



## THE EFFECTIVENESS OF E-LEARNING-BASED VOLLEYBALL SERVICE VIDEO MEDIA ON STUDENTS AFFECTED BY COVID-19 AT FACULTY OF SPORTS SCIENCE, UNIVERSITAS NEGERI MEDAN

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### Abstract

**The study purpose.** The online learning system, media, and resources used by lecturers to achieve volleyball learning goals are known to be not optimal. This study aimed to develop an e-learning video media that can be used by students as a learning resource to learn the material for upper serve, jump serve, and floating serve in volleyball games.

**Materials and methods.** The research subjects were students who were divided into treatment groups and control groups where each group consisted of 40 people. The research method used was an experimental method with a before-after research design (one-group pretest and posttest design). A rubric test is an instrument used to measure the effectiveness of video media in improving student service skills.

**Results.** The results of the research and data analysis found that the service skills (upper serve, jump serve, and floating serve) in the treatment group with the help of e-learning video media were better than in the control group who did not receive e-learning.

**Conclusions.** The treatment group has better service skills than the control group. During the Covid-19 pandemic, it is recommended for lecturers to use e-learning video media in teaching volleyball service material.

**Keywords:** media e-learning, volleyball serve.

### Introduction

The study of Physical Education, Health and Recreation is closely related to the subject matter studied by students in this course. These materials include all the basic techniques in sports, such as service techniques, passing, smashes, blocking, rules and refereeing (Vute, 2009). The purpose of students studying this course is so that they can master the various subject matter. Therefore, after they graduate from college, they are expected to become teachers who can teach volleyball to students at school. Based on the E-Learning web-site and the network teaching, we use skilled system to establish the interactive Sport Teaching E-Learning structure (Chang, 2008) To achieve this goal, a lecturer is required to be able to provide meaningful learning patterns and following the needs of students. The pattern of learning volley-

ball courses conducted by lecturers so far is through direct learning (face to face) in which there is the direct interaction between lecturers and students at the same time and place (Fathoni, 2018). The achievement of volleyball learning objectives through the direct learning pattern obtained excellent student results. Since Covid-19 is greatly affected Indonesian, the government is taking policy steps with regional lockdown in Indonesia (Pardilla et al., 2020). The Covid-19 pandemic outbreak that hit Indonesia caused direct learning patterns to be impossible to do. In other words, students cannot learn directly with their lecturers. This in the end becomes a problem that needs to be addressed by lecturers and students. This problem can be solved if changes and adjustments are made to the learning patterns of lecturers with the conditions during the Covid-19 pandemic.

Regulation of the Minister of Education of the Republic of Indonesia Number 3 of 2020 concerning Prevention of Covid-19 in education units aims to assist teachers and students in carrying out the teaching and learning process

even though it is not done face-to-face. Thus, one alternative that can be done to overcome the problems described previously is to conduct distance learning in the network. Distance learning in this network is learning on the internet network using e-learning media (Denysova et al., 2018). Through this e-learning media, lecturers and students can do face-to-face online as a teaching and learning interaction related to volleyball material. This e-learning media content is equipped with video-based learning resources, tutorials on basic volleyball techniques, and forms of practice. Students will be able to study the content on their own (self-check) and learn from the videos supplied from the comfort of their own homes (Invernizzi et al., 2019).

Service in volleyball is a technique to start a game. The definition of service is an attempt to cross the ball over the net every time it serves (Ahmadi, 2008). The service in volleyball is divided into five types, namely under service, side hard service, overhead service, floating service, upper spin service, and jump service. The under serve can be referred to as a service for novice players. As mentioned by (Beutelsahl, 2016) that the underserved is the most popular and most frequently used service considering that this service is the easiest serve where the ball can be controlled more accurately than other services. The advantage of the underserved is that it is easy to do, while the drawback of this serve is that the ball bounces high so that it is easily accepted by the opponent (Barbara et al., 2000). The description of the implementation of the volleyball underhand service can be explained as follows.

