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E-Module Based Training Management with an Experiential Learning Approach to Enhance Project Based Learning (PjBL) Implementation by Teachers

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Abstrak

Penelitian ini dilatarbelakangi oleh beberapa permasalahan yang menghambat optimalisasi pembelajaran berbasis proyek. Permasalahan tersebut antara lain adalah masih adanya kesalahpahaman tentang PjBL, pelatihan guru yang kurang memadai dan tidak memiliki keterkaitan yang kuat dengan pembelajaran eksperiensial yang merupakan prinsip inti dari PjBL, serta perlunya pelatihan e-modul berbasis pembelajaran eksperiensial bagi guru. Oleh karena itu, penelitian ini bertujuan untuk mengembangkan sistem manajemen pelatihan berbasis e-modul dengan menggunakan pendekatan pembelajaran eksperiensial guna meningkatkan kemampuan guru dalam mengimplementasikan model PjBL. Penelitian ini memanfaatkan metodologi penelitian dan pengembangan Borg & Gall dan model ADDIE. Penelitian ini menggunakan pendekatan metode campuran, yaitu menggabungkan metode kualitatif dan kuantitatif. Subjek yang digunakan dalam penelitian ini adalah berbagai mata pelajaran yang diajarkan kepada guru di sekolah menengah atas dan sekolah menengah pertama. Metode pengumpulan data meliputi observasi, wawancara, dan angket. Data kualitatif dianalisis menggunakan metode Miles dan Huberman, sedangkan data kuantitatif dianalisis menggunakan statistik deskriptif dengan skor dan persentase. Penelitian ini menghasilkan produk manajemen pelatihan model PjBL berbasis e-modul dengan pendekatan pembelajaran eksperiensial yang disajikan dalam bentuk situs web. Produk ini memperoleh skor validasi sebesar 94% dari pakar IT dan 88% dari pakar manajemen pelatihan, serta memperoleh skor uji coba terbatas sebesar 95% yang termasuk kategori sangat baik. Berdasarkan hasil tersebut, dinyatakan bahwa produk e-modul ini valid dan layak digunakan dalam proses pembelajaran. Pelatihan model PjBL dengan pendekatan experiential learning dapat memberikan pengalaman yang berbeda dan pemahaman yang lebih mendalam bagi guru.

Kata Kunci: *Pembelajaran Berbasis Proyek, Pembelajaran Kolaboratif, Pembelajaran Eksperiensial*

Abstract

This research is motivated by several problems that hinder the optimization of project-based learning. These include misconceptions about PjBL, inadequate teacher training that does not have a solid connection to experiential learning, which is the core principle of PjBL, and the need for experiential learning-based training e-modules for teachers. Therefore, this study aims to develop an e-module-based training management system using an experiential learning approach to improve teachers' ability to implement the PjBL model. This study utilized the Borg & Gall research and development methodology and the ADDIE model. The study used a mixed-methods approach, combining qualitative and quantitative methods. The subjects involved in this study were various subjects taught to teachers in senior high and junior high schools. Data collection methods included observation, interviews, and questionnaires. Qualitative data were analyzed using the Miles and Huberman method, while quantitative data were analyzed using descriptive statistics with scores and percentages. The research produced an e-module-based PjBL model training management product with an experiential learning approach that was presented as a website. This product obtained a validation score of 94% from IT experts and 88% from training management experts, and it received a limited trial score of 95%, which is an outstanding category. Based on these results, it is stated that the e-module product is valid and feasible to use in the learning process. Training on the PjBL model with an experiential learning approach can give teachers different experiences and a deeper understanding.

Keywords: Project Based Learning, Collaboratif Learning, Experiential Learning

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1. INTRODUCTION

The development of education in Indonesia has ushered in new changes through the implementation of various classroom learning methods in both private and public schools. One of the models used is Project-Based Learning (PjBL). Project-Based Learning (PjBL) is a learning model that utilizes problems to gather and integrate new knowledge based on students' experiences and real-life activities. In this model, learning is facilitated through activities such as events, product creation projects, and other practices, both individual and group-based (Allam & Bramasta, 2023; Widodo et al., 2020). The projects referred to here are projects as forms of collaborative learning where participants contribute to a shared outcome and involve experiential learning elements with active reflection and conscious engagement, as opposed to passive experiences (Fahlevi, 2022; Hakim & Hairunisa, 2022). The PjBL model is considered beneficial for classroom learning, because that teachers hold positive views towards implementing PjBL in classroom instruction (Sari et al., 2021; Yamin & Syahrir, 2020).

