

Development of Sport Massage (e-Sport Massage) Based on Android App with ADDIE Design as a Learning Media for Students

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Abstract The purpose of this research is to produce an e-sport massage application based on an Android app with ADDIE design and effective as a learning media for students. This study hopes to improve students' interest in sports massage courses by making it simple for them to learn on-the-go via applications on their smartphones. This study makes use of the ADDIE model design for research and development (Analyze, Design, Develop, Implement and Evaluation). The research is conducted at Muhammadiyah University Palu and Tadulako University. There are 36 research participants from two distinct campuses. The results of the content expert validation study suggest that the agree category has an average score of 0.78 across all elements, indicating that the research development model module is within the bounds of acceptable qualifications, allowing for necessary revisions. The experts in learning design validated their findings with an overall average score of 0.73 in the agree category, this indicates that multiple changes are required even though the e-sport massage application development is well qualified. According to the validation analysis performed by experts in learning media, the overall average score is 0.83, falling into the agree group, which indicates that the module is extremely high quality and does not require revision. According to the trial's findings, it showed an increase in effectiveness; whereas students' average scores before utilizing these media were 65, after using this e-sport massage application, they were 80. The results of the

assessment used pre-test and post-test, where before pre-test students have not used e-sport massage and when post-test students have used the media. The e-sport massage application can improve practicum skills by 80%, while the product acceptability of e-sport massage applications to students is 90%, which shows that this application can be applied to students very well. We recommend that this application be developed further and that further research be conducted.

Keywords e-Sport Massage, ADDIE Design, Learning Media

1. Introduction

One of the learning outcomes of the sport massage course is to prepare students to be able to administer and implement sports massage for athletes, sports players, and the general public who require aid in maintaining their fitness. After engaging in sports, athletes may benefit from receiving sport massages, which stimulate, relax, or lessen stress and weariness [1]. Sport massage is massage geared toward healthy individuals; in this instance, it does not have the concept that sport massage is solely for athletes, whether they are elderly or young, male or female [2]. Sports massage can help people recover from injuries of all

sizes, including mild ones. Meanwhile, sports massage (massage) involves manipulating bodily tissues with the hands. It will have an impact on the neurological system, muscles, and nerves [3]. Sport massage offers the advantage of restoring a person's physical state when they are physically worn out from an activity. Sports massage has advantages like enhanced recuperation, performance, and injury avoidance [4]. The sport massage course is a continuous combination of theory and practice in the Health and Recreation Physical Education Study Program (PJKR Study Program), with continual deepening of the content and practice. There is a difference between the learning process and the expectations for the lecture's outcomes when it comes to the implementation of sports massage lectures. Of course, there is a distinction between the learning process and the goals for the lecture's outcomes.

According to observations and interviews conducted by researchers, Muhammadiyah University of Palu and Muhammadiyah University of Luwuk:

The results of interviews of 15 students from these campuses and 6 lecturers supporting sports massage courses, it was stated that the implementation of learning was not all in accordance with the goals and expectations of lecturers and students, especially in brave learning during the Covid 19 pandemic. Lecturers are still experiencing difficulties in providing material in the form of practices that they have applied in pre-pandemic learning which is easily transfer material and students are able to practice it well. In addition, there are also lecturers who feel they are still not confident with the results of student abilities because there is no guarantee that students will pay close attention to the practicum material carried out by lecturers while studying well.

The main obstacle for students during practice is that there are no detailed, clear, and easily accessible practice guidelines, even though they are in an area where the signal is not good. In addition, the differences in cognitive and psychomotor abilities between students are also different. Students are not able to understand and practice because when listening to an online practice carried out by lecturers in charge of courses constrained by signals so that the learning process is disrupted. After lectures, students are given the task of practicing it in society. The results of the practicum vary, some students do the practicum but the results are in a bad category. There are still wrong massage movements. There are also students who are still confused about what movements to do. This situation causes students to feel bored and depressed with the assignments given by the lecturer.

With these issues, a solution is required to get around them. One solution is to create teaching aids or learning media that are interested in promoting learning and that can be utilized as a student practicum companion in any situation, regardless of whether the signal is strong or not. Teaching aids are instructional materials that convey the features of the idea getting learned [5]. Meanwhile, it

proposes that incorporating learning media into the teaching and learning activities might boost students' motivation and interest in engaging in educational activities as well as have a variety of psychological effects on them [6].

