

Volley Ball Teaching Materials Based On Interactive Multimedia as A Source for Independent Learning for Students

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Abstract. The purpose of this research is to develop interactive multimedia-based teaching materials so that they are independent lectures. The model used is the Borg and Gall model. However in this article, only the results from stage one to stage five are presented. This research was conducted from March to June 2022. The tools used in this study were questionnaires and interviews. The data analysis technique uses the percentage formula. The assessment of the first material expert gave a score on the interactive multimedia-based volleyball referee teaching material with a percentage of 92.5% in the very good category, the second material expert 87.5% in the very good category. And media experts gave a score of 87.5% in the very good category. Based on this percentage, it can be stated that from the conceptual aspect of volleyball refereeing teaching materials based on interactive multimedia, it is feasible to proceed to the empirical test.

Keywords: refereeing, teaching materials, multimedia, development

1. Introduction

Along with technological developments in the 21st century, the dimensions of human life have also changed. These changes are marked by the use of technology in every human affair (Ginjar, A., Suherman, A., Juliantine, T., Hidayat, 2019). Likewise, in the world of education, the use of technology is something that is very much needed both in teaching, management of digital-based organizational systems and also others. Information and technology make everything easy, access is faster and information is obtained faster (Wendi K. Zimmer Sharon D. Matthews, 2021). Thus the development of this era requires humans to be able to adapt, survive with all changes in order to still be able to give their role as humans to other humans. At the State University of Medan, the learning system that must be applied by lecturers varies, one of which is the blended learning model. This model is a learning model that combines or merges face-to-face learning with learning using applications, so that in practice there is a time for students to learn independently, independently to improve their competence in achieving learning goals. This model is also applied by a volleyball lecturer at the State University of Medan. The difficulty for lecturers is that they have not been able

to provide teaching materials for students that are used by students in independent study. So that when students study independently, they are hampered by resources and teaching materials. So far, volleyball teachers have used teaching materials, but the teaching materials are still printed, PPT, books, videos. With this teaching material, students are less motivated to use it.

Based on the results of observations made on the ability of student volleyball referees, only 30% of sports science students are able to become referees in accordance with the objectives of the volleyball course, the rest cannot be categorized as capable. The weakness found in these students is in the mastery of body movement signals based on the rules and violations in the volleyball game. As a sports graduate, of course, this is a worrisome condition and worries the future of students as prospective teachers. So with this condition it is necessary to provide interesting teaching materials and can generate student learning motivation. As explained that teaching materials are all materials, both information, tools, and texts that are arranged regularly, which displays a complete figure of abilities that will be mastered by students and used in the learning process with the aim of planning and studying the implementation of learning (Kasih et al., 2022). The teaching materials in question are volleyball refereeing materials based on interactive multimedia which were developed with the rationale of theoretical studies, student characteristics and material elements. The novelty of this development research is the creation of volleyball refereeing teaching materials that are integrated with online applications. These teaching materials combine various interactive media (video, audio, graphics and text) to control a command so as to create a reciprocal relationship between the developed teaching materials and students. Through this material will emerge the experience of students and will lead to new perceptions to clarify the meaning of an object, movement and technique. Android and Laptop cellphones become media tools for students to use the media. It is hoped that through these teaching materials, students will be able to learn anywhere and anytime (Andi Prastowo, 2011). Predicting the superiority of this learning model, students will be able to be accurate, quickly in understanding various volleyball refereeing materials and lecture efficiency will be better so that student skills in terms of refereeing are achieved optimally.

2. Literature

Volleyball is one of the games that can make the players happy, create unity, and if done regularly this sport will make the body fit, healthy and fit. Because this sport has many positive values, the development of this sport is currently very good, and this sport is a popular sport. In playing this sport there must be a volleyball referee, the referee is the person in charge of managing the volleyball match with all fair play attitudes and responsibilities, so that with the presence of a match referee it can be satisfying for the players. Refereeing is a noble task and for someone who wants to be a noble referee, of course, it is necessary to follow various educational and training processes, so that every game rule and match rule, refereeing signals and their practice can be mastered. The referee must also have knowledge of what equipment a referee must have when leading the game, such as wearing white pants; Plain white collared T-shirt; White rubber boots; and wear the referee badge according to his classification. Then the referee must also understand and follow the requirements to become a referee, such as:

- a) Be in good health and have a normal physique.
- b) Have the talent to be a referee.