The implementation of this service begins from the preparation stage with a standing position, left foot in front with a slightly bent knee, right leg back straight, body slightly leaning forward, and body weight on the left leg/front leg (Kumar et al., 2021). Another position that needs to be considered is the left hand holding the ball in front of the body and the right hand straight back with the fingers together and the palm bent. This is followed by the hit stage, which is when the ball is thrown with the left hand up, then the right hand must be swung straight from the back to the front through the bottom beside the body and hit or touch the ball, followed by the right foot being stepped forward after the ball is hit (Aip Syarifuddin dan Muhadi, 1992).

Barbara et al. (2000), state that the upper service is a floating service. This is because the ball being hit will result in a left-right and up-down motion as it moves across the net. This happens because the ball is hit without turning. According to (Nuril Ahmadi, 2007), it is called a floating service because the ball that is hit by the service does not contain rotation (the ball goes floating or floating). The advantage of floating serve is that the ball is difficult to receive by opposing players because the ball does not move in one trajectory and the ball speed is unpredictable (Lopez-Martinez & Palao, 2009). On the other hand, the weakness is that it is not powerful, sometimes the ball moves too high up to leave the field. The description of the implementation of the above service can be explained below.

The upper service is carried out in three stages (Barbara et al., 2000), namely; (1) Preparation Stage; feet in a relaxed stride position, bodyweight is evenly distributed, shoulders parallel to the net, feet of the hand that is not hitting are in front then use open palms, and eyes on the ball. (2) Implementation Phase; hit the ball in front of the shoulder of the

hitting arm, hit the ball without or with little spin, hit the ball with one hand, hit the ball close to the body, swing the arm back with the elbow up, place the hand near the ear, hit the ball with the heel of the palm open, keep the arms in a position to reach as far as possible. Keep an eye on the ball when it is about to hit and shift your weight forward. (3) Continuation movement; keep the weight forward, lower the arms slowly as a follow-up to then move onto the court. It's not easy to master the upper serve technique so it takes practice over and over again. Besides, it is necessary to get the right, interesting and balanced method of exercise. Strengthening service skills is not enough just to train the technique, but also requires physical exercise which is also a major factor. Jump serve is a service by making a jump so that the opponent is difficult to deal with. The motion element of this technique is to combine the pressure, strength, and feeling of the player on the ball used in the game (Gabbett et al., 2006). This technique is the same as doing a smash, but it is done from a distance of 9 meters according to the length of the field against the net. Mastery of this technique is more emphasized on the feeling and experience of the player (Alwan, 2021). This technique is a combination of full spin, half spin and jump flute techniques. A player who uses this technique must be an experienced player, has good power, and have an adequate ball feeling. Someone who has good power can do this technique, but not all serves will work perfectly.

Arsyad (2004) states that learning media is a tool in the learning process both inside and outside the classroom. In the Regulation of the Minister of National Education of the Republic of Indonesia number 24 of 2007, it is stated that learning media are educational equipment used to assist communication in learning. Gagne (2012) explain that what is included in learning media are physical tools that can be used to convey the contents of teaching materials, such as books, tape recorders, cassettes, video cameras, video recorders, films, slides, photos, pictures, graphics, television, and computers. Media in the learning process serves as a presenter of stimuli (information, attitudes, etc.) and increases harmony in receiving information. In certain cases, the media is also useful for managing progress steps and providing feedback. However, other research, focusing on the educational impact of media, suggests that well-designed and age-appropriate educative media can impart knowledge (Mares & Pan, 2013). Furthermore, Hamalik (1982) revealed that "the use of instructional media in the teaching and learning process can generate motivation and stimulation of learning activities and even bring psychological effects on students.

Agus S. Suryobroto (2001) stated that the use of media is the use of learning resources that must be systematic where the decision to try or use learning resources must pay attention to the characteristics of students and learning objectives. Aside from the characteristics of educational media that influence learning, researchers have also examined the personal characteristics of learners such as demographics, age, and gender (Kirkorian & Anderson, 2008). The E-learning experience of students is significantly correlated with the learning process and has an indirect effect on perceived learning outcomes (Azis, Suharyati, & Susanti, 2019). The use of interactive features of e-learning increases the motivation of the undergraduate students for the learning process (Abou El-Seoud et al., 2014).