Students must be involved in the media use during the learning process for it to be meaningful. The learning media that can be offered can be in the form of an Android application with the name e-sport massage, which students can download directly on students cell phones via the Play Store once downloaded they can access the application offline or online, with the convenience of this application it can make it easy for students to learn wherever and whenever students can practice sports massage directly with the e-sport massage application guide so that massage movements can be detailed and correct. With such conditions, it can achieve optimally the learning objectives.

2. Materials and Methods

In this study, ADDIE model has been developed through Research and Development [7][8]. The basic elements of the instructional design accompany the ADDIE model [9]. The ADDIE model can make learning effective in the classroom [7]. The steps of this research are as follows: a) Analyzing; this stage comprises learning analysis, analysis of instructional goals, analysis of data, analysis of needs, and analysis of the resources that are currently available. This stage comprises internal evaluation efforts, external evaluation, and redesign of the system being produced. b) Design, c) Develop, d) Implement, e) Evaluate [10]. At Tadulako University and Muhammadiyah University in Palu, this study was carried out. One specialist in lecture materials, one in learning design, and one in learning media make up the subjects. 36 students who had completed sport massage classes at PJKR FKIP UNTAD and IKOR UNISMUH Palu served as the subjects of the most recent trial. The information gathered through the use of formative evaluation is divided into four sections: (1) the first stage evaluation data in the form of the outcome of the lecture material content test, (2) the second phase assessment data in the form of the test results from the learning design experts, and (3) the third evaluation data in the form of the test results from the learning media expert, and (4) data from the fourth stage evaluation in the form of findings from small group tests.

The instruments used are observation and questionnaires. Questionnaire sheets were used to collect data from the results of reviews from subject matter experts, design experts, media experts, and students. And lastly, the data were analysed descriptively qualitatively and descriptively quantitatively, the qualitative data researcher used a questionnaire to get the result from the validator product to know the effectiveness of the development of e-sport massage. For the qualitative data, the researcher used interviews with lecturers to get information about the

condition of sport massage learning process and the utilization of e-sport massage in classes.

Validation of the final product is done following complete repair of the actuarial mathematics module. The analysis of product design test findings is conducted by specialists such learning module specialists, learning device specialists, and small group tests using test subjects who are students. Lawshe [11] suggests using the Content Validity Ratio (CVR) when examining validity, I can substantiate the content validity of an item using CVR. I carried the content validity out to ascertain whether the content of the questionnaire is appropriate and relevant to the objectives of the study [12]. Using a questionnaire sheet, assessments of students in small and large groups were recorded. T-test analysis will be used to measure the media's effectiveness.

3. Result and Discussion

The table below shows the breakdown of responses by gender.

Table 1. Respondents' Gender

Gender	Respondent	Percentage
Male	32	88.9%
Female	4	11.1%

As noted in the above table, the majority of respondents 88.9% (32 students) were male, while 11.1% (4 students) were female.

The following table shows the breakdown of responders by age.

Table 2. Respondents' Ages

Age	Respondent	Percentage
< 20 Year	12	33.3%
≥ 20 Year	24	66.7%

The respondents in this survey had an average age of 20 years, 3 months, rounded up to 20 years. According to the aforementioned table, the majority of responses (66.7%, or 24 students), were elder than or equal to the age range, while 33.3%, or 12 students, were younger than the average age.

The e-sport massage development design has adhered to the ADDIE model's five steps, which are as follows:

1. Analysis

The first or very first stage of the ADDIE, paradigm is the analysis step. Three crucial tasks are completed in this step: (1) an analysis of the competencies that students must master, (2) an analysis of student characteristics related to the knowledge, attitudes, and skills that students possess, and (3) an analysis of the content pertinent to the achievement of the competencies that students are expected to possess. At this point, an assessment is done to identify

any deficiencies and make any necessary corrections.

2. Design

Three tasks are completed in this step: (1) choosing content pertinent to student traits and anticipated competency demands; (2) learning methodologies; and (3) forms and assessment methods and evaluation. In this step, the application's structure and design are established. The learning tactics used for each step are then adjusted so that readers may easily learn and understand the e-sport massage application. It is also decided how to assess if the reader has learned the material after studying it at each level. An evaluation is conducted as a first step at the conclusion of this step.

