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The Development of Educational Practice Lecture Models to Prepare Adaptive and Innovative 21st-Century Primary School Teachers

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Abstract: This research aims to develop a teaching model that combines problem-based educational methods with local culture and Technological Pedagogical Content Knowledge (TPACK) to train future primary school teachers who are adaptable and creative in the 21st century. The development model employed encompasses the subsequent phases: (1) preparatory stage, (2) prototype stage, and (3) assessment stage (Nieveen et al., 2016). The quality of the problem-based PK lecture model, which incorporates local culture and TPACK, is assessed based on its validity, practicality, and effectiveness (Francisca, 2017; Santi & Santosa, 2016). The development of the model includes the collaboration of two professionals, specifically curriculum experts and learning experts, together with the participation of five students who conduct practical knowledge (PK) activities in five elementary schools. The experimental trial consisted of 20 students who conducted instructional activities in 20 primary schools. The research and development findings indicate that the implementation of the PK lecture model has a feasibility rate of 91%, placing it in the outstanding category. Additionally, this learning model enhances students' competence and effectively improves learning outcomes in educational practices. Moreover, the model fosters a learning environment that integrates local culture and TPACK, equipping prospective elementary school teachers with adaptability and innovation skills for the 21st century.
Keywords: educational practice, adaptive, innovative

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Introduction

Rector's Regulation No. 5 of 2020 concerning the MBKM Curriculum for Undergraduate and Applied Undergraduate Programs UNY states that Educational Practice (PK) is an extension of the Introduction to School Field (PLP) carried out by students of the undergraduate education program to learn and practice teaching skills in the form of guided teaching activities and school practices in formal education units, namely elementary schools. The competency standards are stated in Permenristekdikti Number 55 of 2017, which include: (1) understanding the characteristics of students; (2) mastering the field of study; (3) mastering educational learning methodologies; and (4) having a personality as a teacher (Permenristekdikti, 2017). Students' difficulties in teaching practice are especially in terms of applying basic teaching skills, student planning before teaching, implementing teaching and learning activities in the classroom and evaluations carried out by students (Rambe et al., 2022).

Several obstacles must be faced by the Primary School Teacher Education Department, or PGSD in Indonesian context, in implementing the MBKM Curriculum especially for teaching assistance activities in PK lectures. The diversity of school characteristics and students in each class raises problems for PGSD students. The next problem is the lack of synchronization between the programs prepared on campus and their implementation in schools. This obstacle arises because the development of learning tools carried out by several schools is adjusted to the appeal of the local education office. Although PGSD periodically starts a teaching assistance program through coordination with partner schools, students still often complain about these problems. In addition, students are overflowing with

many teaching hours to replace teachers who frequently get assignments or other administrative work. This requires students to be able to adapt to their new assignments, which initially "only" played the role of assistant teachers to change to the primary teacher during part of the PK implementation.

Students encounter various experiences in real situations and conditions during PK activities, including learning the teaching skills of observed teachers, developing the potential of students modeled by pamong teachers, and educational administration practices. Students learn in a school environment with diverse policies, cultures, and customs. The ability to adapt and innovate in the technological era is a challenge for 21st-century teachers, who must understand disciplines from various contexts and be sensitive to the development of the needs of students and society.

The researcher conducted a need assessment with the results that the evaluation of the implementation of educational practices in 2021 obtained data from 115 respondents information that: 1) 75.65% of respondents stated that teaching and non-teaching activities in the framework of PK had gone well, 2) 69% of respondents stated that it is necessary to improve the implementation of PK in the aspect of PK management from the side of the Campus, Lecturers and Students, and 3) 75% of respondents stated the need to integrate TPACK and local culture in implementing PK to make teaching practice more meaningful.

The PGSD Study Program needs a PK lecture model that can be applied to accommodate the needs of all partner schools. This model is needed considering that the number of PGSD students is the highest compared to other study programs at UNY, which has implications for the number of partner schools. The research focuses on the third competency standard, mastering educational learning methodologies. An understanding of the complex process and the determining factors in adjusting learning planning and implementation to the diverse needs of students needs to be developed to achieve the goal of becoming an adaptive and innovative 21st-century elementary school teacher.

