

## DEVELOPMENT OF ARTIFICIAL INTELLIGENT-BASED LEARNING MEDIA IN TRADITIONAL DANCE LEARNING IN VOCATIONAL HIGH SCHOOLS

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**ABSTRACT :** This study is entitled Development of Artificial Intelligence-Based Learning Media in Traditional Dance Learning in Vocational High Schools. The problem currently found is the unavailability of Artificial Intelligence-based learning media for traditional dance learning in Vocational High Schools. The purpose of this study is: development of Artificial Intelligence-based learning media and to determine the validation, practicality and effectiveness of Artificial Intelligence-based learning media for traditional dance learning in Vocational High Schools. The research method used is the development method (R&D) 4 D model by Thiagarajan with stages of define, design development and dissemination. The collection technique is carried out with validation and reliability tests, practicality and effectiveness tests. Data analysis using validity data analysis and effectiveness test data analysis. This study produces Artificial Intelligence-based learning media in the form of Image Processing (Digital Image Processing) applications with the link: <https://gerakantari.karimhasibuan.com> on the Tatak Garo-garo dance material from the Pak-pak ethnic group. The results of the assessment from the media expert validator consisting of four main aspects of the assessment, namely: (1) Design/Layout 90% very very valid category; (2) Typography Text 95% very valid category; (3) Images, 82% valid category; (4) Media Quality 82% valid category, with an average of 87.25% valid category. The assessment results from the expert validator of the material consisting of four main aspects of the assessment, namely: (1) Learning Material Quality 95% very valid category; (2) Learning Delivery System 95% very valid category; (3) Learning Strategy Quality 85% valid category; (4) Learning Material Language Quality 100% very valid category.; (5) Display Quality 100% very valid category, with an average achievement of 95% very valid category. The assessment results from students consisting of four main aspects of the assessment, namely: (1) Design and layout 94.44% very practical category; (2) Typography text 94.28% very practical category; (3) Images 92.85% very practical category; (4) Media Quality 88.57% practical category, with an average achievement value of 92.53% with a very practical category. The results of the N-Gain value in the effectiveness test obtained a value of 0.85 with a percentage of  $g > 0.7$  with a high category. Based on the N-Gain value obtained, it is known that the development of learning media based on Artificial Intelligence that has been revised by media experts is Very Effective.

**KEYWORDS :** *Development, Learning Media, Artificial Intelligent, Traditional Dance*

### I. INTRODUCTION

Education in the digital era that occurred in the 21st century requires education implementers to be able to integrate Information and Communication Technology (ICT) into all aspects of learning. This era provides opportunities for students to obtain abundant sources of knowledge from various internet sources that are easily accessible anytime and anywhere students are in a fast and easy way. This condition makes educators as the main role holders in delivering education challenged to be able to adjust to meet their scientific competencies according to the demands of the times. Educators are required to be able to communicate and adapt to the times, in this case the development of technology, in addition, with the continued development of the era, it is directly proportional to the development of problems that require solutions with high-level thinking. Research by Scheel, Laura; Vladova, Gergana; Ullrich, André (2022) concluded that although digital learning disrupts traditional learning concepts and activities in higher education, to achieve successful integration of digital learning, student use and acceptance are very important. Therefore, the acceptance of

digital learning in turn depends on the characteristics and dispositions of students, among other factors. Learning media is one of the mandatory components that must be present when the teaching and learning process takes place, including in digital learning, because in general learning media aims to make it easier for educators to provide material and make it easier for students to receive lesson material. Over time, learning media has also begun to develop from manual to digital. The presence of digital learning media provides a variety of innovations in learning, because conventional learning that has been carried out so far is very rigid and monotonous. The use of digital learning media is considered more practical, flexible and not limited by space and time. There are several characteristics of globalization, including the absence of boundaries in the world, applications in human life have progressed towards applications and science, the struggle for human rights, and better cooperation and competence, Akrim (2018). Artificial Intelligence-based learning media or also known as artificial intelligence is currently very popular in learning, because it can simulate human intelligence in machines that are programmed to think and act like humans. Artificial Intelligence is the ability to display behavior that is considered equally intelligent if the ability is displayed by humans. Artificial Intelligence can read human minds based on brain activity, understand human emotions and feelings. Thongprasit, Junjiraporn, Wannapiroon, Panita (2022), stated that currently Information Technology has been integrated as part of life activities. This not only affects teaching and learning methods at all levels, but also the teaching style of each teacher in accordance with the digital era. Therefore, a standard platform must be created for all teachers in order to effectively serve future education policies.