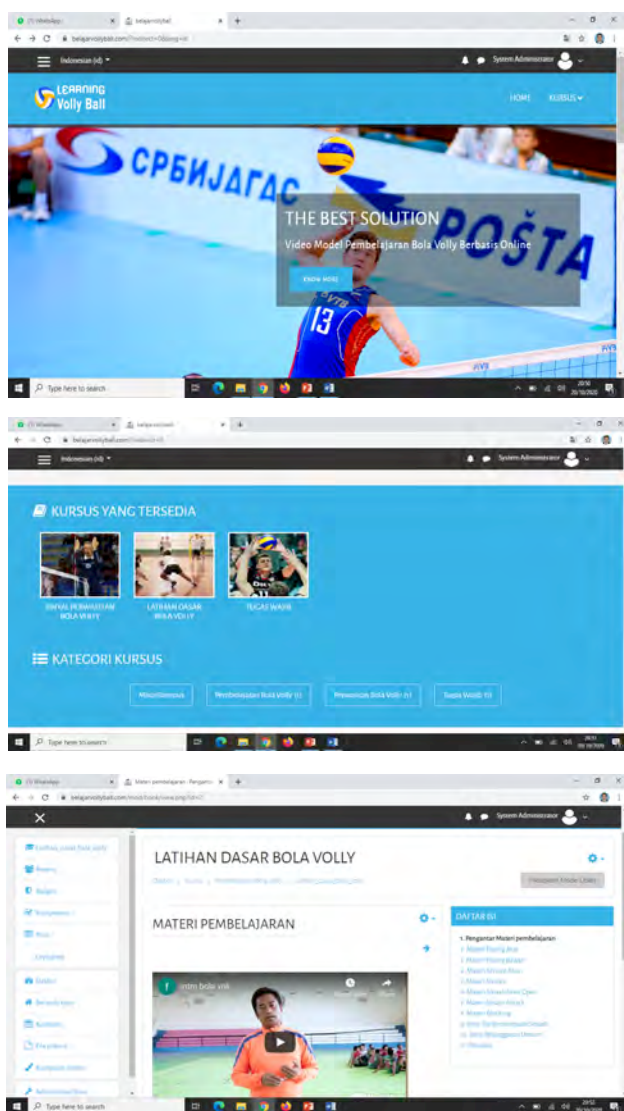


Figure 1. E-learning volleyball.com Web Display

In developing students' movement skills, educators also need to develop media that can attract students' interest and attention to foster their motivation, creativity, and movement activities. When this can be conditioned by the lecturer, the achievement of the volleyball service learning objectives will be more optimal. As stated (Samsuddin Siregar, 2020), learning activities with well-designed games in a learning process will provide many benefits for students and educators.

E-learning transitions from computer-managed learning to collaborative online learning by utilizing new technological platforms like as Edmodo, Social media, Blog, Coursera, or HEIs-specific tools (Sukendro et al., 2020). The media used in this study were the e-learning volleyball.com Web and volleyball service video media. The volleyball.com e-learning web was developed as an online learning space for lecturers and students. Through the web, lecturers and students can interact to review conceptually related to volleyball service technique practices, hold discussions and questions and answers, conduct quizzes, and make reports on their mandatory assignments (routine assignments, critical book-review assignments, critical journal review as-

signments, engineering assignments). ideas, research mini assignments, and project assignments). The screen display of the volleyball.com e-learning web is presented in Figure 1.

The demonstration of the movements shown in the video has been accompanied by an explanation from the instructor regarding the meaning of each of the movements demonstrated. The video has also been equipped with a variety of exercises that can be a reference for students to practice their skills independently. In research findings by (Palao, 2012), it is stated that "The 'video and teacher feedback' condition provided the most positive overall results (Fukkink et al., 2011), with statistically significant improvements in skill execution, technique, and knowledge learning, as well as the highest level of practice. Nonetheless, while acknowledging the utility of video feedback as an instructional tool, the teacher felt overwhelmed by the demands of the technology on both his time commitments and in terms of his technology competencies. *The study purpose* to develop an e-learning video media that can be used by students as a learning resource to learn the material for upper serve, jump serve, and floating serve in volleyball games.

