

DEVELOPING A TPACK-BASED MODULE TO IMPROVE PRE-SERVICE SOCIAL STUDIES TEACHERS' KNOWLEDGE, ATTITUDE, SKILLS AND VALUES

Submitted:
10 October 2024
Revised:
1 November 2024
Published:
30 November 2024

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KEYWORDS

TPACK; Social Studies;
Knowledge; Skills;
Values

ABSTRACT

This research aims to develop a learning module based on Technological Pedagogical Content Knowledge (TPACK) to increase knowledge, attitude, skill and values of the students of Social Studies Education at State Islamic University (UINs) in Sumatera. Using research and development (R&D) methodology, this study involved 40 students from UIN Imam Bonjol Padang and UIN Sultan Syarif Kasim Riau. The result of this research shows that students were still facing challenges in intergrating technology in learning process. Despite using digital tool like PowerPoint, the intergration within the pedagogical context was suboptimal. The students desire to obtain an interactive and relevant learning experiences. The developed module integrates Content Knowledge, Pedagogical Knowledge, and Technological Knowledge, using media such as Padlet and Wordwall. Expert validation indicated that the module is highly suitable for use, with an average score of 84%. It is anticipated that this module will improve the quality of Social Studies learning, equip students with relevant skills, and integrate Islamic values. With this approach, the module is expected to enhance student understanding and engagement, as well as adaptability to future curriculum developments.

I. INTRODUCTION

State Islamic University plays a significant role in shaping a qualified educator, specifically in Social Studies Education Study Program (Arbaini Wahyuningsih & Mutia, 2018). Challenges in the 21th century emphasize innovation in the learning development to fulfill the students' need and prepare them to face the complexity of modern society (Pare & Sihotang, 2023). The development of technology has significantly impacted the students' mindset and their learning style demand a pedagogical renewal to be relevant to the digital generation. Therefore, the integration of technology into education has become imperative.

To improve the quality of the learning in Social Studies Education, a holistic and technology-oriented approach is needed. This approach is known as Technological Pedagogical Content Knowledge (TPACK) (Rahmaniah, 2003). TPACK combines knowledge of technology, teaching methods and subject matter, providing a foundation for effective learning. TPACK implementation in Social Studies Education aims to cultivate graduates with not merely conceptual knowledge but also have the skills to use technology effectively. This will help them to become confident teachers who can integrate Islamic values, social studies and technology into their teaching. consequently, the students are expected to become comprehensive educators, able to intergrate Islamic values, social studies and emerging technology.

It is very important to develop TPACK-based learning for future Social Studies teachers. This is because many new teachers find it difficult to use technology when they start teaching. They often feel unprepared because they didn't get enough training in technology during their studies. This lack of training makes it hard for them to use technology in their classrooms (Satria, 2022). In line with Hanik Malichatin's 2019 research on the analysis of Technological Pedagogical and Content Knowledge among prospective teachers, it was found that students' abilities in TPACK were still at a low level.

The inability of a teacher implementing TPACK teaching makes it crucial to equip pre-service teachers with necessary skills during their undergraduate studies, particularly those in social studies field. As social studies teachers play a significant role in cultivating gradutes with knowledge, attitude, skills and values. It is a must that these educators are equipped with a more comprehensive skill set than their students. This endeavor is necessary to produce competence teachers as mandated by the Indonesian Ministry of Education's Regulation No. 16 Of 2007 on teacher competency standards, stipulating that teachers must possess at least four competencies; pedagogical, personality, social and professional.

Previous research published in an international journal by Zhang and Tang (2021) and other research conducted by Cahyono, Yudi, Dewi, Oktafina and Kurnianti I (2016), showd that TPACK-oriented courses are beneficial to Indonesian teachers and enhance the quality of learning process. This prespective was also supported by Drajati, Tan, Haryati, Rochsantinigsih and Zainnuri (2018)

as well as Redmond and Lock (2019) perceived that TPACK is crucial to the 21st century learning and can increase the quality of teaching. Materials that implement TPACK strategy is considered as interactive and effective in enhancing students' skill in writing. To an instructor, this material broadens their knowledge in integrating contents through technology, providing learning variation and supporting student-centered learning. Therefore, TPACK can also be developed in social studies education to enhance knowledge, attitude, skills and values, thereby equipping prospective to social studies teachers.