Methods

Development research (R&D) was carried out in the even semester of 2021-2022 in the Primary School Teacher Education Department at Faculty of Education and Psychology Yogyakarta State University, and Sarjanawiyata Tamansiswa University. The research was conducted six months, from November 1, 2021, to April 30, 2022. The subject of the study is PGSD semester six students taking micro-learning courses. The development model used includes the following stages: (1) preliminary stage, (2) prototyping stage, and (3) assessment stage (Nieveen et al., 2016). The quality of the problem-based PK lecture model integrated with local culture and TPACK refers to valid, practical, and effective criteria (Nieveen, 1999). The model development involved two experts, namely curriculum experts and learning experts. The model trial involved four micro teaching student learning groups (44 students) conducting educational practices in 20 elementary schools. Furthermore, research data was collected by observing learning activities, student teaching skills, and documentation of learning tools. The data from the study were analyzed descriptively.

Results and Discussion

Preliminary Stage

The preliminary stage is initiated by conducting an initial investigation into the implementation of PK guidance. In general, lecturer guidance for students is relatively incidental, and there is no intention for students to acquire any direction of competence. The development of student teaching skills is probably less effective, as guidance is contingent upon the circumstances and conditions of the school. By incorporating local culture and TPACK, Mansyur (2015) elucidated how to assist students in PK courses identify and present alternative solutions through the resulting learning aids. In addition, the PK lecture model as the main product of research can be used as a starting point for prospective driving teachers, one of the indicators of which is to implement differentiated learning to accommodate the learning needs of different students. Preparation of problem-solving-based models according to the opinions of Binkley et al. (2012) that success in living and working in a knowledgeable society requires 21st-century skills, namely the skills to learn, creative and critical thinking, collaboration, and the ability to utilize ICT so that lectures need to be arranged according to the skills of the 21st Century.

Prototyping Stage or Model-making Stage

The prototyping stage (Ario et al., 2020) was carried out by developing a model of Educational Practice Lectures (PK) Based on Problems Integrated with Local Culture and TPACK to Prepare Adaptive and Innovative 21st Century Elementary School Teacher Candidates. The Educational Practice lecture model consists of 4 stages of activities, namely exploration, formulation, execution, and reflection. With the assistance and guidance of lecturers, each student prepares learning tools based on problems in their respective schools by integrating local culture and TPACK. Santi and Santosa, (2023). The learning tools include the Learning Implementation Plan (RPP), teaching materials, media, student worksheets (LKPD), and assessment instruments. The learning tool is designed to be used by teachers in online and offline learning.

To achieve the skills of prospective elementary school teachers who are adaptive and innovative, problem-based learning is designed, involving local culture and TPACK principles. The Educational Practice lecture model is carried out in 4 stages of activities, namely exploration, formulation, execution, and reflection.

Figure 1. Problem-Based Educational Practice Lecture Model

The implementation of each stage of the problem-based educational practice lecture model is carried out continuously, involving the role and requiring active contributions from students, lecturers, and teachers through the following phases.

Table 1. Phases and Learning Activities

Phase	Student Activities	Lecturer Activities	Teacher Activities
Interpreting initial information	Individually, based on different perspectives, answering a series of questions about problems encountered through information sources	Confirm each student's understanding of the problem	Providing information about various problems that occur in elementary schools
Integrate new information	In groups, they process various new information, perspectives, and experiences obtained using effective means of communication	Encourage the development of various ideas from each student during the implementation of the discussion	Observing the implementation of group discussions
Formulating a hypothesis	Formulate a solution plan in groups that are not yet available	Facilitate the division of tasks that can improve the quality of problem solving	Provide sufficient time to discuss with students
Develop a plan	Collectively agree on a novel solution to solve the problem	Guide group decision-making through productive discussions	Providing suggestions on solutions to problems agreed upon by students
Executing the plan	Individually implement solutions to problems that have been agreed upon by the group	Ensuring a balanced role between students during the implementation of agreed solutions to solve problems	Monitor the process of achieving group goals
Mark progress	Individually report changes that occur as a positive impact on the implementation of problem solutions	Provide structured and clear instructions during the	Provide time to discuss with students about the

Phase	Student Activities	Lecturer Activities	Teacher Activities
		implementation of effective group cooperation	process of implementing solutions
Reflecting on the quality of the solution	Individually detect the strengths and weaknesses of the problem solutions that have been implemented to achieve the group's goals	Allocating equal time and opportunity to each student to convey the results of reflection	Review the results of each student's reflection

Assessment Stage

Experts with the following results validated the lecture model.