In applying the PjBL model in classroom learning, the concept of experiential learning becomes a crucial element that supports the practice of this model. Experiential learning occurs when participants, with personal responsibility, cognitively, affectively, and behaviorally process knowledge, skills, and/or attitudes in a learning situation characterized by a high level of active involvement (Ferryka et al., 2023; Suanto et al., 2022). This means that the activity and contribution of the project are central to experiential learning. This aligns with the need for active involvement and contribution from students in the PjBL model, suggesting that combining PjBL with experiential learning provides students with a unique experience and can enhance their comprehension of the material (Nurrahmah et al., 2020; Winandari et al., 2022).

Despite the widespread adoption of the PjBL model, numerous issues persist in its practical application. In a case study on teachers' perceptions of the PjBL model in Jambi, it was found that teachers struggle to implement PjBL, often confusing it with other learning models (Arbi, 2023; Winandari et al., 2022). Similar problems exist at SMA Budya Wacana Yogyakarta, where misunderstandings about the concept and implementation of PjBL are prevalent. According to the author's observations, PjBL implementation at SMA Budya Wacana is driven by school policy rather than teacher initiative. Teachers implement PjBL not as an extension of classroom learning but as a requirement to be fulfilled. This is evident from the Mid-Semester Assessment (PTS) format each semester, where every subject must use the PjBL model for instruction and final assessment without exception. Although the goal is to encourage teachers to diversify their teaching methods, the mandatory application of PjBL in PTS has made it challenging for teachers in some subjects to deliver the core content of their lessons (Nurhasanah et al., 2024; Sriwijayanti et al., 2022).

Based on these problems, a solution is needed to maximize the implementation of PjBL. One is through training that equips teachers with more relevant approaches, such as experiential learning. Experiential learning involves learners being directly involved with the reality being studied (Hastuti et al., 2020; Lastri et al., 2019). It differs from learning, in which learners only read, hear, discuss, or write about reality but are never directly involved. Experiential learning involves the holistic engagement of affective, perceptual, cognitive, and behavioural processes (Prabawati & Suparman, 2019; Suanto et al., 2022). Training that prioritizes experience as the primary source of reflection can optimize the implementation of PjBL, which is closely related to practical and project activities. This research is supported by previous research, which shows that the lack of training on the PjBL model makes it difficult for teachers to implement it effectively (Albana & Sujarwo, 2021; Epifania et al., 2020). At Budya Wacana High School itself, for two consecutive years, there was only one training aimed at empowering teachers using the PjBL model. Therefore, PjBL training needs to be

managed with the right training management concept to improve the training process, effectiveness, and results.

Training with an experiential learning approach is considered appropriate to bridge the delivery of PjBL materials because the methodology focuses on building participants' experience through practice and projects, which aligns with the core concept of PjBL (Lapase, 2021; Raehanah et al., 2020). This kind of training is also considered more effective and efficient if it is well-managed and supported by a comprehensive module that anyone can access online. Effective training management should be presented in the form of e-modules to increase its efficiency and effectiveness. This is supported by previous research, which states that e-modules are considered adequate in learning because they allow for direct and indirect learning methods, thus allowing participants to increase their learning effectiveness and efficiency (Inayati, 2020; Poerwati & Cahaya, 2018). The novelty value of this research lies in integrating a specifically designed e-module with an experiential learning approach in the context of teacher training. This research offers a more flexible and interactive training management approach, enabling teachers to implement PjBL in the classroom more effectively.

Based on this explanation, this research aims to develop an e-module-based training management system using an experiential learning approach to improve teachers' ability to implement the PjBL model. This research is expected to provide effective and practical guidance for teachers in managing and implementing PjBL in the classroom to create a more interactive and collaborative learning environment. In addition, this research is also expected to improve teachers' professional competence, strengthen their ability to face the challenges of modern education, and ultimately improve student learning outcomes through a more structured and experiential PjBL implementation.