- c) Enjoy the game of volleyball.
- d) Have a minimum education of high school graduates.
- e) Aged between 20-40 years.
- f) Have good dedication.
- g) Must be a member of a volleyball association.

Referee duties:

- a) Lead the match to run smoothly.
- b) Improve skills, abilities, and knowledge of volleyball refereeing, for example referee signals.
- c) Disseminate the rules of volleyball games in the community. Improving the quality of refereeing in society in particular and in Indonesia in general.

Teaching materials are one of the important aspects for a lecturer to have in carrying out their duties, in order to provide quality learning services, both in practical learning and in classical learning (Palao, 2012). Regarding the definition of teaching materials, (Suciati, 2018) is the subject of every course that is designed in its entirety and complete (self-contained), capable of triggering meaningful mental and physical interactions and learning activities, and can be studied independently (self-instructional material). In terms of packaging, interactive teaching materials are packaged in digital and printed form with flash drives. Dan (Andi Prastowo, 2011) defines teaching materials as all forms of materials used to assist teachers or instructors in carrying out the learning process.

Developing interactive teaching materials is certainly not as easy as imagined, as mentioned above that teaching materials must really be able to help students achieve learning goals (Wijaya et al., 2020). Thus, in developing interactive teaching materials, it is necessary to pay attention to the characteristics of teaching materials. The characteristics in question are eleven, namely, complete, appropriate, sufficient, polite, easy, relevant, useful, interesting, creative, innovative, systematic, stimulating activity, communicative, (Dlis Firmansyah, 2015).

The use of media or assistive devices is very helpful in learning process activities, especially improving student learning outcomes (Siregar et al., 2019). Learning media can enhance students' learning process in teaching which in the end is expected to improve the learning outcomes they achieve. Judging from the process of education is communication because in the educational process there are communicators and communicants and messages. Communication in the educational process occurs because of the desired plans and goals. (Arsyad, 2011) says that the media, if understood in broad outline, are human, material, or events that develop conditions that enable students to acquire knowledge, skills, or attitudes.

3. Research Method

The approach used in the research is a qualitative approach with the aim of revealing the relationship or meaning or interpreting the data. Meanwhile, the method used in this research is a development research method through a model (Borg, W.R. & Gall, 2007) which consists of ten steps. However, in this article, only the results from stage one to stage five are presented (information gathering, planning, product design, product testing from experts, revisions). These five stages are carried out sequentially and systematically to obtain a scientific process. The following is the research design.

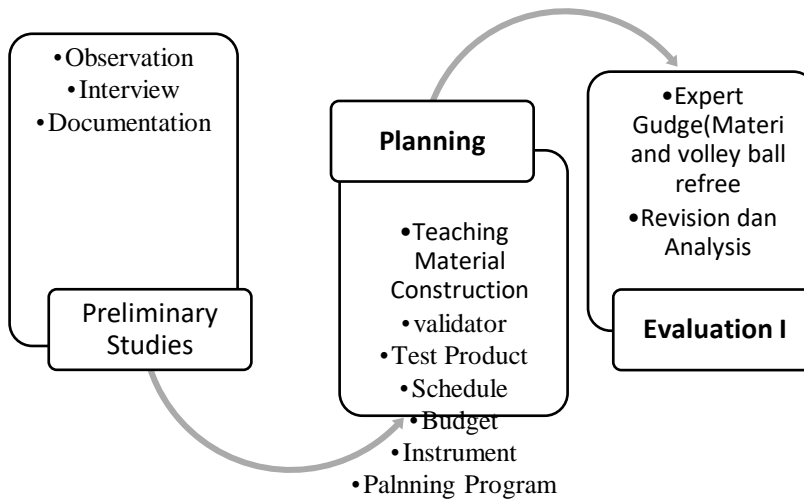


Fig 1. Product Development Design

This research was conducted from March to June 2022. The tools used in this study were questionnaires and interviews. Then the technique for analyzing the data obtained is using percentage calculations. Calculations in this way are intended to obtain a large-small comparison of the frequency of each alternative answer and the number of samples. The formula is as follows $p = \frac{f}{n} \times 100$ (Arikunto, 2009).

