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Digitalization-Based Learning Outcomes with the Project Based Learning model in the Vocal Technique Course

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ABSTRAK

Tuntutan pekerjaan saat ini yang erat dengan teknologi harus dipersiapkan baik, generasi muda harus dibekali dengan kolaborasi, kreativitas, pemikiran kritis, dan komunikasi, yang terkait dengan prinsip-prinsip pembelajaran berbasis proyek. Penelitian ini bertujuan untuk menganalisis peningkatan kreativitas dan keterampilan dalam bidang vokal, juga menambah pengalaman belajar melalui digitalisasi. Penelitian ini menguunakan pendekatan kuantitatif dengan jenis pretest posttest control group desain, dengan PjbL sebagai treatment. Instrumen penelitian ini ialah tes keterampilan (performance test) yang dpakai ketika pretest maupun posttest untuk mengukur kemampuan bernyanyi yang terdiri dari aspek phrasering, pitch, dan dinamika. Analisis data menggunakan uji independent sampel t test. Hasil penelitian menunjukkan bahwa model pembelajaran PjBL efektif untuk meningkatkan kualitas keterampilan dan kreativitas dalam bidang vokal berbasis digitalisasi. Peningkatan pada kelompok eksperimen lebih tinggi daripada kelompok kontrol. Oleh karena itu model PjBL dapat diuji untuk diterapkan pada pembelajaran lainnya yang memuat keterampilan dan kreativitas. Model PjBL sangat penting untuk diterapkan pada mata kuliah teknik vokal guna mencapai tujuan pembelajaran.

ABSTRACT

Current job demands related to technology must be well-prepared, and the younger generation must be equipped with collaboration, creativity, critical thinking, and communication, which are related to the principles of project-based learning. This research aims to analyze the increase in creativity and skills in the vocal field, as well as the increase in the learning experience through digitalization. This research uses a quantitative approach with a pretest-posttest control group design, with PjbL as treatment. This research instrument is a skills test (performance test) used during the pretest and posttest to measure singing ability, which consists of phrasing, pitch, and dynamics. Data analysis used the independent sample t-test. The research results show that the PjBL learning model effectively improves the quality of skills and creativity in the digitalization-based vocal field. The increase in the experimental group was higher than the control group. Therefore, the PjBL model can be tested to be applied to other learning that includes skills and creativity. The PjBL model is critical for vocal technique courses to achieve learning objectives.

1. INTRODUCTION

Facing the 21st century, children must also be equipped with 21st century skills, including collaboration, creativity, critical thinking, and communication, which are related to project-based learning principles that support early childhood development. In project mode, students will communicate the results of their activities, an important skill for the 21st century(Nirmayani & Dewi, 2021; Wicaksana & Sanjaya, 2022).The PjBL paradigm is student-centred and independent learning, with the aim of solving complex problems through inquiry and understanding, with a focus on students (focusing on authentic skills), solving in work teams (collaboration), and promoting Educators(Kusnawan, 2021; Mayuni, Komang Ratna, 2019). Students at PjBL are given a great deal of autonomy in designing their own learning experiences and, ultimately, in creating the products displayed.

Students benefit from the project-based learning model in three main ways: (1) building strong and meaningful knowledge and skills through real-world assignments and work; (2) complete curricular activities through a study planning (design) or open inquiry process; and (3) gaining knowledge through

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experience and interpersonal cognitive negotiation in a team setting. The distinctive advantage of the project-based learning model is that it helps students in designing processes to determine results, trains students to be responsible in processing information carried out on projects(Sumarni, 2020; Wicaksana & Sanjaya, 2022), as well as allowing students to create real products from their own results, which are then presented in class. Therefore students in PjBL work in groups to investigate and find solutions to real-world problems as they develop and apply concepts in projects(Lestari et al., 2017; Sari & Angreni, 2018).

The project will be assessed as a learning outcome. Learning outcomes are abilities obtained by individuals after the learning process takes place, which can provide changes in behavior, including knowledge, understanding, attitudes and skills of students so that they become better than before.(Agung et al., 2022; Widiastini & Yudiana, 2021). Learning outcomes are the level of mastery achieved by students in following the teaching and learning program, in accordance with the stated objectives(Astuningtias & Appulembang, 2017; Nirmayani & Dewi, 2021). Learning outcomes are a process to see the extent to which students can master learning after participating in teaching and learning process activities, or the success achieved by a student after participating in learning activities which are marked by certain numbers, letters or symbols agreed upon by the education provider.(Sanatun & Sulisworo, 2017; Suryaningsih et al., 2022).

