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Implementation of Project Based Learning Making Gamelan Awi Laras Salendro at SMK Al-Huda Sariwangi

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ABSTRACT

This study aims to identify and describe the design, process and product implementation of the project-based learning (PjBL) of making gamelan *awi* (bamboo) laras salendro at SMK Al-Huda Sariwangi. This learning model are expected to provide experience and understanding regarding the making of *awi* gamelan, especially starting from the beginning of the process to producing the product. This research is a qualitative research with the steps in the research based on PjBL stages. Data collection techniques are observation, interview, documentation and questionnaires. The results of this study prove that the implementation of the PjBL learning model are quite effective in terms of students' cognitive, affective and psychomotor aspects related to gamelan. Students have a better understanding of gamelan knowledge, concern for preserving gamelan, and improving student skills. The results of this study are expected to be a reference and become an idea for the use of learning models for future researchers.

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1. INTRODUCTION

Learning, in essence, is not merely the transmission of information but also a professional activity that requires teachers to integrate fundamental teaching skills effectively and to create an efficient learning environment (Mashudi, 2016). Therefore, in the learning process, teachers need to create a conducive atmosphere and employ learning strategies that engage students' interest. Both exact and non-exact subjects taught in schools require a well-structured learning situation so that students can conveniently comprehend the instructional material delivered by the teacher. This is particularly important in cultural arts education, which emphasizes practical learning more than theoretical knowledge and necessitates the use of learning media, such as musical instruments.

Cultural arts education particularly in the subject of music, involves not only creative musical performance but also fostering creativity through the introduction of musical instrument-making as a learning medium. This approach aims to support the availability of musical instruments as learning media in cultural arts lessons. Learning media such as musical instruments do not necessarily have to be provided solely by institutions or schools; the provision of supporting tools for learning activities can be implemented through classroom learning processes. One effective way to support the procurement and implementation of learning media is by creating gamelan instruments made from bamboo, commonly known as gamelan awi. The construction of these instruments must be accompanied by the study of organology, as each instrument has its own organological characteristics. Importantly, the gamelan awi can serve as an effective learning medium in cultural arts education.

Learning media are essential as a supporting tool for students to facilitate a quicker and more effective understanding of the material being taught. According to Surraya (2012), "Learning media are tools that can assist the teaching and learning process and function to clarify the meaning of messages or information conveyed, thereby helping to achieve the planned learning objectives." Furthermore, the general purpose of using learning media, as stated by Lestari, Ariani, & Ashadi (2014), is to assist teachers in delivering messages or learning material to students in a way that is easier to understand, more engaging, and more enjoyable for learners. Therefore, the availability of learning facilities or media significantly aids students in rapidly comprehending the material presented. One school that facing this challenge is SMK Al-Huda Sariwangi Tasikmalaya.

SMK Al-Huda Sariwangi strongly encourages cultural arts teachers to develop students' creativity through practical musical instrument activities. However, this poses a challenge for teachers due to the lack of musical instrument facilities; not only are musical instruments unavailable, but there is also no dedicated arts room, and even classroom space is insufficient. The creation of simple musical instruments as a form of practice in learning can stimulate students' creativity. In addition to gaining creative experience, the process of making musical instruments also produces tangible products that can serve as school inventory and represent creative outputs.

The lack of music learning media at SMK Al-Huda Sariwangi presents a significant challenge in the teaching and learning process, such as the absence of an arts room and musical instruments to support effective learning. This situation is regrettable, considering the high potential and enthusiasm of the students, which is not adequately supported by appropriate learning media, particularly musical instruments, resulting in suboptimal learning outcomes. Based on the researcher's observations and curriculum development

considerations, there is an opportunity to innovate by creating learning media derived from the surrounding environment that can be utilized as learning tools or musical instruments. For example, musical instruments can be crafted from coconut shells, recycled materials, and plants, as these materials are abundantly available within the school environment. One viable material for making musical instruments is bamboo.

Bamboo trees are abundant in the school environment, with several varieties present, including *bambu surat*, *bambu haur koneng*, *awi hideung*, and *awi bitung*. However, among these, *awi bitung* is the type most commonly used by musical instrument craftsmen. The advantages of *awi bitung* compared to other bamboo varieties lie in its thickness, which is suitable for tuning—especially for producing high notes—its ability to generate quality sound, and its durability when used as a material for musical instruments.