Vocational High Schools in Medan City have several similar subjects, such as general subjects (mathematics, Indonesian, Arts and Culture, PPKN and so on). However, there are several different subjects as characteristics of the Vocational High School which are adjusted to their fields of expertise, such as SMK Negeri 11 Medan whose fields of expertise are music and dance.

Traditional dance is one of the dance learning materials that contains several traditional dance practices from eight ethnic groups in North Sumatra. Traditional dances that will be developed into artificial intelligence-based learning media in this study are eight traditional dances in North Sumatra, including Malay, Nias, Batak Toba, Karo, Simalungun, Pakpak, Sibolga, Mandailing. The results of observations made on the Arts and Culture subject, especially on dance practice materials in several Vocational High Schools in Medan City, are still mostly carried out conventionally, including traditional dance practice subjects, where teachers are only models in dance learning and interspersed with learning media in the form of dance technique learning videos. Therefore, in this study, researchers will develop this learning media using digital learning media based on Artificial Intelligence. This study will develop learning media based on Artificial Intelligence especially in traditional dance subjects, so that this digital learning media can be used by students and teachers.

## II. RESEARCH METHOD

This study uses a Research and Development (R & D) approach. According to Sugiono (2019) the Research and Development method is a research method used to produce products and the effectiveness of the product will be tested.

## III. FINDING

The Artificial Intelligence learning media developed aims to improve traditional dance learning in Vocational High Schools, precisely at SMK Negeri 11 Medan, which is a vocational school in the field of dance. Therefore, the packaging of Artificial Intelligence-based learning media is packaged in the Dance Education Study Program, FBS Unimed and tested on students at SMK Negeri 11 Medan. The research procedure is in accordance with the stages in the 4-D model, namely: Define, Design, Develop, and Disseminate, to be more clear, it is described as follows:

### 1. Define

The define stage is to define the needs analysis in the development of learning media based on Artificial Intelligence in traditional dance learning in Vocational High Schools. The needs analysis consists of:

#### a. Initial Analysis

The initial analysis was conducted by reviewing and analyzing the syllabus of traditional dance subjects based on North Sumatra. In this case, the researcher analyzed the Syllabus and RPP of the traditional dance Tatak Garo-garo originating from Pakpak. The results of the analysis found that the learning media used in traditional dance subjects were still in manual form and none were in digital form (Artificial Intelligence). Therefore, in this study, the researcher developed a traditional dance learning media based on Artificial Intelligence that was adjusted to the local content of North Sumatra, especially the Tatak Garo-garo dance from Pakpak.

#### b. Student Analysis

The identification results found that most students did not understand the Tatak Garo-garo dance material, therefore researchers need to develop learning media based on Artificial Intelligence in order to answer this problem.

### c. Task Analysis

Task analysis is done by analyzing the tasks in the traditional dance subject. The tasks given by the teacher are not only on practical materials but also given tasks on theoretical materials, because for traditional dance learning, students' knowledge (practice and theory) must be balanced so that students dancing the Tatak Garo-garo dance can dance with the correct expression according to the meaning contained in the dance.

### d. Concept Analysis

Concept analysis was conducted by analyzing the concept of learning traditional dance (Tatak Garo-garo) based on Basic Competencies (KD), Standard Competencies (KD) and indicators. In this case, it was found that learning traditional dance in Vocational High Schools was not yet in-depth, because so far teachers have only taught traditional dance based on the teacher's experience in dancing the traditional dance (Tatak Garo-garo). This causes students to be more familiar with the practice of traditional dance and do not know the description of the traditional dance..