Based on the background, the researcher aims to develop a Technology Pedagogical Content Knowledge-based learning approach to enhance students' knowledge, attitude, skills and values in social studies programs at State Islamic Universities in Sumatera. This initiative is anticipated to empower Social Studies programs at institutions like UIN Imam Bonjol Padang, UIN of North Sumatera and UIN Sultan Syarif Kasim Hidayatullah to produce graduates who are not only academically proficient but also well-equipped to navigate the complexities of modern society with technological proficiency, positive attitudes and strong Islamic values.

This research will pioneer a novel approach by integrating TPACK principles into social studies courses, thereby contributing to the development of innovative learning models. The study underscores the importance of synergizing technology, pedagogy and Islamic content to not only expand students' knowledge but also cultivate positive attitudes, essential skills and robust Islamic values.

II. METHODS

This study employed a Research and Development (R&D) approach, specifically the ADDIE model, which consists of five phases: Analysis, Design, Development, Implementation, and Evaluation. This structured approach was adopted to develop an instructional design based on Technological Pedagogical Content Knowledge (TPACK) aimed at enhancing the knowledge, attitudes, skills, and values of Social Studies Education students at State Islamic Universities in Sumatra. The study involved 40 students from UIN Imam Bonjol Padang and UIN Sultan Syarif Kasim Riau. Data were collected through expert validation, student response questionnaires, and observational assessments of practicality. Data analysis involved the use of Intraclass Correlation Coefficients (ICC) for validity assessment and two-way ANOVA for evaluating effectiveness..

III. RESULT AND DISCUSSION

Research Result

The result of this research shows that students of social studies program of state Islamic universities in Sumatera experience various challenges in integrating technology into their learning. Through interview with 120 students from UIN Imam Bonjol, Padang and UIN Sultan

Syarif Kasim, Riau, reveals that while digital tools such as, PowerPoint and other e-learning platforms have been utilized, technological integration with appropriate pedagogical approach remain suboptimal. Many students perceived that the utilization of technology in learning often fails to support effective learning process, resulting in monotonous and uninteresting learning experiences.

Furthermore, students expressed a desire for more interactive and relevant learning approach with current advancement of technology. They identified a lack of technology integration in social studies learning becomes a challenge in understanding materials deeply. Students expressed a hope for innovations of teaching materials that utilize technology more effectively, thereby enhancing their comprehension of social studies concepts. This shows the importance of the development of learning content that is not only informative, but also engaging and applicable.

The interview findings underscored the need for increased faculty support in technology integration, students expressed a strong desire for active mentorship and demonstrations from lecturers on technology use in learning. additionally, they emphasized the importance of training to effectively integrate technology into appropriate learning methods. Faculty engagement in TPACK is crucial to enhance the quality of social studies education.

Interviews with lecturers revealed that despite the efforts to integrate technology, pedagogy and contents into social studies education, the implementation remains limited and sporadic. Many lecturers have not fully grasped the principles of TPACK, resulting the suboptimal technology integration in their teaching practices. It shows urgent needs to develop TPACK-integrated teaching materials to provide learning process more effectively and thorough.

Based on the analysis of needs, this research recommends TPACK-based module development as solution for students and lecturers to face the challenges. This module is anticipated to provide a clear and standardized guidance in integrating technology, pedagogy and contents of social studies. With integrated modules, learning process is desired to be more interesting, interactive and equip students with relevant skills to face modern working life.

