Multimedia Project as Authentic Assessment through Self-Direct Learning

P K Dewi[1], E Setiawati[2], N Budiana[3], Z B Ismail[4], M Fatoni[5]
[1,2,3,4,5]University of Brawijaya, Indonesia, [4]International Islamic University, Malaysia

{[1]phoe3_kumala@ub.ac.id, [2]ety64@ub.ac.id, [3]nia_budiana@ub.ac.id, [4]zuber77@iium.edu.my, [5]muh_fatoni@ub.ac.id}

Abstract. The purpose of this research is improving student skills in multimedia projects with Self Direct Learning and authentic assessment. The procedure involves (1) analyzing basic competencies, learning theories, embodiment of learning behavior, and HOTS learning techniques, (2) selecting information as instructional materials, (3) making test and non-test instruments, (4) choosing types of multimedia applications based on the ACTION principle, (5) producing multimedia, and (6) implementing multimedia. The research method is Classroom Action Research. The data source is 80 students. The results of cycle 1 showed student competencies of 62.5% in the excellent category, 20% in the good category, 6.25% in the satisfactory category, and 11.25% in the poor category. In cycle 2, student competencies were 71.25% in the excellent category, 16.25% in the good category, 6.25% in the satisfactory category, and 6.25% in the poor category. It can be concluded that Self-Direct Learning and authentic assessment can improve the skill of students in the stages of planning, producing, and applying it to Indonesian teaching and learning.

Keywords**:** *Multimedia Project, Authentic Assessment, Self-Direct Learning*

1 INTRODUCTION

The Fourth Industrial Revolution (4.0) has resulted in increased flow of digital information (big data). This has encouraged teachers to be creative in developing students with the abilities to read, analyze, select, and peruse the information that is appropriate to learning goals. Teachers act as facilitators who guide students to think by analysis, evaluation, and creativity in utilizing the data from the information. In addition, teachers should also be skilled in applying technology in learning. In this way, students are expected to be motivated to learn. Students can then learn independently using applications even though they do not meet with the teacher directly. However, what teachers also need to consider is that data literacy and technology literacy ought to make students more collaborative and communicative. A good language competence test is a test that is fully capable of measuring four language skills at a time, namely listening, speaking, reading, and writing competencies. The assessment of language competence should be conducted in an authentic, not discrete or partial way [1]

These effects of the Fourth Industrial Revolution implicates that future teachers who go through teacher preparation education need to be shaped as human resources that possess high

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competence and are able to compete in this era. Lecturers should apply learning techniques and authentic assessments that provide students as future teachers with competencies of data literacy, technology literacy, and HOTS (Higher-Order Thinking Skills). According to Abidin (2015), in facing the Fourth Industrial Revolution, educators should prepare learners to become a generation that is better than the previous one, as well as to be reliable, polite, and well-mannered[2]

One of the courses that prepare students of the Indonesian Language and Literature Education Study Program of the Faculty of Culture Studies of the University of Brawijaya with the competencies of data literacy and technology literacy is the course of Indonesian Language and Literature Learning Media. The learning objectives of this course are for students to be skilled in planning, producing, and applying multimedia in Indonesian language education.

According to the results of a pre-cycle conducted on September 18, 2018, with 80 students, it was found that most of the students have not been skillful in planning, producing, and applying multimedia in Indonesian language education. The data showed that 60% of students were in the poor category, 15% were satisfactory, 6% were good, and 19% were very good. The indicators were that first, the learning and reading materials had not been considered based on the constructivist learning theory and the realization of learning behaviors of the students. Second, the evaluation instrument consisting of test problems had not been able to develop the HOTS of students.

In addition, there had not been any non-test instruments that allow students to measure their own learning process. Third, there had not been interactivity and novelty. This is because from the process standpoint, the lecturer applied an exploratory technique that directed students to identify examples of multimedia in consideration of contents and appropriateness to the basic competence and learning level of students to be taught. The students then produced multimedia with the structural contents of multimedia as indicated by the lecturer, and they composed the steps of applying multimedia in Indonesian language learning. Moreover, the evaluation was only conducted by the lecturer, who only appeared to evaluate their work.