2. METHOD

This study employs the Research and Development (R&D) method with a mixed-method approach, combining qualitative and quantitative methods. The research involves developing training for implementing the PjBL model, with the research subjects being high school teachers from SMA Budya Wacana Yogyakarta and SMPN 10 Salatiga, utilizing an experiential learning basis. This research procedure and development model is the Borg & Gall method and ADDIE, or analysis, design, development, implementation, and evaluation. Data collection involves several techniques, such as observation, interviews, and questionnaires, with instruments that follow each method, such as observation guidance, interview guidance and questionnaire list. The data analysis employs qualitative descriptive analysis and quantitative analysis. Data validation involves technology and training management experts as validators. Qualitative data analysis involving data collection, reduction, presentation, and conclusion or verification. This qualitative analysis assesses teachers' level of understanding as training participants after undergoing PjBL model training.

Additionally, quantitative analysis utilizes descriptive statistics (categorizing as high, moderate, and low). The purpose of descriptive statistical analysis is to provide a more detailed overview of user evaluations of the product through categorizations such as high, moderate, and low. These categories serve to assess the product, ranging from excellent (E), good (G), fair (F), poor (P), to very poor (VP). The product of this training is an e-module training based on experiential learning that can be used for future training sessions, not limited to PjBL implementation alone.

3. RESULT AND DISCUSSION

Result

This research is conducted in five stages: information gathering (initial data), planning, initial product form development, field testing, and revision. In implementation, each stage is not executed procedurally but rather simultaneously according to field conditions. For example, the planning stage is conducted concurrently with the initial data collection stage, and the initial product form development stage is refined through redesign or design innovation during the planning stage.

The researcher observed a PjBL training conducted by SMA Budya Wacana Yogyakarta. The training was only held once in August 2022 and was not repeated until May 2024. The training method primarily involved lectures with minimal practical exercises. The training content consisted of theoretical studies and curriculum schemes, lacking practical aspects that could be beneficial for teachers in a technical sense. It can be said that the PjBL training at SMA Budya Wacana is still minimal and has not been optimal in providing a deep understanding of the PjBL model to teachers.

The initial product developed to address the issues arising from the lack of understanding and training in PjBL for teachers and schools is an E-module training for PjBL with an experiential learning approach. The product takes the form of a website containing training sessions that can be accessed online and flexibly, allowing participants to engage at their convenience and downloaded for offline use. The website features a profile of the experiential learning approach, participant registration, training schedule, seven training sessions presenting materials in creative visual formats and concise modules, a feedback section for participants, and training guidelines. This site is named PjBL Training (pjbl-training.com).

The PjBL model training is managed using a management system that emphasizes flexibility and autonomy for participants. The submission space for participants is a Google Form, where they can provide feedback and insights gained from the PjBL training sessions. All training features, from session materials to participant submissions, are housed on the same page, organized per session. The PjBL training is structured in a concise yet comprehensive management system. The training materials consist of seven (7) sessions that combine elements of the PjBL model with experiential learning. The main topics of these sessions are derived from the concepts and principles of experiential learning, while the forms and examples of application are relevant to the PjBL model. These seven topics are: (1) briefing; (2) action; (3) debriefing; (4) project collaboration; (5) activity variations; (6) innovative discussions; (7) facing challenges and pressures.

The e-module product underwent validation by two expert validators, each focusing on specific validation topics. The validation topics encompassed training management and information technology & communication. The validation regarding training management aimed to assess the product from the perspective of PjBL training administration. Meanwhile, the validation concerning information technology & communication aimed to evaluate the product in terms of system development, user accessibility and usability, and overall product presentation. Dr. Yari Dwikurnianingsih, M.Pd served as the validator for training management, while Prof. Dr. Kristoko Dwi Harmono, M.Kom acted as the validator for information technology & communication.

The summary of product validation results analyzed by IT experts and training management experts shows the feasibility of e-module-based PjBL training products with an experiential learning approach, as presented in tables 1 and 2.

Table 1. Recapitulation Results of Management Experts' Validation

No.	Validation of Training Management Experts	Average Score	Result	Criteria
1	Technical Quality	4.38	88%	Excellent
2	Quality of Training Management Development	4.33	87%	Excellent
3	Quality of Usefulness	4.5	90%	Excellent
	Average validation value of training management experts	**4.40**	**88%**	**Excellent**

Table 2. Recapitulation Results of IT Experts Validation

No.	Validation of IT Experts	Average Score	Result	Criteria
1	Technical Quality	4.38	88%	Excellent
2	Display Quality	4.78	96%	Excellent
3	Quality of Usefulness	5	100%	Excellent
	Average validation value of IT experts	**4.72**	**94%**	**Excellent**

Based on the validation results from the two expert validators on the PjBL training e-module product, the product was rated as good and ready for field testing with some revisions. These revisions include enhancements in the feedback upload area for training participants, additional features to facilitate product use, and improvements in the presentation methods to make them more engaging and creative by incorporating images, graphics, videography, virtual reality, and augmented reality.