The learning outcomes in the Vocal Technique course are that students can sing with the correct technique individually and in groups and can produce song covers digitally. In the learning process, students are expected to be able to make arrangements in the form of a chorus (SATB), and produce a work that is published in video form. The fact is that current competition activities related to vocal techniques require competence in the digital sound production process, for example choir competitions, group vocals or solo singing are produced digitally, through recording, editing, mixing and mastering processes. Unfortunately, there are still some participants who record raw directly from their cellphones even though the results obtained are not clean, for example the sound of motorbikes, bird sounds, and even the sound of the wind can still be heard. This certainly affects the assessment if digital processing is permitted. Therefore, the concept of the project based learning model provides opportunities for students to gain this experience as a project so this research is very important to carry out.

The concept of the project is also inseparable from the quality of vocal technique learning. The first technique taught is articulation.Articulation is the formation of words in singing. The pronunciation of words must be clear when singing modern songs so that the song's message reaches the song audience. Articulation is divided into three as follows (1) Articulation of vowel vowels, consisting of 5, namely A, I, U, E and O. These five vowels are very necessary to form words correctly(Larashati et al., 2021; Suryati, 2021); (2) Articulation of consonants/dead letters; and (3) Double modal articulation (Diphthong) where two vowels sound in sequence, the difference between them is the quality of the initial vowel sound and the final vowel sound. Examples of the diphthong "ai" (permai, waving, up), "au" (thou, mengkulau, past). The second technique is the breathing technique. There are three types of breathing, namely: chest breathing, abdominal breathing, and diaphragmatic breathing. This type of chest breathing is not suitable for singing because the chest cavity is not large enough to accommodate air. The best breathing to use for singing is breathing that uses the diaphragm muscle. The diaphragm is the partition between the body cavity and the abdominal cavity at the bottom(Harahap & Sinaga, 2021; Larashati et al., 2021).

Several other vocal techniques are studied using the Eurhythmic Dalcroze approach to emphasize musical sensitivity, namely phrasering,intonation, and dynamics. Singing whole sentences is called phrasering, learning to pronounce letters and then connecting the syllables or sentences. Based on this explanation, it can be concluded that phrasing is breaking up sentences that are good and correct when singing a song. Dynamics is a sign that states the level of sound volume, changes in loudness or softness of sound. Dynamic marking terms are as follows, including fortissimo (very loud), forte (hard), mezzoforte (quite loud), piano (soft), pianissimo (very soft), crescendo (harder), decrescendo (softer).

Similar research shows that by using a project-based learning model, course-based learning, students are more involved because they write and complete project assignments in groups via worksheets.(Irfana, Saidatul, 2022; Yulianto et al., 2017). This data shows that learning activities are improved by using a project-based model. Similar research also suggests that students' ability to think creatively has grown as a result of their participation in dance composition classes. In addition, utilizing PjBL can inspire the emergence of dance-based communication modes(Fujiawati et al., 2020; Lestari et al., 2017). Similar research suggests that project-based learning (PJBL) models have been shown to improve teacher professional development and student outcomes when implemented in the classroom(Fujiawati et al., 2020; Supena et al., 2021). Research shows that students' interest and ability to be creative in arts and culture courses increases when taught using a project-based learning model.

The results of the three previous studies provide benefits from the implementation of project based learning methods on student activity, student appreciation, and student creativity. Apart from that, the project based learning model can also be further developed with better management, according to students'

needs(Elisabet & et al, 2019; Kusnawan, 2021). However, research is needed to find out how effective the application of the project based learning model with a special approach to music learning is on vocal technique learning outcomes. Considering the large number of competitions in the vocal field, apart from making achievements an achievement, you also have experience in competing and producing works in the vocal field. Therefore, the research results can be implemented as a reference in carrying out vocal learning in order to achieve outputs and outcomes in learning. The aim of this research is to analyze the learning outcomes of vocal technique learning with digitalization, which includes affective, cognitive and psychomotor aspects through project-based learning.