Based on this problem, there needs to be a learning technique and authentic evaluation that prepares students to be leading, be competitive, and have character. The technique of Self-Direct Learning and authentic evaluation based on projects are techniques that are appropriate to those needs. The technique of self-direct learning is a learning technique that guides students to study project-based materials with the emphasis being on the ability of students to make their own decisions that are appropriate to the learning objectives (study balance and awareness monitoring). Grow (in Black, 2018) stated that there are four matters that need to be considered in the application of this technique: (1) teachers should provide clear instructions to the students so that students will understand the learning objectives, (2) teachers motivate and guide students to become actively involved in learning so that students can find out the important detail of each learning procedure and the results that are intended to be achieved, (3) teachers act as facilitators that guide students to develop their knowledge and skills as broadly as possible, and (4) teachers direct students to become independent and responsible subjects in making the decisions of each learning procedure for the progress of their own learning[3]. The role of the teacher in this regard is the monitoring of the student learning process to find out the achievements of student learning and the learning targets (assessment for learning and assessment as learning).

This technique is quite applicable in learning in colleges because multimedia learning can increase the performance students as candidates of educators with the self-learning and self-

direct system[4]. In addition, as candidates of teachers in the Fourth Industrial Revolution, students are part of the new generation that will further develop Indonesian education to a more advanced stage. As such, students must possess in-depth knowledge of advanced information, in-depth understanding, data literacy, digital literacy, and skills in utilizing multimedia in learning.

From an authentic research standpoint, authentic project-based evaluation is required. Authentic project-based evaluation is an evaluation model that evaluates the process of learners in working on certain project assignments in a structured manner and with real experience, leading to the creation of certain products. To realize assessment for learning and assessment as learning, the authentic evaluation based on projects covers authentic evaluation by lecturers and students.

Competencies of multimedia planning include (1) analyzing basic competencies, (2) analyzing learning theories, (3) analyzing the realization of learning theories, (4) data literacy or selecting learning sources that are relevant to the needs of learning, (5) technology literacy or selecting multimedia applications using the ACTION principle (Access, Cost, Technology, Interactivity, Organization, Novelty), and (6) designing multimedia implementations that allow students to develop HOTS, covering thinking by analysis, evaluation, creativity, collaboration, and communication, and to be able to measure their own learning achievements (assessment as learning). According to Songkram, Khlaisang, Puthaseranee, and Likhitdamrongkiat (2015), there are eight aspects that must be well-planned in producing and applying multimedia in learning[4]. These aspects cover media contents, learning management system, communication, evaluation, the role of educators, the role of learners, the role of the school, and learning method.

The competence to produce multimedia is in the form of competence to compose multimedia based on the principle of ACTION. Meanwhile, the competence to apply multimedia is in the form of the competence to compose the steps of multimedia implementation in reference to the selected learning theory and realization of learning behaviors, HOTS, and assessment as learning. According to Surjono and Gafur (2010), multimedia that is optimal to be implemented in learning is that which can trigger and encourage students to learn, facilitate the students to achieve the learning objectives, and instill permanent cognitive, affective, and psychomotor changes among students[5].

For the project-based evaluation to be valid and to affect the competence of learners, according to Kay and Knaack (2009), there are essential elements that must be present in the instrument, including the aspects to be evaluated, descriptors, object data, and decision considerations [6]. Based on this background, the aim of this research is to increase the skills of students through the Self-Direct Learning technique and the model of authentic project-based evaluation on the stages of planning, producing, and applying multimedia in Indonesian language education.

1.1 Research Method

This research is a Classroom Action Research. This is because there are problems in the course of Indonesian Language and Literature Learning Media. The problems were found from the results of the pre-cycle with the instrument of observation guidelines. The results showed that there was a lack of student competence in planning, producing, and applying multimedia in Indonesian language education. For the research, remedial actions were carried out by applying the technique of Self-Direct Learning and authentic project-based evaluation. The stages of application of the Self Direct Learning technique at the planning stage involved

asking the students to (1) analyze basic competence, learning theory, and realization of learning theory, (2) select learning sources that are relevant to the basic competence, (3) select multimedia applications with the ACTION principle, and (4) designing the application of multimedia with the principles of HOTS and assessment as learning. At the stage of multimedia production, students composed multimedia based on the ACTION principle. While the actions were carried out, learning activities were observed using the instrument of observation guidelines. The results of applying these actions were then reflected upon and evaluated to find out the achievement of learning objectives. If the desired aims have not been achieved, then the n^{th} cycle was performed.