Furthermore, quantitative data were also collected from teachers who participated in the training and completed an overall evaluation of this e-module product. The evaluation aimed to assess all aspects of the website product, including technical aspects, appearance, and the quality of training sessions. The summary of these evaluations is presented in Table 3.

Table 3. Recapitulation Results of Product Assessment by Users

No.	Results of Product Assessment by Users	Average Score	Result	Criteria
1	Uniqueness of idea	5.00	100%	Excellent
2	Ease of website use	5.00	100%	Excellent
3	Website visual appearance	4.67	93%	Excellent
4	Access, connectivity and features	5.00	100%	Excellent
5	Session Quality	4.67	93%	Excellent
6	Session Suitability	5.00	100%	Excellent
7	Session Clarity	4.67	93%	Excellent
8	Experiential Learning concept	4.67	93%	Excellent
9	Flexibility	4.00	80%	Good
10	Website usefulness	5.00	100%	Excellent
	Average Score by users	**4.77**	**95%**	Excellent

From the data, it can be concluded that the product is categorized as very good and suitable for use. However, the aspect of training time flexibility is still in the good category and needs further improvement.

Discussion

The PjBL e-module training product was tested on four research subjects from various teaching backgrounds. Three subjects were teachers from SMA Budya Wacana Yogyakarta, and one was from SMPN 10 Salatiga. The three teachers from SMA Budya Wacana were Harvesto Jalmav, an English teacher; Wury Yuanika, a Christian Religious Education teacher; and Angga Ryon, a PPKN (Civics Education) teacher. The teacher from SMPN 10 Salatiga was Slamet Budi Handoyo, a Biology teacher.

The results of the field test show that the e-module product provides significant benefits in project-based learning (PjBL) training. The e-module successfully introduced a new perspective to the training, improved participants' understanding of the basic concepts of PjBL, and offered a creative and innovative experiential learning method (Elvarita et al., 2019; Jatisunda & Nahdi, 2020). The training was practical and provided an in-depth knowledge of each session. For example, the "Brief" session highlighted the importance of context setting and audience conditioning in learning. Participating teachers emphasized that the briefing part of teaching is often overlooked, even though it plays a crucial role in determining the direction and effectiveness of learning (Fitria & Muslimah, 2023; Hastuti et al., 2020). In addition, one of the teachers mentioned that the briefing material presented was easy to understand and relevant to be applied directly in the classroom, emphasizing the importance of understanding instructions, audience, and rules/methods in learning. Overall, this e-module enriches participants' learning experience and provides practical guidance that can be applied in daily teaching (Lubis, 2022; Yulmi, 2021).

The participants' understanding of the importance of managing instructions within the brief to initiate each PjBL activity aligns with previous research indicating that effective PjBL instructional strategies can alleviate students' cognitive load (Jatisunda & Nahdi, 2020; Zulfa et al., 2023). Furthermore, in the training session that developed e-module-based management with an experiential learning approach, it was found that participants could understand and improve their understanding of the critical points in each session, especially in the session "Action." This session emphasized providing open space for students to experience and explore Project Based Learning (PjBL) based learning. Teachers like Wury Yuanika from SMA Budya Wacana stated that this session helped them understand the importance of allowing students to learn independently under the teacher's guidance. Teachers provide experimental space for students and monitor the learning process to ensure alignment with the set objectives. Harvest Jalmav, the English teacher, emphasized the importance of two aspects in this action session: experimental space and monitoring conditions, where students' freedom is ensured to remain purposeful and safe. Angga Riyon Nugroho, the PPKN teacher, also emphasized that students' freedom to choose and determine learning projects is essential so that they can be responsible for the tasks given without excessive intervention from the teacher. This is in line with the basic principle of the PjBL model, which places students' freedom and learning experience at the core of the learning process (Arbi, 2023; Mayanty et al., 2021).

PjBL model is a student-centered instructional approach based on three constructivist principles: learning within a specific context, active student engagement in the learning process, and the achievement of their goals through social interaction and sharing of knowledge and understanding (Sari et al., 2021; Yunus et al., 2020). The congruence between Angga's statement, highlighting the essence of the action session in this e-module as providing space for students, and prior research advocating for the same concept, demonstrates that the content of this e-module's material aligns with the foundational principles of PjBL and successfully fosters participants' understanding (Lastri et al., 2019; Sopian, 2022).