The development of bamboo-based instruments in cultural arts education, particularly in music at schools, is, in the researcher's view, worthy of thorough development. Teachers can even innovate both in their teaching strategies and in the instruments they employ. This approach aligns with the curriculum at the vocational high school (SMK) level, which incorporates project-based learning in music education during the odd semester. Project-based learning centers on students solving problems with guidance from the instructor. In this study, the researcher acts as the instructor who observes and guides the students throughout the learning process.

2. LITERATURE REVIEW

Learning is one of the common approaches used to stimulate and enhance the thinking processes of each student engaged in the learning activity. A conducive teaching and learning environment supports the occurrence of effective learning interactions between educators and students, thereby enabling the learning objectives to be achieved with optimal outcomes. Linguistically, learning is a translation of the word "instruction." There are numerous definitions and interpretations of learning. Learning can take place when there is individual student activity and a conditioned environment. This is emphasized by Gagne and Briggs, as cited by Sunarti (2013), who state,

Learning is a system aimed at assisting the student learning process, comprising a series of events that are carefully designed and organized to influence and support the internal learning process of students. Meanwhile, learning is defined as a human activity that continues throughout one's lifetime. Therefore, throughout their lives, individuals must and will continue to learn, as life constantly changes in accordance with the increasingly rapid development of the times.

The indicators of learning success are observed from the development of students in cognitive, affective, and psychomotor domains. As stated by Bambang Warsita (2008:62), learning is always associated with efforts or processes of behavioral change in individuals as a result of their interaction with various learning resources in their environment. These behavioral changes include changes in knowledge (cognitive), skills (psychomotor), attitudes (affective), and values. Furthermore, the levels or stages of success in the teaching and learning process are described by Djamarah and Zain (2010:108).

Project Based Learning (PjBL) is a learning model that organizes the classroom around student-centered projects (Thomas, 2000). According to NYC (2009), PjBL is a learning

strategy in which students are at the center, required to construct their own content knowledge and demonstrate their understanding of that knowledge, as well as to showcase new understandings through various forms of representation. Meanwhile, George (2005) defines it as a dynamic learning approach in which students actively explore real-world problems, face challenges, and acquire deeper knowledge. Based on these expert definitions, it can be concluded that PjBL is a student-centered learning model designed to build and apply concepts through projects that are developed by exploring and independently solving real-world problems. The implementation of the project based learning model in learning activities requires several stages to achieve the learning objectives of PjBL. The stages of PjBL have been developed by two experts, The George Lucas Education Foundation and Dopplet. The syntax of PjBL (Kemdikbud, 2014) is as follows:

- **Phase 1: Determining Fundamental Questions**
Learning begins with essential questions, which serve to assign students activities for engagement. These questions are formulated by selecting topics that align with real-world contexts and commence with an in-depth investigation. The questions posed should not be easily answered and must guide students toward creating projects. Typically, such questions are open-ended (divergent), provocative, challenging, require higher-order thinking skills, and are relevant to the students' lives. Teachers strive to ensure that the chosen topics are pertinent to the students.
- **Phase 2: Project Planning.**
Planning is conducted collaboratively between the teacher and the students. This approach is intended to foster a sense of ownership of the project among the students. The planning process includes establishing guidelines, selecting activities that support answering the essential questions by integrating various relevant materials, and identifying accessible tools and resources to assist in the completion of the project.
- **Phase 3: Scheduling**
The teacher and students collaboratively develop a schedule for completing the project activities. The tasks in this phase include: (1) creating a timeline to complete the project, (2) determining the project's final deadline, (3) encouraging students to plan new approaches, (4) guiding students when they devise methods unrelated to the project, and (5) asking students to provide explanations (rationales) for their time allocation choices. The agreed-upon schedule must be mutually approved to enable the teacher to monitor learning progress and project completion outside of class.
- **Phase 4: Monitoring Students and Project Progress**
The teacher is responsible for monitoring student activities throughout the project completion process. Monitoring is conducted by facilitating students at each stage, whereby the teacher acts as a mentor for student activities. To streamline the monitoring process, a rubric is developed to record all essential activities comprehensively.
- **Phase 5: Assessment Result**
Assessment is conducted to assist the teacher in measuring the achievement of competency standards, evaluating the progress of each student, providing feedback on the level of understanding attained by the students, and aiding the teacher in developing subsequent instructional strategies.