The research was conducted at the Indonesian Language and Literature Education Study Program of the Faculty of Culture Studies of the University of Brawijaya. The subjects of the research are students of the Indonesian Language and Literature Education Study Program of the 2016 cohort, numbering to 80 students. The research was conducted from September 18 to November 27, 2018.

The type of data in this research is the student learning process and results. At the stage of data analysis, the following table was used as a guideline for the data analysis of student learning process and results.

Table 1. Guidelines for Data Analysis of Student Learning Process and Results**.**

No.	Score	Category
1	80—100	Excellent
2	75—79	Good
3	69—74	Satisfactory
4	0—68	Poor

Based on Table 1 above, the n^{th} cycle was not necessary if, based on the evaluation by norms, at least 70% of students are categorized as excellent. Meanwhile, based on the evaluation by criteria, students can be said to be skilled if they possessed scores > 75 (good category).

1.2 Results and Discussion

At the pre-cycle stage, the lecturer applied the technique of exploration. At the stage of information processing, the lecturer provided examples of multimedia for the basic competence of reading news with the Lectora Inspire application and multimedia for the basic competence of abstracting texts of negotiation using a Macromedia Flash application. At the stage of critical thinking, students were asked to identify the contents of the multimedia. At the stage of research, students were asked to identify the appropriateness of multimedia to the basic competence and learning level of students to be taught. Then, at the stage of self-discovery, students summarized the contents of the multimedia, the appropriateness of the multimedia to the basic competence and learning level of students to be taught, and the kinds of application that may be applied in multimedia production. Next, at the stage of implementation, students were asked to plan, produce, and apply multimedia. The lecturer evaluated student performance by the aspects of the appropriateness of media to basic competencies, learning level and style of students, function, and the ACTION principle.

According to the results of observation, there were several weaknesses in the application of this exploratory technique. At the stage of multimedia planning, students did not analyze learning theory, the realization of learning behaviors, the composition of test instruments, as

well as techniques of multimedia presentation that allowed students to be taught to develop HOTS, collaborative, and communicative competences. Students also did not compose non-test instruments that allowed students to be taught to measure learning achievements and targets. At the stage of production, students did not apply the principles of interactivity and novelty. This can be seen from the contents of multimedia by students, which were not composed based on specific learning techniques, did not refer to the constructivist theory of learning that direct students to HOTS and realize learning behaviors, did not contain non-test instruments in the multimedia that allowed students to be taught to be able to measure their level of learning achievement, and did not contain novelty because the presentation of media contents only followed the example model demonstrated by the lecturer. At the stage of applying multimedia, students did not compose them based on learning techniques that allow students to be taught to develop skills of thinking by analysis, evaluation, and creativity (HOTS). In addition, there were also no collaborative and communicative procedures among students to be taught.

Seen from the standpoint of authentic evaluation, the evaluation was only carried out by one party, the lecturer. There was no process for students to measure their learning achievements and targets (assessment for learning and assessment as learning). The evaluation aspects applied by the lecturer only regarded the results of the learning of students, and there was no process evaluation.

The learning results of students in planning, producing, and applying multimedia with the exploratory technique are presented in the following table.

Table 2. Learning Results of Students in the Pre-Cycle Stage.

No	Category	Score	Percentage
1	Excellent	80—100	18.75%
2	Good	75—79	6.25%
3	Satisfactory	69—74	15%
4	Poor	0—68	60%

From Table 2 above, it can be seen that out of the 80 students who became the subject of this research, 60% of students were in the poor category, 15% were in the satisfactory category, 6.25% were in a good category, and 18.75% were in the very good category. The indicators were that first, the learning and reading materials had not been considered based on the learning theory of constructivism and realization of learning behaviors. Second, the evaluation instruments consisting of test problems had not been able to allow students to be taught to develop their HOTS. In addition, there were no non-test instruments that allowed students to be taught to measure their learning achievements and targets by themselves. Third, the material presented was not based on learning techniques based on HOTS.