Based on the results of the debriefing session, the trainees managed to identify and reflect on the subject matter, emphasizing the importance of giving meaning to learning. Mrs Wury Yuanika, a participant, admitted that this material reminded her of the importance of meaningful reflection in the learning process, where the meaning given must be directed at students' self-reflection as the centre of learning activities so that learning becomes an experience that shapes both the cognitive and affective aspects of students. This aligns with Mr Angga Riyon Nugroho, a PPKN teacher at Budya Wacana High School, who stated that learning must guide students to reflect on the material to be applied in everyday life. This opinion is supported by Mr Slamet Budi Handoyo, a Biology teacher at SMPN 10 Salatiga, who emphasizes that reflection helps the subject matter stick better in students' minds and is more effective if followed by simple application. On the other hand, Harvesto Jalmav, an English teacher at SMA Budya Wacana, also emphasizes the importance of learning interpretation, where students not only experience the learning process but also reflect on and interpret their experiences, which are then integrated into future learning activities. This approach shows how reflection and interpretation can be used effectively to improve students' understanding and application of the material by the principles of Experiential Learning (Suanto et al., 2022; Winandari et al., 2022).

In the research on developing e-module-based training management with an experiential learning approach to improve teachers' implementation of Project Based Learning (PjBL), the interview results showed that participants' understanding and application of PjBL principles varied (Hakim & Hairunisa, 2022; Prabawati & Suparman, 2019). However, Harvesto Jalmav, an English teacher at Budya Wacana High School, demonstrated a deep understanding of the importance of collaboration in group dynamics, as outlined in the PjBL e-module in the fourth session. Jalmav explained that collaboration often involves conflicts that arise early in group discussions, which require mutually agreed and implemented solutions. This suggests that the collaborative process, although prone to conflict, is an essential part of PjBL and necessary for an immersive learning experience. This finding aligns with experiential learning theory, which emphasizes life experiences as an integral part of learning, and previous research states that group dynamics in PjBL can trigger conflict but also strengthen participants' active engagement and reflection in solving real-life tasks collectively (Lastri et al., 2019; Winandari et al., 2022). Harvest Jalmav also emphasizes flexibility in the collaboration process, where students are free to choose groups and seek input from other groups, which enriches their learning process.

The dynamics described by Harvesto Jalmav suggest that every problem can be addressed, and every goal can be achieved. This is supported by previous research, where various forms of problem-solving and experiential learning help individuals think creatively, solve problems, make decisions, and develop communication skills (Lapase, 2021; Suanto et al., 2022). PjBL model focuses on goal achievement through collaboration by students. This aligns with the statements made earlier by Harvesto Jalmav regarding the collaboration module.

Based on research conducted on various teachers from different subject backgrounds as research subjects, the results indicate that training in the PjBL model using experiential learning approaches can provide different experiences and deeper understanding for these teachers. The evaluation results of each module indicate that each participant experiences a renewal in their understanding of PjBL, becoming more familiar with the connection between PjBL and experiential learning, as evidenced by the reflective sharing of the training participants, as well as the field practices related to the training content (Setyorini & Masulah, 2020; Winandari et al., 2022). This research has the advantage of providing a practical and structured tool to improve teachers' skills in implementing PjBL, which positively impacts students' engagement in learning. The implication is the potential for

improving the quality of education through better teacher competency development and more effective implementation of PjBL in the classroom. However, of course, this research still needs to improve, namely the limitations in measuring the e-module application's long-term impact on the overall learning quality. For future research, it is recommended that broader and more diverse trials be conducted to get a more comprehensive picture of the effectiveness of e-modules in various learning contexts.

4. CONCLUSION

Based on data analysis and discussion, it can be concluded that the product produced is an e-module-based PjBL training management system with an experiential learning approach. With the availability of the e-module, PjBL training can be carried out independently and flexibly, overcoming the constraints of limited time and human resources from both the school and the local education office. Product validation test of e-module-based PjBL training management system with experiential learning approach showed validation results by IT experts of 94%, by training management experts of 88%, and limited trials resulted in 95% with "very good" assessment. Based on these results, it is stated that the e-module product is valid and suitable for use in the learning process. Through training on the PjBL model with an experiential learning approach, it can provide different experiences and a deeper understanding for teachers, as well as improve the implementation of Project Based Learning (PjBL) in the learning process at school.

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