- Phase 6: Evaluation

At the conclusion of the learning process, both the teacher and students engage in reflection on the activities and outcomes of the completed project. This reflective process is conducted individually as well as in groups. At this stage, students are encouraged to express their feelings and experiences throughout the project completion. The teacher and students collaboratively develop discussions aimed at improving performance during the learning process, ultimately leading to new insights that address the problem posed in the initial phase of learning. The teacher and students engage in discussions aimed at improving performance throughout the learning process, ultimately leading to the discovery of new findings that address the problem posed in the initial phase of learning.

Organology is a subfield within ethnomusicology that focuses on the study and description of musical instruments. It examines the structure of musical instruments based on their sound sources, methods of sound production, and tuning systems. Organology aims to provide a comprehensive understanding of the form and construction of musical instruments. This discipline studies both the physical aspects—such as size, shape, materials, decoration, and construction principles—and the functional aspects, including playing techniques and the cultural and social contexts related to the instruments. According to Mantle Hood and other scholars, organology encompasses not only the history and description of instruments but also their classification and the relationship between their physical characteristics and sound production. Thus, organology serves as a scientific framework to analyze musical instruments from both structural and functional perspectives within the broader domain of ethnomusicology. The study of musical instruments is not limited solely to perspectives from culture, visual arts, or archaeology, but also encompasses their physical aspects, including texture, sound properties, and methods of manipulating timbre (Hendarto, 2010). Furthermore, Hendarto (2010) states that "Organology is a branch of study that examines musical instruments from both physical and non-physical aspects." The physical aspects of an instrument include materials, shape, construction, manufacturing methods, physical classification, and so forth. Meanwhile, the non-physical aspects of an instrument encompass its function in music, relationships with musicians' status, history, dissemination, comparison, development of performance techniques, and others. In the music dictionary, Banoe (2003) explains that organology is the science of music that studies musical instruments (not limited to organ instruments only).

Gamelan Salendro is a set of Sundanese gamelan instruments in which all the instruments produce sounds based on the salendro scale. The name of this gamelan ensemble is derived from the tuning system it employs, namely the salendro scale. Gamelan salendro is most frequently used by artists across various genres of art, even though Sundanese karawitan (traditional music) includes several gamelan sets such as gamelan degung and pelog. This serves as evidence that the salendro scale has long been possessed by the Sundanese community as part of their inherited musical tradition, passed down through generations from their ancestors (Saepudin, 2015). In the 1980s, the presence of gamelan salendro became more popular and widely recognized by the public when the Sundanese community was captivated by the emergence of a new genre called 'jaipongan,' which features gamelan salendro in its accompaniment. During this period, many artists merged gamelan degung and pelog instruments to create gamelan ensembles

tuned to the salendro scale. Gamelan salendro is a set of musical instruments tuned to the salendro scale, played by striking. The instruments are made from various materials such as bronze, brass, and iron, and have resonator chambers made of wood, also known as *ancak* or supports for the gamelan, shaped as *penclon* and bars. Gamelan salendro comprises several types of instruments. A complete gamelan salendro ensemble consists of two *saron* instruments, one *peking*, one *demung*, one *selentem*, a set of *bonang*, a set of *rincik*, a set of *kenong*, one *gambang*, one *kempul*, one *gong*, one set of *kendang* (drums), one *rebab* (bowed string instrument), and vocalists (Saepudin, 2015). Over time, there have been numerous developments and innovations initiated by artists and researchers that have brought significant breakthroughs in the context of gamelan. Among various factors carefully considered during this process is the limited availability of gamelan instruments, particularly in the educational sector. Due to budget constraints in acquiring gamelan sets as learning media in schools, the process of teaching music—especially traditional musical instruments—has been less than optimal.

Consequently, students lack direct experience in learning and practicing these materials. In light of the issues previously outlined, various ideas have emerged from artists and music educators as innovations aimed at improving the music learning process. These ideas arose not only due to the lack of learning media but also because of the abundant natural resources available, particularly the wealth of bamboo (*awi*) trees. The plentiful bamboo, which is currently underutilized, has been tested by several artists and studied by researchers. It has been found that bamboo, in addition to being used as a building material and for various household needs, can also be utilized to create a variety of musical instruments, with gamelan being one of them. After undergoing numerous stages and trials by experts, the bamboo gamelan, known as *gamelan awi*, was developed. *Gamelan awi* is a set of gamelan instruments tuned to the *degung* and *salendro* scales, made primarily from bamboo. Although the material differs from traditional gamelan, the tuning systems remain the same, namely *degung*, *salendro*, and *madenda*. Likewise, the names of each instrument correspond to those of bronze gamelan, such as *bonang*, *saron*, *rincik*, and *jenglong*. The distinctions lie in the playing techniques, and *gamelan awi* holds an important role in the teaching of *karawitan* (traditional Sundanese music) in schools (Musik Bambu, 2017, p. 79).