In cycle 1, the lecturer applied the technique of Self-Direct Learning and project evaluation. The procedure was that in the stage of multimedia planning, students were asked to analyze basic competence, learning theory, and realization of learning behaviors; select a learning technique that is appropriate to basic competence and allows students to be taught to develop HOTS; select appropriate reading materials and resources that are relevant to learning objectives; compose test problems that refer to the high cognitive levels of C4 (analyzing), C5 (evaluating), and C6 (creating); composing non-test instruments that allow students to be taught to measure their own learning achievements and targets; and selecting multimedia applications with the ACTION principle. The lecturer measures the skills of students at this stage with the project evaluation instrument that include the evaluation by lecturers and the

students themselves. The evaluation aspects cover the skills of (1) analyzing basic competence, (2) selecting a learning theory appropriate to basic competence and learning objectives, (3) analyzing the appropriateness of realizing learning behaviors with the selected learning theory, (4) selecting a learning technique that is appropriate to basic competence and realizing HOTS, communication, and collaboration, (5) selecting relevant reading materials and resources appropriate to learning objectives (data literacy), (6) composing test problems that refer to high-level cognitive skills (levels C4, C5, and C6), (7) composing non-test instruments that refer to the principles of assessment for learning and assessment as learning, and (8) selecting multimedia applications with the ACTION principle (technology literacy).

In the stage of multimedia production, students compose multimedia with its structural contents covering the basic competence, materials, readings, evaluation, and list of references that have been composed at the multimedia planning stage. Meanwhile, multimedia presentation is adjusted to the selected learning theory, the realization of learning behaviors, and learning technique. The project evaluation aspects are composed of student skills in producing multimedia from (1) the presentation aspect, (2) the content aspect, and (3) the appearance aspect. All of these refer to the ACTION principle.

In the stage of applying multimedia, students compose the Lesson Plan based on the selected learning technique. The aspects of evaluation cover student skills in composing learning procedures that are in line with (1) basic competence and (2) learning theories and the realization of learning behaviors, and learning techniques that allow students to be taught (3) to develop HOTS, collaboration, and communication, (4) to solve problems with principles of the C4, C5, and C6 cognitive levels, and (5) to be able to evaluate their own learning achievements and targets. Next, the evaluation aspects of each stage are formulated in the form of project evaluation by observation guidelines for lecturers and attitude scales for students.

Results of observation indicated that lecturers guided students to determine learning theories. According to Dewi and Budiana (2019), the function of learning theory is to guide students to optimize their self-potential and achieve learning targets [7]. Then, students filled in the multimedia content matrix and its evaluation. For the appearance, the lecturer provides the example applications of Macromedia Flash, Adobe Flash, Adobe Presenter, Powtoon, and Lectora Inspire. Students were then given a choice to determine the application they wished to use, as long as the ACTION principle is followed.

However, from the results of analysis of observational guidelines and attitude scales, it was known that in the stage of multimedia planning, the students had not yet been able (1) to apply the appropriate learning theories, (2) to select materials and techniques that allow students to be taught to think with HOTS, (3) to compose problems that refer to a high cognitive level, and (4) to compose non-test instruments based on the principle of assessment for learning and assessment as learning. At the stage of multimedia production, the multimedia of students were not based on certain learning techniques based on HOTS, collaboration, and communication. In addition, the multimedia presentation had also not been based on specific learning theories, and thus the expected learning behaviors from students could not be predicted. Yet according to Huda (2013), the technique of Self-Direct Learning should enable students to be independent and responsible while making learning decisions, even though they still require the guidance of lecturers [8]. Meanwhile, regarding appearance, students elected to use the applications of Lectora Inspire and Powtoon. However, the aspect of interactivity was not present. In the stage of applying multimedia, the students have not been skilled in composing learning procedures according to learning theories and learning techniques that allow students to be taught to develop HOTS, collaboration, and communication, as well as

problem-solving procedures that have principles of the C5 cognitive level and that allows them to evaluate learning achievements and targets on their own.

The results of the multimedia product evaluation are presented in the following table.

Table 3. Learning Results of Students in Cycle 1.