2. METHOD

This study used a quantitative methodology, a purely experimental design, and a pre- and post-test control group structure. In this setting, participants in both groups take identical pre-tests at the same time. Then, a unique item-based learning model was implemented for the experimental group but not the control group. Both groups were evaluated using the same assessment after the final exam (post-test). The results of each group on both tests will be compared with each other. The population of this research is all active students of the ISI Yogyakarta Performing Arts Education Department with a total of 171 students. The sample selection utilized a purposive random sampling technique with the criteria of currently taking Vocal Engineering courses with a total of 42 students. After obtaining samples, to determine whether there are differences in starting points between the experimental group and the control group or not, participants are randomly assigned to the experimental group or the control group.

The null hypothesis (H0) of this research states that the project-based learning model has no effect on average student performance before and after implementing the intervention. The use of a project-based learning model is effective if, on average, the post-test scores are higher than the pre-test scores. This is the alternative hypothesis (Ha).This research instrument is a skills test (performance test) which is used during the pretest and posttest to measure singing ability which consists of aspects of phrasing, pitch and dynamics. To determine whether there is a significant difference in the mean scores between the two groups, a paired samples T-test was performed using SPSS 28 software. Finding out whether the data follows a normal distribution is a necessary first step in this analysis. To check normality, the Shapiro Wilk test was run in SPSS version 28 for samples of size 50 or less. If the Sig value for each group is greater than 0.05, the data is considered normally distributed and the test is considered successful.

3. RESULT AND DISCUSSION

Result

By utilizing descriptive analysis, it is determined whether there is an increase in learning outcomes between the control and experimental groups. Based on research resultsIt is known that in both the experimental group and the control group, there was an increase. In the control group the average score increased by 32.99%, while in the experimental group it was 54.73%. Therefore, you canIt is said that the average improvement was achieved more for the experimental group than for the control group. Although both groups faced an increase, the experimental group that utilized PjBl faced a more significant increase.

Based on the research results, it is known that learning outcomes in the control group increased from fair to good. Meanwhile, in the experimental group it increased from fair to very good. As explained in the introductory chapter, the aim achieved in this research is to determine the effectiveness of using the PjBl model in learning vocal techniques on the achievement of digitalization-based learning outcomes. The Independent Sample T-test will show significant differences in learning outcomes between students taught using the PjBL model and students taught without projects.There are also details of the results of the hypothesis analysis experiment in Table 1.

Table 1. Hypothesis Analysis Test Results

Test scores	t-test for Equality of Means					
	F	t	df	Sig. (2-tailed)	Mean Diff	Std. Error Difference
Equal Variances Assumed	0.963	-1.926	32	0.000	-31.4706	5.2228

Based on the results of data analysis using the Independent Sample T-test,where the PjBl model is the independent variable 1 (X1), and the PBL model is the independent variable 2 (X2), and learning

outcomes are the dependent variable (Y). The analysis results show a Sig (2-tailed) value of 0.000 and a calculated t value of 1.926 so that there is a difference in learning outcomes with the PBL model and the PjBl model, which means Ha (alternative hypothesis) is accepted. In other words, the PjBl model is effectively applied in vocal technique learning to improve digital-based learning outcomes.

Discussion

Learning outcomes cover three domains, namely: 1) Cognitive Domain, namely the domain that includes mental (brain) activities. All efforts that involve brain activity are included in the cognitive domain. In the cognitive domain there are six levels of thinking processes, namely: knowledge (knowledge/memorization/memory), comprehension (understanding), application (application), analysis (analysis), synthetic (synthetic), evaluation. (evaluation)(Afriyanti et al., 2021; Narayani et al., 2021); 2) The affective domain, namely the domain in which changes in a person's attitude can be predicted if a person has a high level of cognitive mastery(Purhanudin & Nugroho, 2021; Susanto et al., 2020); 3) The psychomotor domain appears in the form of skills and the individual's ability to act(Purhanudin & Nugroho, 2021; Utama et al., 2020).

In the cognitive domain, the expected learning outcome is that students are able to understand vocal techniques theoretically(Narayani et al., 2021; Paputungan & Lapian, 2020). Before carrying out the research, the samples were given material about vocal techniques such as breathing, phrasing, articulation and intonation. To ensure adequate cognitive material is provided and learning outcomes can be measured, tests are administered prior to treatment. In total, 8 separate processes were run on the sample after initial testing meeting the PjBl model in the experimental class, while the control class implemented the PBL model. In the first treatment, the sample explained the concept of the project to be worked on, namely a digitally processed choir, both audio and video. This is aimed at learning outcomes, where there are lots of virtual competitions, so students need to be equipped with experience in processing a song into a video performance. The songs that are done freely are determined by each group. Likewise with the arrangements, students are required to make new arrangements, meaning they are not allowed to use pre-existing arrangements. Arrangement is adapting a composition that is different from the original composition, usually with the aim of maintaining elements of its musical essence and also with a process of adaptation in such a way.(de Almeida & de Souza, 2018; Firmansyah, 2016).

