hoped that in the future this research will become a reference for research on the integration of TPACK in learning to support the applicable curriculum.

METHOD

This research uses a type of development research or R&D research (Research & Development). The research steps were adopted from the Borg & Gall stages which include 10 stages as in Figure 1 (Sugiyono, 2014). However, researchers only reached stage 5 due to limited costs and accommodation in carrying out the research. The type of data from this research is quantitative data in the form of scores from validators, and qualitative data from validator comments.

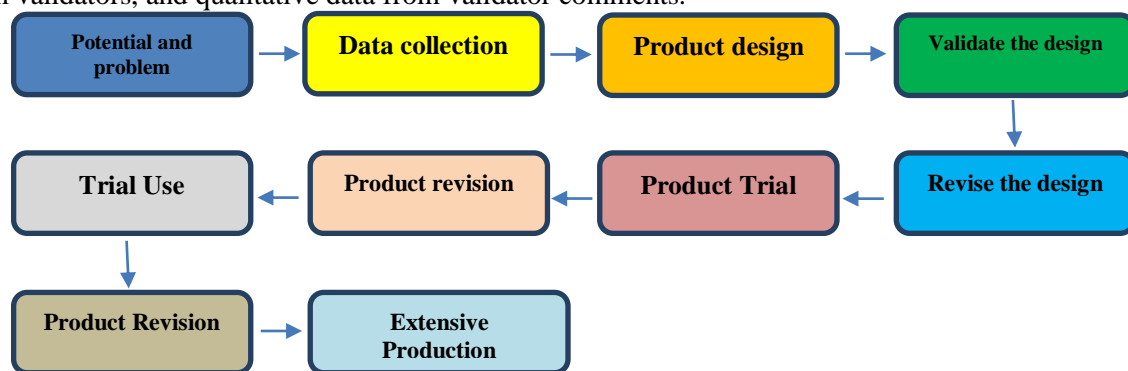


Figure 1 R&D Research Stages from Borg & Gall

A trial was carried out to determine the level of feasibility of the TPACK integrated learning tool which was validated by validators, namely lecturers and teachers of moral aqidah subjects from Man3 and MA Al-Bairuny Jombang, through a product validation sheet containing assessment indicators (Table 1) with assessment scores in Table 2.

Table 1 Assessment Indicators for Validation of TPACK Integrated Learning Tools

No	Category
1.	Design Aspects
2.	Indicator Aspects
3.	Content Aspect
4.	Time Aspect
5.	Language Organization and Readability
6.	Typography

Table 2 Assessment Scores for Validation of TPACK Integrated Learning Tools (Riduwan, 2013)

No	Quantitative Analysis	Score
1.	Very good	5
2.	Good	4
3.	Pretty Good	3
4.	Not Good	2
5.	Very Not Good	1

The assessment results from the validation sheet are then processed to determine the feasibility of the TPACK integrated learning device product according to the equation below and adjusted to the product feasibility score in Table 3.

Eligibility percentage formula:

$$= \frac{X (\text{Skor Ahli Validator})}{X_i (\text{Skor Maksimal})} \times 100\%$$

Table 3 TPACK Integrated Learning Tool Eligibility Score (Riduwan, 2013)

Persentase	Criteria
81%-100%	Very Worth It
61%-80%	Worthy
41%-60%	Decent Enough
21%-40%	Not Worth It
0%-20%	Not feasible

RESULT AND DISCUSSION

Result

This research was to determine the design and feasibility of the TPACK integrated learning device product and carried out the stages according to the Borg & Gall development model as follows.

1. Potential and problems

At this Potential and Problem stage, it corresponds to the problem of existing conditions, namely not being able to determine or regulate learning processes and targets. Facilities and infrastructure are uneven. The ability of educators to use the digitalization of human resources in the digital era is still low. This problem actually motivates researchers to develop learning tools that integrate TPACK. This R&D research has the potential to develop TPACK-integrated learning tools in the form of RPP and LKPD. This R&D research also has the potential to increase students' activeness in learning Aqidah Akhlak, especially in the material on Praiseworthy Morals in an attitude of tolerance (tasamuh) and increase insight related to the subject matter of this moral aqidah.