### e. Formulation of Learning Objectives

The formulation of learning objectives is carried out to achieve student competencies after learning traditional dance (Tatak Garo-garo), because it will be the achievement of student learning to be able to understand, identify, compare, formulate, present, analyze, create traditional dance Tatak Garo-garo.

## 2.Design

The design was carried out by designing learning media based on Artificial Intelligence with the type of Image Processing for learning traditional dance in Vocational High Schools before being tested on students:

### a.Preparation of Test Standards

The stage of preparing the test standards was carried out by giving an initial test (pretest) to class XI students of SMK Negeri 11 Medan before the material was given. The questions given were related to the Tatak Garo-garo dance which aimed to determine the students' initial abilities in understanding the Tatak Garo-garo dance. After the material was given, a final test (post-test) was given to students which aimed to determine the extent of students' knowledge in understanding the Tatak Garo-garo dance.

### b. Selection of Learning Media

The stage of selecting learning media is carried out by developing learning media based on Artificial Intelligence for dance learning in Vocational High Schools based on material characteristics, learning objectives and student characteristics. The learning media developed is based on Artificial Intelligence with the type of Loomi.

### c. Development

The development stage was carried out by developing learning media based on Artificial Intelligence which began with recording the various movements of the Tatak Garo-garo dance which was carried out in the dance study of the Dance Education Study Program, Faculty of Language and Arts, Unimed.

## 3.Effectiveness Test

### a.Practicality of Artificial Intelligence Based Learning Media

The trial was conducted in class X1 of SMK Negeri 11 with the aim of assessing the practicality of the designed Artificial Intelligence-based learning media which can be observed from student responses in the Traditional Dance subject. The trial results are presented in the following table:

**Table1.Level of Practicality**

No.	Achievement(%)	Category
1	90–100	Very Practical
2	80–89	Practical
3	65–79	Quite Practical
4	55–64	Less Practical
5	0–54	Very Impractical

**Table 2.Student Practical Results**

No	Assessment Aspects	Achievement(%)	Category
1	Design	94,44	Very Practical
2	Typography text	94,28	Very Practical
3	Picture	92,85	Very Practical

4	Media quality	88,57	Practical
	Average	92,53	Very Practical

### b. Effectiveness of Traditional Dance Material

At this stage, learning and assessment are carried out to observe the effectiveness of teaching materials applied to Traditional Dance learning through three stages, namely: pretest, first trial, second trial and posttest. The results of the three stages are presented in the following table:

**Table3. Average Test Results**

Activity	Pretest(%)	Phase 1 Trial (%)	Phase 2 Trial (Posttest)(%)
Score	42,14	64,28	91,42

The results (pretest) of the first stage trial, and the second stage trial and posttest can be described as follows:

#### 1). Pretest

The pretest was conducted by giving 20 questions in the form of multiple choices. The pretest questions contained dance art material. The purpose of the pretest was to determine students' initial abilities in learning the learning materials in Traditional Dance learning. The percentage at the pretest stage obtained an average student score of 44.14% with the category of Quite Effective.

**Table4. Effectiveness of Pretest Results**

No.	Achievement(%)	Number of Students	Category
1	81–100	0	Very Effective
2	61–80	0	Effective
3	41–60	5	Quite Effective
4	21–40	2	Less Effective
5	0–21	0	Very Less Effective

Based on the table above, it can be seen that SMK Class X1 students already have knowledge about traditional dances of North Sumatra from various sources so that it is known that there are 5 students who are quite effective but there are 2 students who are less effective.

#### 2) Phase 1 Trial

The first stage trial was conducted by providing Traditional Dance teaching materials that had been developed but had not been revised based on suggestions from media experts. The percentage of the first stage trial obtained an average student score of 64.28 with an effective category. The students' mastery was grouped into learning effectiveness as shown in the following table:

**Table5. Effectiveness of Phase 1 Trial Results**

No.	Achievement(%)	Number of Students	Category
1	81–100	0	Very Effective
2	61–80	5	Effective
3	41–60	2	Quite Effective
4	21–40	0	Less Effective
5	0–21	0	Very Less Effective

Based on the table above, it can be seen that the development of traditional dance teaching materials tends to be quite effective with 2 students and effective with 5 students.