Development Results

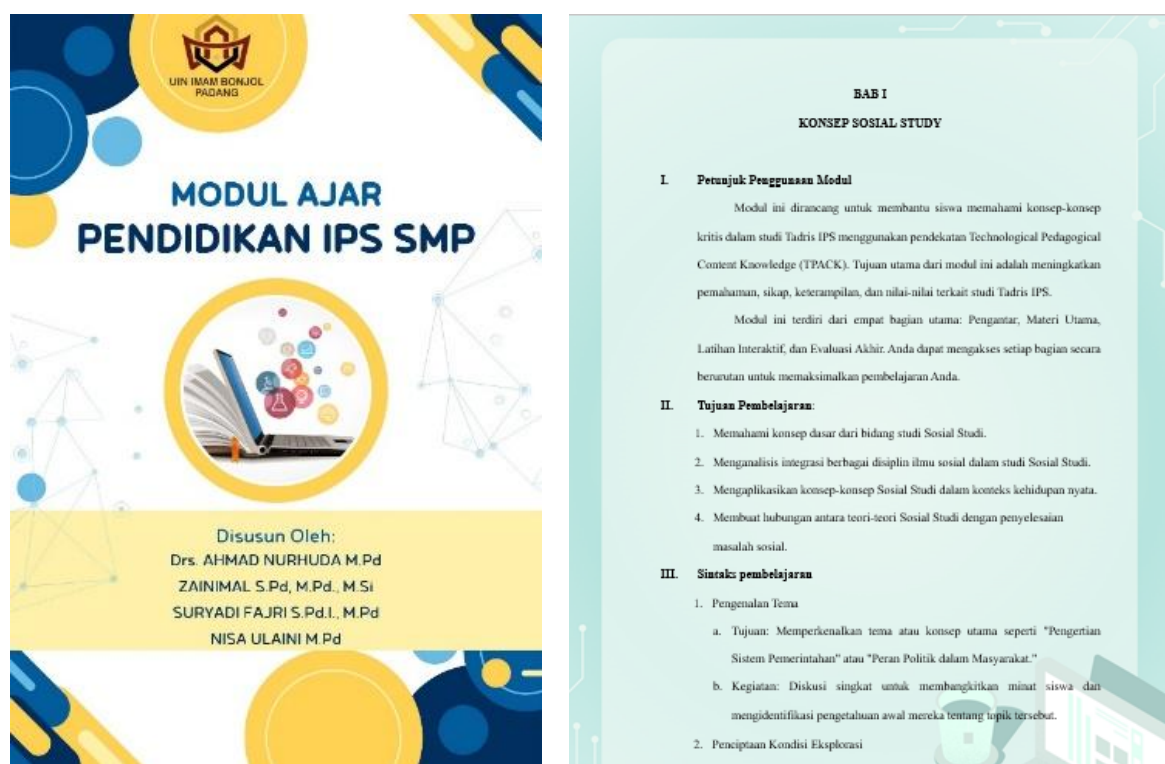
1. Initial Product Description

TPACK-based interactive module for social studies is an innovation set to integrate technology, pedagogy and content knowledge effectively into social studies education in junior high school. This module consists of three elements: Content Knowledge (CK), Pedagogical Knowledge (PK) and Technological Knowledge (TK), collaborating to create a deeper and interactive learning experiences. In pedagogical aspect, this module adopted active learning approach to encourage students' participation in investigating real cases,

teamworks and relevant projects. Interactive activities such as discussion, presentation and self-reflection are designed to enhance a deeper comprehension and critical thinking skills.

In terms of contents, the module presents social studies materials in a structured manner, covering a wide range such as government, economy and history structures. These contents are complemented with informative texts, graphics, diagrams and relevant case studies, ensuring that students not only grasp the theoretical concepts but can also apply them into real-world situations. To support materials delivery, this module utilizes various digital media, such as padlet, wordwall and flipbook, creating a more interesting and accessible learning experiences. Using responsive designs, this module can be accessed through variety of devices, both in or out of classroom, supporting flexibility in learning process.

This module is equipped with regular evaluation element and feedback from users, which will be used to continually refine and improve the quality. The cover is designed to reflect harmonious integration among the three components of TPACK, thus drawing attention for both students and teachers, and facilitating understanding of the learning objective and content. The contents of module include user guidance, learning objectives, learning syntax, learning media, the main materials and activity sheets supporting students' participation. Therefore, this module aims to improve students' motivation and facilitating students in delivering effective materials.



Picture 1. Initial Product Module

2. Data Analysis

On formative evaluation step, researcher conducted three main steps: self evaluation, expert evaluation and focus group discussion. Self-evaluation was carried out after the TPACK-based module draft was compiled, aiming to evaluate the module's design and content. The research team assessed several aspects, including appearance, content quality, language, interactivity and curriculum relevance. Findings from this evaluation revealed shortcomings in design consistency, material accuracy, language use, and a lack of interactive features that could enhance student engagement. Based on these notes, the module will be revised to improve its quality.