At the second meeting, each group presented the results of the arrangements using the software used. In this case, students are free to choose the software used. The software most widely used by students is Cubase. Cubase was used because according to interview results, this software tends to be easy to use in creating new compositions or arrangements(Andriyanto, 2020; Laksono, 2018). Apart from Cubase, there are also those who use Fruity Loops Studio or FL Studio. Fruity Loops can encourage students to be more active in creating video and audio works with new digital concepts, and it is hoped that they will be able to create original works of film that have original audio and video(Laksono, 2018; Rahman & Sukmayadi, 2021). To make notations, the software used is Sibellius 7 and Finale 2010. After making a presentation and receiving revisions, students are required to complete according to the revisions given by the lecturer. At the third to sixth meeting, each group began practicing each SATB section according to the arrangements that had been made. There are four types of human voice that are often used in group or choir singing, namely Soprano, Alto, Tenor, Bass (SATB). This arrangement has long been considered the most perfect(Andriyanto, 2020; Zahrotul & Rachman, 2020). The range of sounds that can be used on SATB is wide enough so that each type of sound can accommodate all sound registers. also prepare a timeline of targets that must be achieved each week. At the sixth meeting, each group must obtain approval from the lecturer to continue with the process of creating a digital-based project. At this meeting, each group presented the final results of their concepts and arrangements which had been revised according to suggestions from the teaching lecturer.

This learning certainly increases students' enthusiasm for taking vocal technique courses, studying vocal techniques, learning how to process digital-based sound, learning how to make video clips, and also increases students' interest in taking part in vocal competitions. Apart from improving skills related to vocal technique itself, the PjBL model provides the opportunity to improve other skills(Kumala et al., 2022; Mayuni, Komang Ratna, 2019). This is a coverage of learning outcomes in the psychomotor domain, both in singing skills and skills in producing digital-based sound results. Meanwhile, the affective domain emphasizes students' ability to work together from developing concepts to completing projects, students' ability to discuss when a problem is found, as well as students' ability to tolerate each other.(Fujiawati et al., 2020; Sumarni, 2020).Based on the research results, the PjBL model is effectively applied in vocal technique learning to improve digital-based learning outcomes. This is in accordance with research which states that the project based learning model is able to improve students' ability to sing with the themes of vocal technique, diaphragmatic breathing, articulation, dynamics, head voice and timbre. Indications of this

increase are reflected in the increase in the average student learning scores(Annafi, N., & Agustina, 2018; Kumala et al., 2022). The same thing states that PjBL is effective in improving learning outcomes in the field of digital-based vocals(Mayuni, Komang Ratna, 2019; Sumarni, 2020).

The success of this digital-based PjBL provides an illustration that can be applied to other practical learning which focuses on skills and creativity as learning targets. Scientific developments will always increase, especially regarding technology, so that various learning designs should start to be linked to technology. Project models can also be combined according to needs, for example in the field of music they can be combined with approaches or methods developed specifically for music learning. However, unfortunately the facilities provided are not adequate when a teacher has designed good learning, which is full of technology integration, so that learning is readjusted to existing facilities. For example, teachers need to study applications that are not paid for, design replacement musical instruments using used goods, or other things so that limited facilities do not become an excuse to hinder further learning.

4. CONCLUSION

The Pjbl model provides opportunities for students to hone their creativity both in terms of the ability to arrange for choral formats, improvise in solo singing. Apart from that, it provides opportunities for students to learn the technology used in audio recording. Pjbl with the Eutimika Dalcroze approach can maintain the quality of vocal learning outcomes, especially in the elements of pitch, phrasering and dynamics even though it is done student center. The PjBl model, apart from successfully achieving learning objectives in terms of affective, cognitive and psychomotor learning of digital-based vocal techniques, also increases students' skills in mastering recording equipment, music making applications, and skills in sound editing, especially balancing and tuning in a song.

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