#### 3). Phase 2 Trial (Posttest)

In the second phase of the trial, the researcher provided revised Traditional Dance teaching materials based on suggestions from media experts. Furthermore, questions (Posttest) were given to students to determine student competence in the Traditional Dance subject. The percentage of the second

phase of the trial obtained an average student score of 91.42 with the Very Effective category. The students' mastery is grouped into learning effectiveness as shown in following table:

**Table 6. Effectiveness of Phase 2 Trial Results**

No.	Achievement(%)	Number of Students	Category
1	81–100	6	Very Effective
2	61–80	1	Effective
3	41–60	0	Quite Effective
4	21–40	0	Less Effective
5	0–21	0	Very Less Effective

Based on the table above, it can be seen that the development of Traditional Dance materials tends to be very effective with 6 students and effective with 1 student. The N-Gain value obtained in the effectiveness test got a value of 0.85 with a percentage of  $g > 0.7$  with a high category. Based on the N-Gain value obtained, it is known that the development of learning media based on Artificial Intelligence that has been revised by media experts is Very Effective.

**Table 7. N-Gain Score Criteria**

N-Gain Score	Category
$g > 0,7$	High
$0,3 \leq g < 0,7$	Medium
$g < 0,3$	Low

**Table 8. N-Gain Score Criteria**

No.	Achievement (%)	Category
1	90–100	Very Practical
2	80–89	Practical
3	65–79	Quite Practical
4	55–64	Less Practical
5	0–54	Very Impractical

**Table 9. Student Practical Results**

No	Assessment Aspects	Achievement(%)	Category
1	Design	94,44	Very Practical
2	Typography text	94,28	Very Practical
3	Picture	92,85	Very Practical
4	Media quality	88,57	Practical
	Average	92,53	Very Practical

The results of the students' assessments consisted of four main aspects of the assessment, namely: (1) Design and layout, which was at a value of 94.44% with a very practical category; (2) Typographic text, at a

value of 94.28% with a very practical category; (3) Images, at a value of 92.85% with a very practical category; (4) Media Quality, at a value of 88.57% with a practical category, with an average achievement value of 92.53% with a very practical category.

#### IV. CONCLUSION

The problem currently found is the unavailability of Artificial Intelligence-based learning media for traditional dance learning in Vocational High Schools. The purpose of this study is: development of Artificial Intelligence-based learning media and to determine the validation, practicality and effectiveness of Artificial Intelligence-based learning media for traditional dance learning in Vocational High Schools. The research method used is the development method (R7D) 4 D model by Thiagarajan with stages define, design, development and dissemination. The collection technique is carried out with validation and reliability tests, practicality and effectiveness tests. Data analysis using validity data analysis and effectiveness test data analysis. This study produces Artificial Intelligence-based learning media in the form of Image Processing (Digital Image Processing) applications with the link: <https://gerakantari.karimhasibuan.com> on the Tatak Garo-garo dance material from the Pakpak ethnic group. The results of the assessment from the media expert validator consisting of four main aspects of the assessment, namely: (1) Design/Layout 90% very very valid category; (2) Text Typography 95% very valid category; (3) Images, 82% valid category; (4) Media Quality 82% valid category, with an average of 87.25% valid category. The assessment results from the expert validator of the material consisting of four main aspects of the assessment, namely: (1) Learning Material Quality 95% very valid category; (2) Learning Delivery System 95% very valid category; (3) Learning Strategy Quality 85% valid category; (4) Learning Material Language Quality 100% very valid category; (5) Display Quality 100% very valid category, with an average achievement of 95% very valid category. The assessment results from students consisting of four main aspects of the assessment, namely: (1) Design and layout 94.44% very practical category; (2) Typographic text 94.28% very practical category; (3) Images 92.85% very practical category; (4) Media Quality 88.57% practical category, with an average achievement value of 92.53% with a very practical category. The N-Gain value obtained in the effectiveness test was 0.85 with a percentage of  $g > 0.7$  in the high category. Based on the N-Gain value obtained, it is known that the development of learning media based on Artificial Intelligence that has been revised by media experts is Very Effective.

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