Table 2. Validation Results

No.	Aspects	Validator 1	Validator 2	Maximum Score	Average Percentage	Category
1	Adaptive Teacher	3	3	4	75%	Good
2	Innovative Teacher	3	4	4	87.5%	Very good
3	Orientation & Goals	3	4	4	87.5%	Very good
4	Assumption	3	4	4	87.5%	Very good
5	Syntax	4	4	4	100%	Very good
6	Social System	8	6	8	94%	Very good
7	Support System	15	16	16	94%	Very good
8	Instructional Impact	3	4	4	87.5%	Good
9	Accompanying Impact	8	7	8	93%	Very good
	SUM	**50**		**56**	**91%**	**Very Good/ Decent**

Table 2 shows that the developed learning model is "Feasible" to apply with minor revisions. Trial as a stage Assessment stage (Nobles et al., 2020) was held in the first week of April 2022 with a trial subject of 4 student lecture groups in the course closest to PK, namely Microteaching Learning. Microteaching learning is a practical course weighing two credits students must take before taking PK courses. The micro learning lecture describes that students implement learning tools that have been prepared in the practice of teaching peers. Students teach their peers by playing the role of elementary school students. With the simulation of teaching peers, students will have an initial picture and experience of how to teach real elementary school students. This initial experience is very important because teaching activities are not only about how to deliver material but also related to classroom management, basic teaching skills, implementing learning and ending with student evaluation.

Table 3. Results of Model Trials on Students

KLP	Score	Maximum	%	Category
1	42	48	86	Very good
2	46	48	96	Very good
3	43	48	90	Very good
4	44	48	92	Very good
			91	Very good

The percentage of results obtained in the achievement of the implementation of the pilot steps for the implementation of the Problem-Based Educational Practice Lecture Model (PK) Integrated with Local Culture and TPACK to prepare the 21st Century Elementary School Teacher Candidates who are adaptive and innovative developed is categorized as "Very Good". If taken on average from the two experts, an average percentage of 91% or with the category of "Very Good" is obtained.

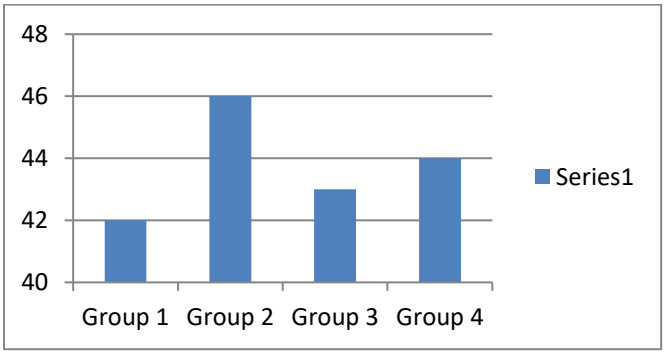

Figure 2. Achievement of the Trial Implementation of the Model by Each Test Group

Based on the graph of the achievement of the model trial, it appears that there is a slight variation in the implementation of the model by the supporting lecturers. The variation is not too significant based on the assumption that the lecturer's style in leading learning is possible, so the observer interprets it as a different phenomenon.

Conclusion

The results of research and development of a problem-based educational practice lecture model integrated with local culture and TPACK to prepare adaptive and innovative 21st century elementary school teacher candidates are categorized as "Feasible" to be used as a training facility for field supervisors and PK teachers. The quality of the problem-based PK lecture model integrated with local culture and TPACK refers to valid, practical, and effective criteria. The development of the model involved two experts, namely curriculum experts and learning experts, and 44 students who carried out PK in elementary school. The model trial involved 44 students who carried out educational practices in elementary schools. This can be seen from the results of the validation of curriculum experts and Learning Technology by 93%. In addition, it can also be seen that the implementation of aspects and syntax of teaching is 91%.

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