3. Development

The third stage of the ADDIE model is development, development of e-sport massage applications. This process includes searching for and gathering important data sources to enhance the content, producing necessary videos and dubbing, typing, editing, as well as the layout of the application. This step involves validating the e-sport massage application prototype. Experts in learning design, learning media, and content are the involved validators. After the first validator offers the results of his assessment, the prototype of the e-sport massage application development research model is analyzed and revised, and so on until the analysis and revision of the third validator's assessment results.

4. Implementation

Students tested product development prototypes in actual classes. The e-sport massage application development research model prototype was put into practice in small groups within the time constraints. After deployment, a small group of eight PJKR Study Program fourth-semester students were requested to evaluate the development product's prototype.

5. Evaluation

Formative and summative evaluations are the two different types of evaluation. Only formative evaluation, which tries to validate product development and alter it in response to input or suggestions, is used in this study. Formative evaluation has been done at each level of the ADDIE model development in accordance with how the ADDIE model was developed.

3.1. Product

Learning media is tangible tools used to present learning to students [13]. This concept highlights that learning media include all tangible tools used to impart knowledge, including textbooks, audiovisual devices, computers, and other tools. A sport massage learning tool that can be downloaded from the Play Store is the end result of this research and development. Understanding e-sport massage,

the advantages of sports massage, and various massage manipulation techniques for the upper (superior) and lower (inferior) limbs are all covered in the learning materials provided. Teaching resources in the form of printed modules and books are another item.

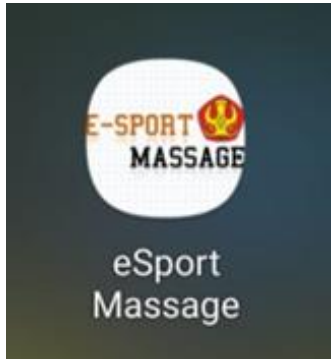


Figure 1. The App's Front View after Downloading

Figure 1 is the front view of the application after students

download it from the play store. The figure says e-Sport Massage and there is the Tadulako University symbol.



Figure 2. e-Sport Massage QR Code

Figure 2 is a QR Code display that can be scanned on and downloaded for free on the Play Store application.