Tabel 1. Percentage Conversion

81-100	Very high
66-80	Very
50-65	Currently
Under- 49	Not Enough

After the data is analyzed using the formula, then the next step is to interpret the existing data.

4. Results and Discussion

As previously explained, the contents of this article are part of the data of the research process carried out through the model (Borg&Gall, 2003). So the results of this study describe how the results of expert evaluation of the product draft (interactive teaching materials) were developed. There are three experts involved in evaluating the product draft developed, namely two media experts and one material expert. Experts see the feasibility of the product draft in achieving its function. As explained earlier that the development of teaching material products has the aim of being teaching materials for educators who teach or train refereeing materials to students, students and athletes.

The expert validation process was carried out in depth through filling out a questionnaire that had been previously validated by an evaluation expert, and interviews were also conducted to strengthen the data obtained through the questionnaire. The following are the results of the study which are drawn through the graph below:

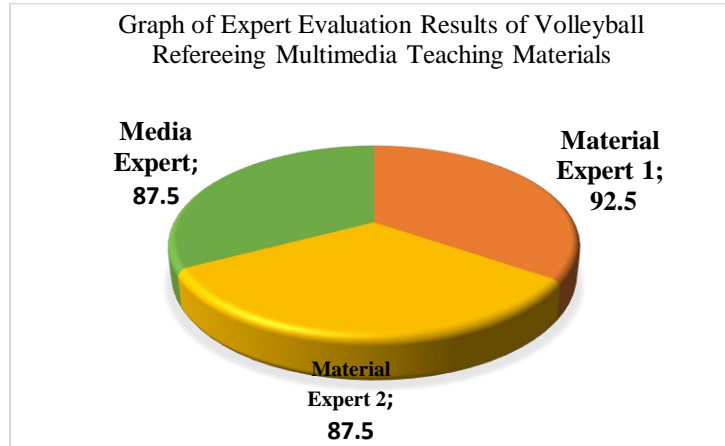


Fig 2. Results of Expert Evaluation of the Developed Product Draft

The table above is the result of data analysis from a questionnaire filled out by experts. The results of the analysis can be seen from the table above that media experts give an assessment of the product draft developed by 87.5% very high category. material expert 1 gave an assessment of the product draft developed at 92.5% very high category and material expert 2 gave an assessment of the developed product draft at 87.5% very high category. Based on the evaluations of the experts mentioned above, it can be stated that the product draft developed from the media and material aspect is feasible to continue for empirical testing to determine the level of usability of this product for users.

The product draft developed is a multimedia refereeing teaching material that can be used as lecture teaching material. Media experts give a very good assessment of this media when it is used as lecture teaching material to improve students' understanding and skills of volleyball refereeing (Xu & Liu, 2021). media graphic design according to experts is very good, this is seen from the composition, balance of media design (Kok et al., 2021). Then from the elements of image coloring, background and font size, media experts also considered it very good. The material expert also has a very good assessment of the draft of this product, where the material expert responded that the draft of this product in terms of material was in accordance with the curriculum in the physical education study program, health and recreation, State University of Medan. In principle, every educator who wants to develop learning (media, teaching materials, methods, models, etc.), must aim to achieve the competencies listed in the curriculum. In terms of ease of understanding the content of the material in this teaching material, it is also considered a good expert, as well as the instructions and music. So that the material expert recommends that the draft of this teaching material is worth continuing

for empirical testing, so that it is known whether the contents of this teaching material can be effective for users.

Good teaching materials are teaching materials that can generate motivation and have attractive value for users to have them (Andi Prastowo, 2011). (Siregar et al., 2022) Apart from that, teaching materials can also be a source of reading and study materials so that they can lead users to achieve the set learning goals. However, teaching materials will be meaningless if they are not supported by computer technology facilities, laptop and android. This is because the developed teaching materials can only be accessed if they have adequate technology. Therefore, if you want to use this teaching material, you must pay attention to the supporting tools.