3. METHODS

This study implements Project-Based Learning (PjBL) regarding the creation of salendro-scale bamboo gamelan (*gamelan awi*) at SMK Al-Huda Sariwangi, aiming to provide clarity for the researcher in describing the research design. According to NYC (2009), PjBL is a learning strategy in which students are the central agents responsible for constructing their own content knowledge and demonstrating their understanding of the content they have acquired, as well as showcasing new understanding through various forms of representation. In accordance with the PjBL concept, this study aims to enhance students' problem-solving abilities related to the project, improve their skills beyond those acquired through conventional models, increase student engagement in the learning process, develop and strengthen students' competencies, and foster greater collaboration and interaction among students, as project-based learning is inherently group-oriented and team-based. According to the teacher training material book *Implementation of Curriculum 2013* (2014, p. 50), every learning model has specific objectives in its application, including: enhancing students' abilities to solve project problems; acquiring

new skills and competencies through learning; increasing student engagement in solving complex project problems with tangible product outcomes; developing and improving students' skills in managing materials or tools to complete tasks or projects; and fostering collaboration among students, particularly in Project-Based Learning (PjBL), which is inherently group-oriented. To ensure the validity of the data, the researcher implements an evaluation research method. According to Wirawan in Ambiyar & Muharika (2019, p. 19), evaluation is defined as research conducted to collect, analyze, and present useful information about the evaluation object, assess it by comparing it with evaluation indicators, and use the results to make decisions regarding the object being evaluated. Based on the research problems, questions, and objectives, the researcher employs the evaluation research method to determine the outcomes obtained from this project-based learning study and to serve as a reference for learning media in music education specifically. In the study on the implementation of Project-Based Learning (PjBL) through the creation of salendro-scale bamboo gamelan (gamelan awi), the researcher aims to determine the effectiveness and whether the project-based learning has achieved its intended outcomes. This evaluation research recognizes that one of the objects of evaluation is a program. A program is a plan that involves various units, encompassing policies and a series of activities that must be carried out within a specific timeframe. Therefore, evaluation can be conducted within a designated period to obtain information regarding the achievement of the program's implementation. In this study, the researcher will narrow the focus by concentrating on the final outcomes of the project-based learning model. The type of evaluation employed will be summative evaluation. According to Wirawan in Ambiyar & Muharika (2019, p. 183), summative evaluation is conducted at the conclusion of a program's implementation and measures the final performance of the evaluation object. The purpose of summative evaluation is to determine the results and impact of the program as well as to assess the program's achievement. This evaluation is carried out to appraise a program so that, based on the evaluation results, a decision can be made whether to continue or discontinue the program (Muryadi, 2017, p. 11).

Table 1. Syntax of Project-Based Learning.

No	Syntax	Process	Aims
1.	Determining Essential Questions	Provide several essential questions related to gamelan, explaining differences, types of instruments, scales, playing techniques, materials, and the making process.	• Measure students' prior knowledge about gamelan • Stimulate interest and provide material knowledge • Direct students toward project learning
2.	Designing Project Plan	Students create a design and steps to carry out and complete the project, which is then evaluated by the researcher.	• Learn discipline by always planning • Foster responsibility • Understand proper and effective planning
3.	Scheduling	Students discuss and determine dates for each project phase and set deadlines for completion.	• Ensure clarity in the implementation of each phase • Promote time discipline and responsibility to complete the project on schedule

4.	Monitoring Students and Project Progress	Students carry out the making process according to the plan and schedule, from observation to project completion, while the researcher monitors and guides them throughout.	Guide and direct students so the process runs according to expectations and plans
5.	Testing Results	The final product created by each group is tested and evaluated for any shortcomings.	• Enable students to identify the results of their work • Recognize strengths and weaknesses • Provide learning for future improvement
6.	Evaluating Experience	Students complete a questionnaire prepared by the researcher.	• Measure the effectiveness of project-based learning • Assess students' development in cognitive, affective, and psychomotor domains

4. RESULT AND DISCUSION

Based on the findings obtained during the research process, which was conducted in accordance with the planned theme and title, the researcher attempts to present and discuss the purpose of this study in greater depth to enhance readers' understanding. The discussion refers to the researcher's interpretations grounded in factual observations from the field, as well as relevant theories and expert opinions.