## Materials and methods

### Study participants

Based on figure one, it can be explained that four steps are passed in the design of this research. The first step is a random sampling from the population (80 students) to determine 40 people who will then be put into the treatment group and 40 people into the conventional group.

### Study organization

This research was conducted online from the home of the researcher and research subject (Learning From Home) starting from September 7, 2020, to October 7, 2020.

Table 1. Service Learning Schedule

Part	Sept-Oct 2020 Time (Western Indonesian Time)	Group	
		Treatment	Control
1	10.00-11.50	Media e-learning service	Conventional
2	10.00-11.50	Media e-learning service	Conventional
3	10.00-11.50	Media e-learning service	Conventional

An experimental method was used for this study. It aimed to test the effectiveness of e-learning media in improving students' volleyball service skills. The design used in this study was a before-after experimental research design (one-Group pre-test and posttest design) (Sugiono, 2008). For more details, see Figure 2 below.

Based on figure one, it can be explained that four steps are passed in the design of this research. The first step is a random sampling from the population (80 students) to determine 40 people who will then be put into the treatment group and 40 people into the conventional group. The second step is the pre-test. This aims to find out the initial data on student service skills. The third step is the process of

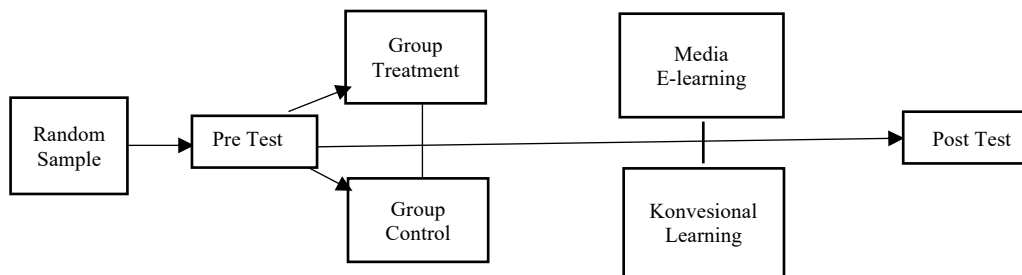


Figure 2. One-Group Pre-Test And Posttest Design

learning the volleyball service itself. In this case, the service-learning treatment group does it online using e-learning media, while the conventional group also learns it online but uses conventional media (WhatsApp, email, youtube)

Statistical analysis

The fourth step is to do a post-test to find out the final data of the study. The instrument used in this study is the service assessment rubric. This scoring rubric is a scoring tool to check the correctness of the service movement. The data obtained were then analyzed using the SPSS 21 application.

Results

The treatment group is students who learn to serve volleyball by using the volleyball.com e-learning application. On the volleyball.com web, videos of volleyball lessons have been provided for students to study independently. In the control group, the learning activities were carried out in a conventional way where teaching materials and learning resources were obtained by the students themselves. In other words, the lecturer did not prepare teaching materials and learning resources for the control group.

Before the service-learning action was carried out in the two groups, a pre-test was carried out first to determine the student's initial abilities. After the learning activity is carried out, it is continued with the post-test. Post-tests aim to determine the final ability of students.

Research findings on basic volleyball service techniques based on data analysis (SPSS 21) pre-test and post-test are presented in the following table and diagram.