5. Conclusion

Based on the results of the research above which are presented qualitatively and quantitatively, it can be concluded that the teaching materials for volleyball refereeing based on interactive multimedia are appropriate to be seen from the aspect of the quality of the media and the content of the teaching materials. Thus, this teaching material needs to be continued with empirical testing, both small and large scale with the aim of obtaining information data that this teaching material is suitable for use by users in the context of volleyball refereeing lessons.

Reference

- [1] Andi Prastowo. (2011). *Panduan Kreatif Membuat Bahan Ajar Inovatif*. Diva Press.
- [2] Arikunto, S. (2009). *Dasar-dasar Evaluasi Pendidikan*. Bumi Aksara.
- [3] Arsyad, A. (2011). *Media Pembelajaran*. Raja Grafindo Persada.
- [4] Borg, W.R. & Gall, M. D. G. (2007). *Educational Research: An Introduction, Eighth Edition*. Longman, Inc.,
- [5] Borg & Gall. (2003). *Educational Research: an Introduction*. Longman, Inc.,
- [6] Dlis Firmansyah. (2015). *Bahan Ajar Motor Learning*. Ilmu Keolahragaan, UNJ.
- [7] Ginanjar, A., Suherman, A., Juliantine, T., Hidayat, Y. (2019). Sports Orientation During Learning Team Or Individual Sports Using A Sport Education Model. *Cakrawala Pendidikan*, 38(2), 377–386. <https://doi.org/http://10.21831/cp.v38i2.24021>
- [8] Kasih, I., Faridah, E., Siregar, S., Bangun, S. Y., & Sinulingga, A. (2022). Effectiveness of Sensor-Based Media to Improve Referee Education. *International Journal of Education in Mathematics, Science and Technology*, 10(2), 391–408. <https://doi.org/10.46328/ijemst.2248>
- [9] Kok, M., Kal, E., van Doodewaard, C., Savelsbergh, G., & van der Kamp, J. (2021). Tailoring explicit and implicit instruction methods to the verbal working memory capacity of students with special needs can benefit motor learning outcomes in physical education. *Learning and Individual Differences*, 89(May 2020), 102019. <https://doi.org/10.1016/j.lindif.2021.102019>
- [10] Palao, J. M. (2012). The impact of video technology on student performance in physical education. *Technology, Pedagogy and Education*, 24(1), 51–63. <https://doi.org/https://doi.org/10.1080/1475939X.2013.813404>
- [11] Siregar, S., Dlis, F., Hanif, A. S., Tangkudung, J., & Siregar, N. (2019). Learning model developing of basic technique for three-dimensional table tennis punch drive for beginner

- players. *International Journal of Recent Technology and Engineering*, 8(2 Special Issue 9), 38–43. <https://doi.org/10.35940/ijrte.B1009.0982S919>
- [12] Siregar, S., Kasih, I., & Pardilla, H. (2022). The Effectiveness of E-Learning-Based Volleyball Service Video Media on Students Affected by Covid-19 at Faculty of Sports Science, Universitas Negeri Medan. *Teorià Ta Metodika Fizičnogo Vihovannâ*, 22(1), 7–13. <https://doi.org/10.17309/tmfv.2022.1.01>
- [13] Suciati. (2018). *PEDOMAN PENGEMBANGAN BAHAN AJAR INTERAKTIF*. Universitas Terbuk.
- [14] Wendi K.ZimmerSharon D.Matthews. (2021). A virtual coaching model of professional development to increase teachers' digital learning competencies. *Teaching and Teacher Education*, 109. <https://doi.org/https://doi.org/10.1016/j.tate.2021.103544>
- [15] Wijaya, T. T., Murni, S., Purnama, A., & Tanuwijaya, H. (2020). Pengembangan Media Pembelajaran Berbasis Tpack Menggunakan Hawgent Dynamic Mathematics Software. *Journal of Elementary Education*, 03(03), 3.
- [16] Xu, W., & Liu, F. (2021). Design of embedded system of volleyball training assistant decision support based on association rules. *Microprocessors and Microsystems*, 81(November 2020), 103780. <https://doi.org/10.1016/j.micpro.2020.103780>