2. Data collection

At this stage, the researcher collected information with the aim of finding out about the process of learning moral beliefs at MAN 3 and MA Al-Bairuny Jombang. This research product aims to produce a new product or improve an existing product, in order to improve student learning outcomes and make it easier for teachers to package learning materials. Researchers collect information through literature study activities by reviewing relevant research results, interviews, and research location surveys by reviewing the curriculum and materials used at the research location.

3. Product design

This step includes determining the design and development model for TPACK integrated learning tools in the form of a Learning Implementation Plan (RPP) (Figure 2) and Student Worksheet (LKPD) (Figure 3).

13	Statement 13	4,6	92%	Very Worth It
14	Statement 14	3,8	76%	Worthy
15	Statement 15	3,8	76%	Worthy
16	Statement 16	4,4	88%	Very Worth It
17	Statement 17	4,2	84%	Very Worth It
18	Statement 18	3,6	72%	Worthy
19	Statement 19	4,6	92%	Very Worth It
20	Statement 20	4,6	92%	Very Worth It
Product Feasibility Score		4,34	87%	Very Worth It

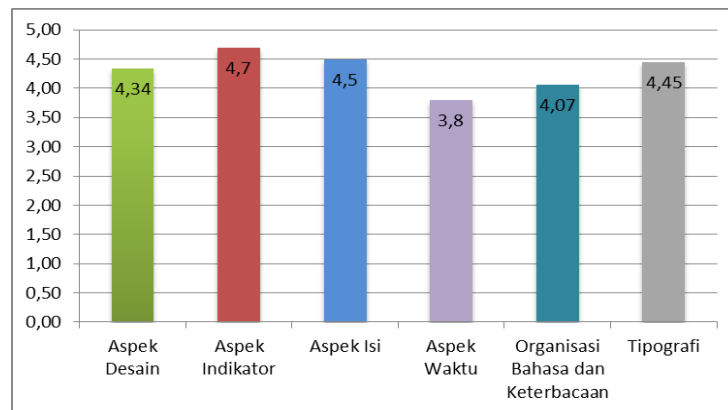


Figure 4 Graph of Values for each Aspect

5. Revise the design

Based on the results of product validation, comments obtained from validators regarding the feasibility of the TPACK integrated learning device product are presented in Table 5.

Table 5 Comments and Suggestions Data from Validators

No	Comments and Suggestions
1	Need to adjust to the allocation of learning time
2	The writing system needs to be improved, especially the numbering section and the like
3	There needs to be motivation in preliminary activities through stimulus activities for students
4	Writing words adapted to Enhanced Spelling

Discussion

TPACK is a learning model that is packaged into one unit including teachers, students, and learning media. This TPACK model was developed by Koehler and Mishra in 2008. According to (Koehler et al., 2013) In this model (Figure 1), there are three main components of teachers' knowledge: content, pedagogy, and technology. Equally important to the model are the interactions between and among these bodies of knowledge, represented as PCK, TCK (technological content knowledge), TPK (technological pedagogical knowledge), and TPACK. The TPACK model is an extension of the PCK concept by adding technology as a special type of teacher knowledge (Meileni et al., 2022).

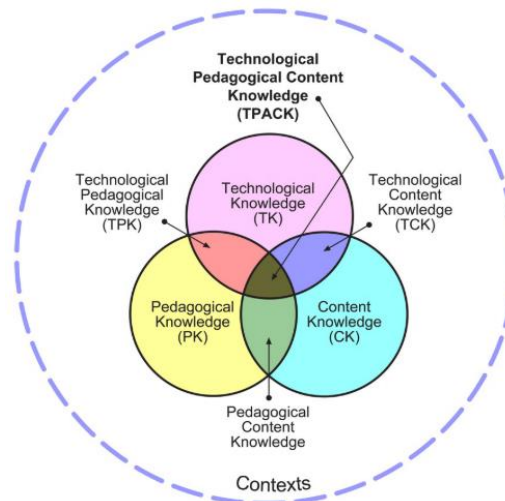


Figure 1 The TPACK framework and its knowledge components

TPACK includes several aspects as follows:

1. Content Knowledge; Content knowledge (CK) is teachers' knowledge about the subject matter to be learned or taught. Content Knowledge is also important because this ability determines the unique way of thinking of a particular scientific discipline in each study and teachers must master it (Rosyid, 2016).
2. Pedagogical Knowledge; Pedagogical knowledge (PK) is teachers' deep knowledge about the processes and practices or methods of teaching and learning. PK also describes knowledge of different teaching methods including knowledge of how to organize activities in the classroom so that student knowledge construction (learning) is conducive.
3. Pedagogical Content Knowledge; PCK is knowledge of pedagogy that is applicable to the teaching of specific content. PCK covers the core business of teaching, learning, curriculum, assessment, and reporting, such as the conditions that promote learning and the links among curriculum, assessment, and pedagogy. PCK means more than just being a content expert or knowing general pedagogical guidelines, but rather understanding the specifics of the interplay of content and pedagogy.
4. Technological Knowledge; Technology knowledge (TK) is always in a state of flux—more so than the other two core knowledge domains in the TPACK framework (pedagogy and content). Kindergarten also includes the ability to adapt and learn new technology.
5. Technological Content Knowledge; Technology and content knowledge have a deep historical relationship. Understanding the impact of technology on the practices and knowledge of a given discipline is critical to developing appropriate technological tools for educational purposes. Technology can constrain the types of possible representations, but can also afford the construction of newer and more varied representations.
6. Technological Pedagogical Knowledge; TPK is an understanding of how teaching and learning can change when particular technologies are used in particular ways. This includes knowing the pedagogical affordances and constraints of a range of technological tools as they relate to disciplinary and developmentally appropriate pedagogical designs and strategies. Technology can also provide new methods for teaching that make it easier to implement in the classroom.
7. TPACK is an emergent form of knowledge that goes beyond all three “core” components (content, pedagogy, and technology). Technological pedagogical content knowledge is an understanding that emerges from interactions among content, pedagogy, and technological knowledge.

TPACK is the basis of effective teaching with technology, requiring 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 to develop new epistemologies or strengthen old ones (Koehler et al., 2013).

Several studies related to the TPACK integrated learning tool have been carried out. The application of TPACK can be highlighted in the core activity, where the teacher discusses learning videos via Google Meet and instructs students to discuss in groups using the WhatsApp Group Application (Ristati et al., 2021)). TPACK can be integrated into the assignment process, where the teacher creates

assignment questions using Google Form, and sends a Google Form access link to students via WhatsApp Group. According to (Nurjanah et al., 2022) TPACK-based RPP and LKPD online and angle material can be developed using technology in other formats, such as interactive multimedia, educational games, flip page ebooks with professional 3D page flip software, can be via the web or blog and others to improve TK. The design of attractive learning materials makes students learn more fun and not boring with the TPACK framework model because like playing by using various educational games, videos, and various learning resources provided by teachers (Meileni et al., 2022)).

TPACK really helps teachers in creating a learning plan. Teachers can integrate several aspects of technology with the material or with the knowledge that students have and teachers must be able to become curriculum designers. Teachers need to integrate technology with classroom learning practices through learning technology by design and learning technology by activity types approaches (Rosyid, 2016). Apart from that, TPACK can be used as a framework for designing teacher education curricula that are more appropriate to the era and learning demands of the 21st Century (Rahmadi, 2019). Therefore, Educators interested in successful technology implementation and integration into K-12 classrooms as well as teacher education programs have become familiar with the TPACK framework (Technology Pedagogy and Content Knowledge model) (Martin, 2015).

CONCLUSIONS

TPACK really helps teachers in creating a learning plan. Teachers can integrate several aspects of technology with the material or with the knowledge that students have and teachers must be able to become curriculum designers. TPACK's integrated learning tools will make the learning atmosphere more conducive due to integration with technology (learning media), one of which is ICT. TPACK can be a benchmark for a teacher or prospective teacher in their readiness to teach through learning designs designed to make learning more effective and conducive using technology so that learning occurs in a multidirectional manner. Therefore, TPACK can be used as a framework for designing teacher education curricula that are more appropriate to the era and learning demands of the 21st Century (Rahmadi, 2019).

The research results showed that the TPACK integrated learning tools in the form of RPP and LKPD were very suitable for use according to the product validation results of 87%. There needs to be improvements related to adjusting time allocation in learning. Researchers hope that in the future further research can be carried out to see the effectiveness of this learning tool in the classroom.

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