The researcher developed a project-based cultural arts learning process focused on creating bamboo gamelan, aligned with the competencies and stages of cultural arts education, specifically in the music arts material involving the practice of playing musical instruments. Since SMK Al-Huda Sariwangi does not have musical instruments, this posed a challenge for the researcher to find a way for students to continue learning while the school acquires musical instruments. This aligns with Surraya's (2012) statement that "Learning media are tools that assist the teaching and learning process and function to clarify the meaning of messages or information conveyed, thereby enabling the achievement of planned learning objectives."

The general purpose of using learning media is to facilitate the teaching and learning process. Therefore, the researcher intends to develop learning by implementing the Project-Based Learning (PjBL) model through the creation of bamboo gamelan. This approach aims to make the learning process more varied and engaging for students. This is in line with Lestari, Ariani, and Ashadi (2014), who state that learning media help teachers convey messages or lesson materials to students in a way that is easier to understand, more interesting, and more enjoyable for learners

4.1. Design of Project-Based Learning Implementation Through the Creation of Gamelan Awi Laras Salendro at SMK Al-Huda Sariwangi.

In this study, the researcher acts as a cultural arts teacher at SMK Al-Huda Sariwangi, Tasikmalaya. Many considerations are taken into account to determine an effective learning design. In particular, during the design process, the researcher follows several stages: analysis or preparation, planning, implementation, and evaluation, which align with the statements of The George Lucas Education Foundation and Dopplet. The syntax of Project-Based Learning (PjBL) according to Kemdikbud (2014) includes: (1) determining essential questions, (2) designing the project, (3) scheduling, (4) monitoring students and project progress, (5) testing results, and (6) evaluating the learning experience.

Based on the syntax of Project-Based Learning (PjBL), the researcher designed the study in accordance with the following steps: 1) determining the essential question (start with the essential question), 2) designing the project plan (design a plan for the project), 3) creating a schedule (create a schedule), 4) monitoring the students and project progress (monitor the student and the progress), 5) assessing the outcomes (assess the outcome), and 6) evaluating the experience (evaluate the experience). This PjBL syntax serves as the guideline for the entire research process.

In general, it can be concluded that the implementation design of Project-Based Learning (PjBL) through the creation of salendro-scale bamboo gamelan (gamelan awi) at SMK Al-Huda Sariwangi has been carried out effectively by providing guidance and directing students according to the stages of the PjBL syntax. Furthermore, the learning process is student-centered within a project, aligning with Thomas (2000) definition that project-based learning is a model that organizes the classroom around student-centered projects.

Based on the PjBL syntax developed by The George Lucas Education Foundation and Dopplet, as well as the PjBL syntax from Ministry of Education and Culture (2014), the design created in this study corresponds with established theoretical frameworks, thus serving as a reference for subsequent processes.

4.2. Implementation Process of Project-Based Learning Through the Creation of Gamelan Awi Laras Salendro at SMK Al-Huda Sariwangi.

During the implementation process of Project-Based Learning (PjBL) through the creation of salendro-scale bamboo gamelan (gamelan awi), which followed the entire planned stages in accordance with the PjBL syntax, the process ran quite smoothly despite some challenges encountered by the researcher. For instance, when the researcher assessed students' prior knowledge of gamelan by asking several fundamental questions, some students were completely unaware of what gamelan is. Some answered that gamelan is a plucked musical instrument, while others mistakenly identified karinding as gamelan. According to the researcher, this study process was very beneficial, especially for students, in learning about gamelan musical instruments because the researcher subsequently provided a comprehensive explanation of the gamelan material. This aligns with George (2005), who defines a dynamic learning approach in which students actively explore real-world problems they observe, face challenges, and acquire deeper knowledge.

Furthermore, during the gamelan construction planning process, students experienced confusion due to their lack of experience in making musical instruments. Therefore, the researcher provided guidance and direction to ensure that the gamelan project planning proceeded smoothly according to the stages of gamelan construction. As a result, all students began to understand how to design the making of the gamelan musical instrument. After the entire plan was developed step-by-step from start to finish, students discussed within their respective groups to organize the project schedule for making the gamelan. Under the researcher's guidance, it was emphasized that the project must be completed within nine meetings, starting from the observation and interviews with experts to the product testing and experience evaluation.