Next, the experts conducted an evaluation by using a validation tool to assess how well the module met the set standards. Three experts—a Media Expert, a Content Expert and a Language Expert—evaluated this tool. The validation results showed that the tool was very valid and could be used without revision, with high scores in terms of content suitability, presentation and language use.

Additionally, the validation tool for practicality test and interview guidelines also received very good ratings from the three validators. The result showed that questionnaires and interview guidelines were suitable to reveal the module's suitability in learning context. For validation tool of observation guidelines for module implementation, validators also assessed that the guidelines were very valid and can be used without revision. Overall, the result of this formative assessment ensured that the developed module meets the expected standards and is ready for further research.

3. The Result of Validation Products

The small-scale trial aimed to evaluate quality and suitability of the developed TPACK-based learning module. This assessment involved experts from various fields, including lecturers from media, materials and language, to ensure the module met the expected standards and effectively increasing Social Studies learning. Validation process conducted by Rilci Kurnia Ilahi, M.Pd., along with two other Social Studies lecturers. Loly Wulansari, M.Pd. and Silva Desvina, S.Pd. using questionnaires, interviews and observations to obtain comprehensive feedbacks. The result of evaluation will be analyzed to identify the strength and areas for improvement, with revisions made based on input from validators.

Media validator was conducted from 14th to 16th July of 2024. The assessment results showed that Validator I gave percentage of 89% with the category "Very Suitable", while Validator III and IV each gave 70% and 93%, which included in the category "Suitable" and "Very Suitable". The average ratings from the three validators reached 84%, which included in the category "Very Suitable". Nevertheless, suggestions for improvement were provided,

such as, using more contrast colors, adding images and reflecting local wisdom in the module's characters.

The same module was also assessed by DR. Fatmariza M. Hum and two education practitioners on July 15th to 17th, 2024. The assessment covered the aspects of materials, language style and efficiency. The results showed a percentage of 79% for Validator I, 87% for Validator II and 100% for Validator IV, with overall ratings reached 89%. This showed that module has very good quality and suitability to be used in the context of Junior High School Social Studies education.

Validators suggested several improvements, including improving the consistency of terms used, language clarity and paying attention to how efficiently the material is presented. All of these suggestions aimed to produce improve students' understanding and participation.

Based on assessment results from various validators, TPACK-based learning module was deemed "Very Suitable" to be used, along with the implementation of several improvements. This module is expected to improve teaching learning process with effective technology integration, support innovative pedagogy and provide relevant contents to the students of Social Studies. Therefore, it is expected that this module will make a significant contribution towards the improvement of Social Studies learning quality.

Table 1: Ratings from four media and content experts

Validators	Experts	Validation Results	
		Score	Category
Validator I (I.Y.K.B)	Media	89	Very Suitable
Validator II (R.H)	Materials	78	Very Suitable
Validator III (J.A)	Media and Materials	69	Suitable
Validator IV (Y.P.A)	Media and Materials	98	Very Suitable
Total Score		334	
Avg= $\sum \text{Score} / \sum \text{validators}$		83,5	Very Suitable

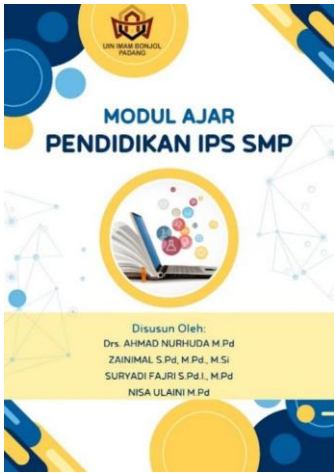
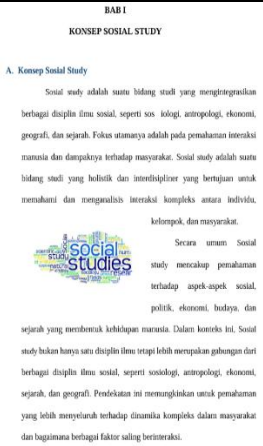
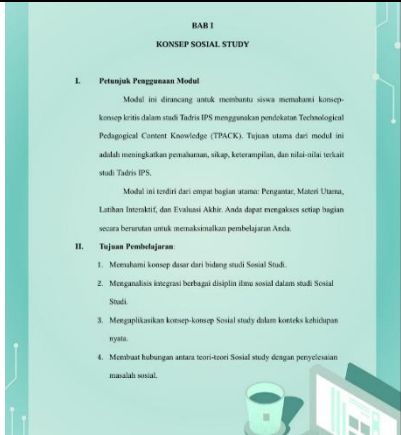
Based on assessment results shown on Table 4.4, assessment percentage from three validators for the materials of social norms varied. Validator I gave percentage of 79% with the category "Very Suitable", Validator II gave 87% also "Very Suitable" and Validator IV gave 100% with the category "Very Suitable". Average results of overall assessment from three validators reached 89%, which categorized as "Very Suitable".