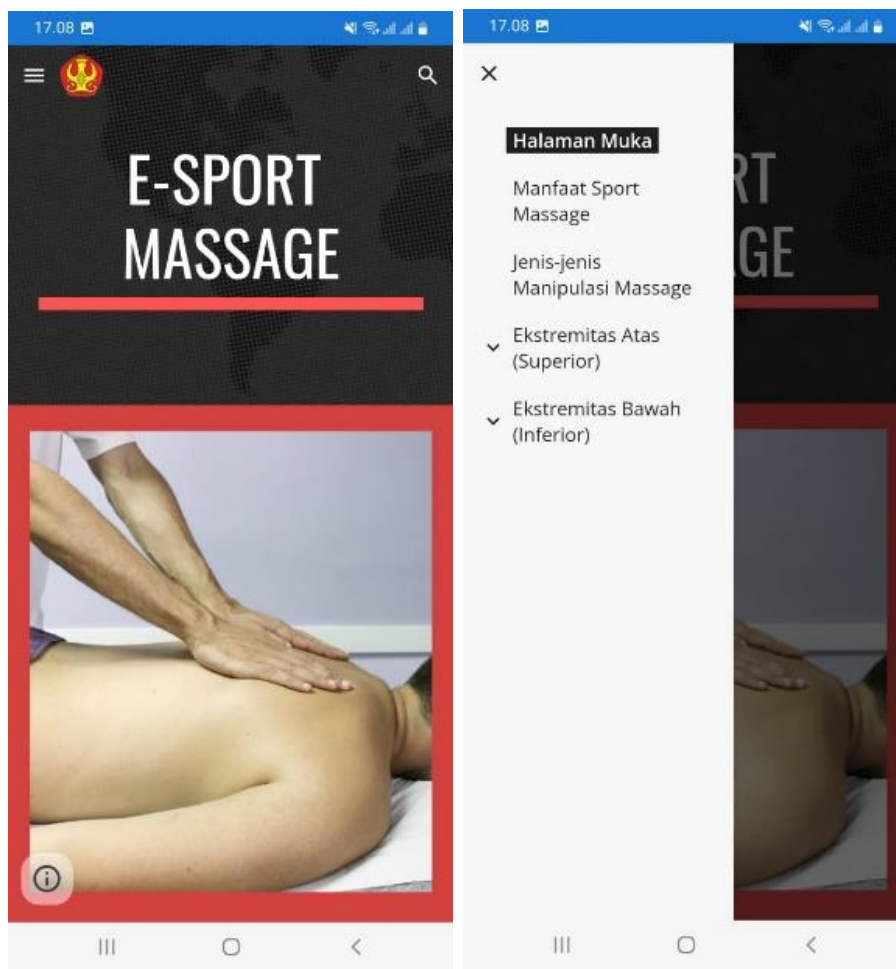


Figure 3. The e-Sport Massage App's Display

Figure 3 is a look at the e-Sport Massage application after the cover which consists of some information related to the benefits of sports massage, types of massage manipulations, and how to massage the superior and inferior parts.

3.2. Validity

1. The average score for all areas of the content experts' validation of e-sport massage is 0.78, with the agree category. This indicates that the research development model module is well-qualified and should be changed as necessary. The research development model module was updated as necessary quantitatively using a closed questionnaire. Content specialists offer their opinions in a qualitative manner via an open questionnaire. To make the material description clearer and simpler for students to understand, it needs to be further studied.
2. The study of the assessment data from the Learning Design Expert shows that there have been nine assessments, with an average score of 0.73 in the agree category. This indicates that multiple changes are required even though the e-sport massage application development is well qualified. The module needs to be changed as necessary quantitatively using a closed questionnaire. Experts in instructional design propose that adjustments be made by changing some fundamental competencies' verbs from those that cannot be assessed to ones that can.
3. There have been 7 assessments of learning media specialists, according to the results of the study, and the agree category's average score is 0.83 based on the analysis of all the factors. This indicates also that media is of extremely good quality, yet the application needs some minor revisions quantitatively throughout a closed questionnaire. Learning media specialists offer suggestions through a qualitative open-ended questionnaire, such as grouping more captivating images and videos and improving the audio clarity.

There have been nine assessments according to the findings of the Learning Design Expert assessment, and the agree category's mean score for all aspects is 0.73. This indicates that multiple changes are required even though the e-sport massage application development is well qualified. The module needs to be changed as necessary quantitatively using a closed questionnaire. The learning design expert recommended that change be carried out by changing some of the fundamental competencies from verbs that cannot be quantified into ones that can.

The evaluation of learning media specialists yielded 7 assessments; the analysis's findings were based on the average score for all elements, which was 0.83, with the agree category. This indicates that the media is of extremely high quality, yet the application needs some minor revisions quantitatively using a closed questionnaire. Learning media specialists offer suggestions through a

qualitative open questionnaire, such as arranging pictures and films that are more compelling and making the audio clearer.

Using the results of tests on a small group of pupils, an average score of 3.61 was produced (good category). This indicates that the application satisfies the requirements and that it may be amended as necessary. The eSport Massage graphic media was quantitatively changed as necessary using a closed questionnaire. Students provided general feedback regarding the e-sport massage application's compliance with the requirements in an open-ended questionnaire.

According to descriptive statistics, the pretest scores ranged from 54 to 78, with an average of 65 and a standard deviation of 7.04, and the lowest score was 54 and the highest was 78. The post-test results range from a minimum of 68 to a maximum of 88, with an average of 80 and a standard deviation (level of data distribution) of 5.23. The variable is homogenous if the variance is bigger than the mean. The value before utilizing e-sport massage is 0.253 and the value after using it is 0.402 according to the Test of Normality table. Both numbers are higher than 0.05, which indicates that the sample data is regularly distributed. The paired sample t test can now be performed because it has satisfied the fundamental requirements of the normalcy test.

According to the t test, the average value before using the media was 65,444 and increased to 80,000 afterward. The average value before and after utilizing e-sport massage media differs, as can be observed in this example. Furthermore, we must evaluate the paired sample t test findings in the Paired Samples Test output table to demonstrate whether the difference in average values before and after utilizing e-sport massage media is actually significant or not. The number of samples used by 36 is shown by column N, which follows. Before employing e-sport massage, the standard deviation was 7.036; after, it was 5.231. The mean std error before using the media is 1.172 and after using it is 0.871. The findings of the correlation or relationship between the two data are displayed in the Paired Samples Correlations output table. Data on correlations between paired samples were collected at a significance level of 0.000. There is a relationship between the value variables before and after utilizing e-sport massage media since the value of sig. (0.000) is less than 0.05.