At the stage of the making process, students only had limited knowledge about gamelan and little experience gained from observations and interviews with expert

bamboo gamelan makers. Consequently, students encountered several difficulties, such as selecting suitable materials that were appropriate for making gamelan instruments, bamboo cutting errors that resulted in significant material waste, and the tuning process, which took considerable time to find the correct pitch for each predetermined bamboo key. However, the researcher continuously guided and directed the students to ensure that the bamboo gamelan construction proceeded according to expectations.

After the gamelan was completed, a trial was conducted with students playing the instruments in groups according to the number of waditra (gamelan instruments). The material taught was the gamelan salendro macan ucul sawilet repertoire. Initially, students were confused because it was their first time playing gamelan instruments. However, due to their high enthusiasm, especially during cultural arts practical learning, they quickly absorbed the material taught and were able to play the bamboo gamelan (gamelan awi) they had made themselves. Based on the above explanation, this aligns with NYC (2009), which states that Project-Based Learning (PjBL) is a learning strategy where students are the center who must construct their own content knowledge and demonstrate their understanding of the content knowledge they have acquired, as well as demonstrate new understanding through various forms of representation.

Based on the implementation process of Project-Based Learning (PjBL) in this study, all stages and procedures align with the theory outlined in the PjBL syntax developed by The George Lucas Education Foundation and Dopplet, as well as the PjBL syntax from the Ministry of Education and Culture (Ministry of Education and Culture, 2014) which consists of six phases of learning

4.3. The Effectiveness of Project-Based Learning Through the Creation of Gamelan Awil Laras Salendro at SMK Al-Huda Sariwangi.

Based on the data and research process obtained regarding the implementation of Project-Based Learning (PjBL) in the creation of salendro-scale bamboo gamelan (gamelan awi) at SMK Al-Huda Sariwangi, the PjBL learning model is quite effective for instruction. This is evident from the PjBL syntax used for project completion, which greatly supports the entire process from the beginning to the end of the learning activities. The project was successfully carried out, as seen from the process and outcomes produced by the students. Although there were some shortcomings, these can be improved in the future to better meet expectations. Overall, this reflects the students' effort to learn by completing a project. This aligns with the Ministry of Education and Culture (Kemendikbud, 2014) statement that PjBL is an in-depth investigation of a real-world topic, which is valuable for students' attention and effort. Furthermore, students gained knowledge and understanding about gamelan, particularly gamelan awi, as well as in-depth experience in its construction. This aligns with George (2005), who defines Project-Based Learning (PjBL) as a dynamic learning approach in which students actively explore real-world problems they observe, face challenges, and acquire deeper knowledge.

The effectiveness of the Project-Based Learning (PjBL) model was also measured through a student test consisting of ten essay questions covering three aspects: cognitive, affective, and psychomotor. The test results showed an average student score of 82.5 or 82.5%. This aligns with the statement by Djamarah and Zain (2010:108): "If 75% of the students participating in the teaching and learning process

achieve a minimum, optimal, or even maximal level of success, then the next teaching and learning process can proceed to new subject matter. However, if 75% or more of the students achieve below the minimum success level, the next teaching and learning process should be remedial.” Based on this statement, it indicates that the PjBL learning model is effective for use in project-based cultural arts education in schools.

The shortcomings found in the implementation of Project-Based Learning (PjBL) through the creation of salendro-scale bamboo gamelan (gamelan awi) at SMK Al-Huda Sariwangi include the lengthy time required, the considerable costs needed to support the project, and a mismatch with the students’ characteristics, as some tend to give up easily when facing difficulties. This is also expressed by Nurfitriyanti (2016),

The weaknesses of the Project-Based Learning (PjBL) model are a) It requires a significant amount of time to solve problems and produce a product, b) It requires sufficient funding to support the needs for tools and materials in producing the product, c) It requires teachers who understand the model or are willing to learn to use the Project-Based Learning (PjBL) model, d) It requires adequate facilities, equipment, and materials, e) It is not suitable for students who easily give up and lack the necessary knowledge and skills, f) It is challenging to involve all students in group work.