The results show that the presented materials in the form of e-comic module is of very good quality and suitability to be used as learning media with several comments and inputs for improvement.

4. Final Product

The development of TPACK-based module aimed to improve Knowledge, Skill, Attitude and Values of Social Studies students. This module is designed to integrate technology, pedagogy and contents for teaching Middle Schools Social Studies. Using theories and practices approach, this module supports students in understanding and applying TPACK principles effectively. The process module development involved several evaluation steps to ensure materials quality and relevance. After obtaining suggestions from validators and participants from Focus Group Discussion, revisions were made, including adjusting topics, objectives and materials delivery to be more suitable for users' need. This module underwent testing and achieved evaluation of "Very Suitable".

Tabel 2. Final Product Revisions and Result

Comments/suggestions	Initial Product	Revisions on final product	Final Product
The design cover was quite plain, with color choices quite unappealing and there no icons that represents TPACK in Social Studies learning. Additionally, the module should include "MTs" (Islamic Junior High School).		Significant improve on cover design. Using appealing color choice, icons representing TPACK were added. Include the word "MTs".	
The content should include images to make it more interesting. Fix the typos and make sure the spacing and margins are correct.		Included images, fixed typos, spacing and margins.	

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Page numbers on table of contents have not been inserted yet.	DAFTAR ISI	Added page numbers.
	KATA PENGANTAR DAFTAR ISI BAB I KONSEP SOSIAL STUDY A. Konsep Sosial Study B. Dimensi Dan Struktur Pendidikan IPS C. IPS dan Ilmu Sosial D. Perkembangan Pendidikan IPS BAB II HAKEKAT PEMBELAJARAN IPS TERPADU A. Pembelajaran Terpadu IPS B. Konsep Pembelajaran Terpadu Dalam Kurikulum Merdeka BAB III PELAKSANAAN PEMBELAJARAN IPS TERPADU BERBASIS DIFFERENSIASI A. Perencanaan Pembelajaran IPS Terpadu Differensiasi B. Pelaksanaan Pembelajaran IPS Terpadu Differensiasi BAB IV PENDEKATAN PEMBELAJARAN IPS TERPADU A. Model Integrasi Berdimensi Tiga B. Model Integrasi Berdimensi Potensi Utama C. Model Integrasi Berdimensi Permasalahan BAB V MANUSIA DAN LINGKUNGAN A. Interaksi Manusia dan Lingkungan B. Teori Manusia Berhubungan dengan Lingkungan C. Dimensi Interaksi Manusia dan Lingkungan	
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This module provides online access through digital platforms, allowing users to learn flexibly using devices such as Android or PC. The final product of this module includes various interactive elements such as, images, students' worksheet and user guidelines that support comprehensive learning experience. For further access and information, please visit <https://online.fliphtml5.com/kilix/vnqe/> <https://online.fliphtml5.com/kilix/vnqe/>.

IV. CONCLUSION

This research developed TPACK-based module for Social Studies through stages of needs analysis, designs, productions, validations and revisions. Evaluation result by materials and media experts and educators showed that this module met high quality expectation, with the category of "Very Good" and "Suitable" on aspects of materials, languages, deliveries, media effect on learning strategy and overall appearance.

This module effectively integrates technology, pedagogy and contents to support interactive and adaptive learning. with presenting clear and user-friendly design materials, this module shows great potential to improve students' understanding and participation in Social Studies and can be continuously updated based on feedbacks and evolving curriculum needs.

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