The average value differs by -14.555 between before and after e-sport massage. The mean difference value's standard deviation, 4.108, is displayed in the standard deviation column (Std). An index of variability with a value of 0.684 is the error mean. The average difference value and standard error are divided by each other in column t, where t is equal to -21.255. The degree of freedom is displayed in column df and has a value of 35. The probability value to attain the t statistic is shown in column Sig. (2-tailed), and the Sig value is obtained when the absolute value is equal to or higher than the t statistic, the Sig value is obtained. (2-tailed) of 0.000. With this, $0.000 < 0.05$ H_0 is rejected at

0.000 0.05. The difference between the value before and after utilizing e-sport massage is substantial since H1 is accepted because H0 is refused.

3.3. Discussion

Sports massage is frequently used to enhance sports performance, hasten muscular pain recovery, and aid in pre-exercise preparation. Increased blood flow and venous return, greater lactate clearance, decreased pain perception, and general well-being are some possible advantages of massage on recovery [14]. The process of becoming less tolerant to physical work is labeled fatigue [15]. Even though they are situated deeper within the body, all tissues, including skin, muscles, peripheral nerves, central nerves, blood and lymph circulation, are adversely impacted by sports massage [16]. For student lectures that stress the entirety of the massage experience both in and out of the classroom, this research on the creation of the e-Sport Massage application has been adapted and created specifically for student lectures. Through program adjustments in the Play Store app, which promotes involvement and experience for students, e-Sport Massage is being developed. In the short term, e-Sport Massage is intended to make learning easier for students so they can practice sport massage with proficiency.

According to the aforementioned reasoning, there has to be a paradigm change from method to model teaching when it comes to teaching sport massage. The model is a strategy or framework for producing original works for long-term learning, designing instructional materials, and guiding instruction anywhere and whenever. This model of learning takes into account a variety of factors, including long-term objectives, context, content, classroom management, associated methods, process proofing, and learning assessment.

The e-Sport Massage development model is created with the intention of stimulating every student in accordance with the function that a masseur must play in order to provide each student more learning time. The research studies showed that using the social mobile application in this situation gave pupils their first chance to have a different time and location to study and discuss successes [17]. All students may utilize the application e-Sport Massage, which has several distinctive qualities such being simple to download and having a visually appealing interface, learning sports massage is made simpler and nicer by the appealing packing material. Learning media are all software and hardware that serve as tools for transmitting learning messages from the sender to the recipient of the message so that it might pique students' interests and thoughts. Students in order for the learning process need to be efficient and effective [18].

The top page of the e-Sport Massage application gives information about the Development Team and the application's goal. The sub-material includes information

on the advantages of sports massage, different forms of massage manipulation, and techniques for manipulating the lower extremity (inferior) body parts, such as the quadriceps, gluteus, buttocks, calves, and soles of the feet. While the waist, back, neck, deltoid, upper arms, forearms, and hands are considered to be among the upper extremities (superior).

This investigation has been effective overall. It may be inferred that this eSport Massage game can be enhanced further based on the data from the field results on the eSport Massage application. The development of eSport Massage is the first application model and was developed in sports massage learning. There are both benefits and drawbacks to this application model, including the following:

1. Benefits of the Products Made

The following development of the e-Sport Massage game has various benefits:

- a. This application is simple to download
- b. Applications are easy to access anywhere and anytime and offline
- c. A smartphone's application capacity that doesn't impede its performance.
- d. beautiful view
- e. The video's explanation is simple to follow.
- f. The audio and video are audible.

2. Limitations or Defects

Limitations are as follows:

- a. The length of the repeat of the action is not as long as it should be; for instance, there should be 8 repetitions, but there are only 4 in the video. This is done to make learning more efficient.
- b. The application still has to be developed because it is too basic; for instance, a search menu for the location of the massage provider may be added.
- c. There are limitations in terms of language, it is hoped that there will be further development for the use of foreign language.

4. Conclusions

According to the opinions of content experts, design experts, and media experts, the form of the e-sport massage application built on the Android app with the ADDIE design was deemed to be good. The trial's findings, which indicated a rise in effectiveness prior to the use of media, are supported by the rise in value from 65 to 80. The e-sport massage application can improve practicum skills by 80%, while the product acceptability of e-sport massage applications to students is 90%, this shows that this application can be applied to students very well. We recommend that this application be developed further and that further research be conducted.

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