Based on the entire learning process carried out by the students, referring to the syntax developed by The George Lucas Education Foundation and Dopplet, as well as the PjBL syntax from the Ministry of Education and Culture (Kemdikbud, 2014), which includes (1) determining the essential question, (2) designing the project plan, (3) creating a schedule, (4) monitoring students and project progress, (5) assessing the outcomes, and (6) evaluating the experience, the implementation of creating the salendro-scale bamboo gamelan (gamelan awi) at SMK Al-Huda Sariwangi Tasikmalaya proceeded well and met expectations. This is demonstrated by the learning outcomes achieved by the students, namely:

- Cognitive Aspect

Students acquired basic theoretical knowledge about gamelan, including understanding the differences in tones or scales, the materials used in making gamelan awi (bamboo gamelan), the techniques for constructing gamelan awi, the parts of the gamelan awi, and the differences between bamboo-based gamelan and bronze-based gamelan. Additionally, students understood the process of making gamelan awi, enabling them to create their own versions of gamelan awi based on their observations and learning throughout the instructional process.

- Affective Aspect

Students showed great enthusiasm during the process of making gamelan awi. They developed a greater appreciation for the works of others, recognizing the difficulty involved in creating art, especially musical instruments. Additionally, a sense of care and responsibility grew among the students to preserve the arts and culture, particularly those originating from West Java, to ensure their continued existence.

- **Psychomotor Aspect**
Students gained hands-on experience from an expert bamboo gamelan maker by learning to craft the components of the waditra saron. As a result, students were able to apply this experience by creating their group's gamelan awi, constructing the parts of a single waditra, mastering the necessary fabrication techniques, and tuning each key on the waditra saron, peking, and demung instruments

5. CONCLUSION AND RECOMENDATION

5.1. Conclusion

The research on the implementation of Project-Based Learning (PjBL) through the creation of salendro-scale bamboo gamelan (gamelan awi) at SMK Al-Huda Sariwangi Tasikmalaya aims to identify, describe, and produce a learning outcome product resulting from the application of the PjBL model. This approach seeks to create an effective and efficient learning process, particularly considering the school's limitations. The implementation of PjBL through the making of gamelan awi is expected to facilitate students' understanding of the subject matter and help solve problems, especially in cultural arts education. The learning process uses the Project-Based Learning (PjBL) model design with the following stages: Start with the essential question, design a plan for the project, create a schedule, monitor the students and the project progress, assess the outcomes, and evaluate the experience.

The results of the research on the implementation of Project-Based Learning (PjBL) through the creation of gamelan awi demonstrated that the model could be effectively applied, despite requiring a relatively long period. Students were greatly assisted in understanding the material related to gamelan, especially gamelan awi, and were able to apply their knowledge by producing a tangible product—the salendro-scale bamboo gamelan—utilizing materials available in their surrounding environment. Thus, the research objectives were achieved and realized as expected, although there were still many shortcomings and challenges encountered during the research process, which were manageable. Based on the research results involving the stages of analysis, design, development, implementation, and evaluation, the researcher, acting as a teacher, was able to implement Project-Based Learning through the creation of salendro-scale gamelan awi at SMK Al-Huda Sariwangi Tasikmalaya. Consequently, the learning process ran smoothly and yielded positive outcomes, notably improvements in the cognitive, affective, and psychomotor aspects of the students.

5.2. Recommendations

Based on the research findings obtained, the researcher offers suggestions or recommendations to the relevant parties. The explanations are as follows:

- **Educators**
The implementation of the Project-Based Learning model applied in cultural arts education through the making of gamelan awi has had a very positive impact on students' intrinsic motivation and has the potential to foster long-term interest in cultural arts subjects. Therefore, educators can consider this model as a viable alternative learning approach to be applied to students.
- **Students**

Through learning activities implemented by Project-Based Learning (PjBL) in the making of gamelan awi within cultural arts education, positive impacts are observed in the cognitive, affective, psychomotor, and auditory (hearing) domains. This student-centered learning model, which revolves around projects and problem-solving, effectively fosters discipline, curiosity, willingness to try, and even presents an engaging challenge for students, thereby naturally enhancing their learning motivation. Therefore, this study can serve as a valuable learning strategy to nurture students' motivation, especially for those experiencing issues such as learning fatigue due to a lack of practical learning media.

- Future Research

This study can serve as a reference for developing cultural arts learning activities, particularly in music education. Several aspects of this learning model need to be examined more deeply and further developed in the future to improve upon the shortcomings and obstacles encountered during the implementation process in this research.

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