No	Category	Score	Percentage
1	Excellent	80—100	62.50%
2	Good	75—79	20%
3	Satisfactory	69—74	6.25%
4	Poor	0—68	11.25%

Based on Table 3 above, it can be seen that the skills of students have already been indicated to increase. Students have become skilled in analyzing basic competences, indicators, and learning objectives; understanding learning theories; considering the aspects of access, cost, technology, organization, novelty; and composing test instruments for the C4 and C6 cognitive levels. As well, the multimedia appearance has become more interesting because most of the test problems have been presented in the form of interactive games. Meanwhile, in the stage of applying multimedia, students have become skilled in composing learning procedures that are appropriate to basic competences.

In cycle 2, the procedure applied by the lecturer was that in the stage of applying multimedia, the lecturer provided examples of application of each kind of learning theory in the learning procedures; types of learning techniques that can develop HOTS, collaboration, and communication; types of learning behaviors; test materials and instruments with a high cognitive level, and non-test instruments based on assessment for learning and assessment as learning. In the stage of production, lecturers guided students to compose multimedia with procedures according to learning theories and learning techniques that can lead the students to be taught to think with HOTS. In the stage of applying multimedia, the lecturer guided students to compose procedures appropriate to basic competence, learning theories, learning techniques that can lead the students to be taught to think with HOTS, problem-solving at the C5 level, and the self-measure of learning achievements and targets. The results are presented in the following table.

Table 4: Learning Results of Students in Cycle 2.

No	Category	Score	Percentage
1	Excellent	80—100	71.25%
2	Good	75—79	16.25%
3	Satisfactory	69—74	6.25%
4	Poor	0—68	6.25%

Based on Table 4 above, it can be seen that the skills of students were indicated to have increased in comparison to cycle 1. In the stage of multimedia planning, students were skilled in (1) analyzing basic competences, indicators, and learning objectives; (2) selecting learning theories; (3) predicting the realization of learning behaviors; (4) selecting techniques based on HOTS, collaboration, and communication; (5) selecting reading materials and resources based on HOTS; (6) composing test problems of C5 level and integrating them with interactive games; and (7) composing non-test instruments to measure learning achievements and targets. In the stage of applying multimedia, students became skilled in composing learning procedures appropriate to basic competencies, learning theories, and learning techniques based

on HOTS; selecting relevant reading materials and resources; composing test instruments of C4, C5, and C6 levels; and including non-test instruments to measure learning achievements and targets in the multimedia. This is in line with the technical target of Self-Direct Learning and project evaluation, in that students should be able to make learning decisions that are appropriate to their own learning needs, and be able to control as well as be responsible for those decisions (Wongsri, Cantwell, Archer, 2002; Hidayati and Listyani, 2010) [9]. Considering the guidelines in Table 1, based on the evaluation of norms, there were 71.25% of students with skills categorized as excellent (greater than 70%), and thus a third cycle was not necessary to be performed.

2 CONCLUSIONS

Based on the research results, the conclusions that can be made are that (1) the technique of Self-Direct Learning and project evaluation can increase the skills of students in composing multimedia in the stages of planning, producing, and applying them to Indonesian language education, with 71.25% categorized as very good; (2) in the planning stage, students became skilled in analyzing basic competences, indicators, and learning objectives; selecting learning theories; predicting the realization of learning behaviors; selecting techniques based on HOTS, collaboration, and communication; selecting reading materials and resources based on HOTS; composing test problems of high cognitive levels; and composing non-test instruments to measure learning achievements and targets; (3) in the media-producing stage, students became skilled in presenting as well structuring the contents and appearance of multimedia with the ACTION principle, in accordance with basic competences, learning theories, learning techniques, and evaluation, to realize learning behaviors that rely on thinking by analysis (C4), evaluation (C5), and creativity (C6), as well as to allow for evaluation of learning achievements and targets; and (4) in the applying stage, students became skilled in composing lesson plans that direct students to be taught to be able to develop HOTS.

Students as teacher candidates and teachers are suggested to possess competence in applying multimedia with the Self-Access Learning technique to students to be taught, in order to conceive self-learning and self-direct learning that is linked to lifelong education. Schools are suggested to support the application of multimedia in Indonesian language education to realize the ACTION principle.

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