Table 2. Data Analysis of Top Service

Descriptive Statistics					
Indicators	N	Min	Max	Mean	Std. Dev.
Pre-Test Treatment	40	4	7	5.73	.784
Post-Test Treatment	40	9	12	10.92	1.185
Pre-Test Control	40	4	7	5.52	.784
Post-Test Control	40	8	12	10.18	1.035
Valid N (listwise)	40				

The difference in the average achievement of students from the two groups in the post test service is presented in the diagram above. The treatment group obtained an average of 10.92, while the control group obtained an average of

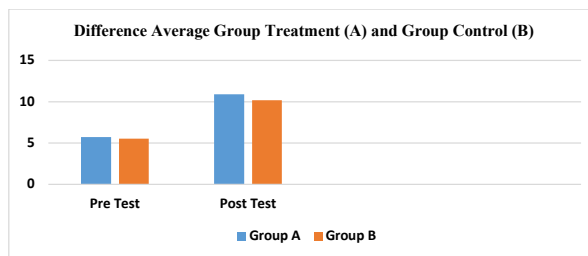


Figure 3. Difference Average Among Group

10.18. Based on the average data, it indicates that the value obtained by students in the treatment group is higher than the control group. In other words, it can be stated that learning upper service techniques through volleyball.com web and video media is better in improving students' service skills. The findings obtained related to the volleyball jump serve research based on data analysis (SPSS 21) pre-test and post-test are presented in the following table and diagram.

Table 3. Data Analysis of Jump Serve Data

Descriptive Statistics					
Indicators	N	Min	Max	Mean	Std. Dev.
Pre-Test Treatment	40	3	6	4.32	1.141
Post-Test Treatment	40	9	12	10.68	1.185
Pre-Test Control	40	3	6	4.35	1.145
Post-Test Control	40	7	12	10.25	1.149
Valid N (listwise)	40				

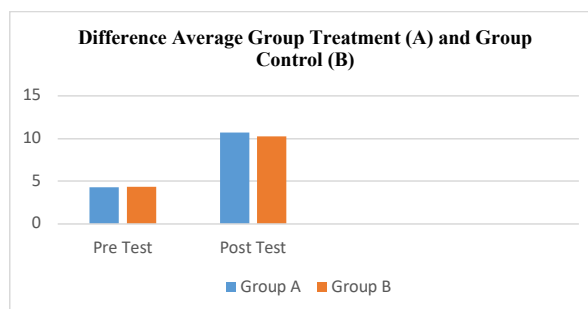


Figure 4. Difference Average Between Groups

Based on the diagram above, it can be seen the difference in the average post-test jump serve data for the two groups. The treatment group obtained an average of 10.68, while the control group obtained an average of 10.25. This

indicates that the average score of the treatment group is higher than the control group. Thus, it can be stated that learning the jump serve technique using volleyball.com web and video media is better in improving student service skills. Integrating volleyball.com web media and video media in learning is the right solution for lecturers who want to teach volleyball in situations or during the Covid-19 pandemic.

## Discussion

Through the help of volleyball.com web and video media, lectures between lecturers and students can still be carried out properly without being hindered by place and time, even though face-to-face lectures cannot be carried out. The benefits of using instructional videos to supplement and improve lecture delivery. The course instructor gathered, evaluated, filtered, or created the instructional videos to have the same content as the classroom lecture materials and to fit the course learning goals (El-Ariss et al., 2021). The existence of the web also provides opportunities for students to learn more because whenever and wherever students are, they will always be able to access various existing materials (Trakru & Jha, 2019). Collaboration and engagement with peers and facilitators (lectures or instructors) in educational designs can give a focused space for reflecting on practice and empathetic adjustment of subject matter, which automated methods cannot. As a result, when the ultimate objective is to develop e-Learning that enhances learning retention and work performance, the efficacy of e-Learning may be properly measured by the quality of the interactions offered (Noesgaard & Ørngreen, 2015).

The interactive feature is also provided by the e-learning platform paradigm. People who can receive comments and see the learning outcomes of the E-learning platform (Chang, 2008). The web not only provides students with more opportunities, but the learning demonstration videos provided on the web will also help them to master the basic volleyball serve technique material. This is because the movements shown in the video are very easy for students to understand and follow so it is hoped that it will minimize the difficulties that students may have in carrying out the movements of every basic volleyball technique. Regarding the integration of video in learning, research was previously conducted by (Hee Jun Choi, 2005). Enhance usability assessments and e-learning tutorials, the main objective of which is to encourage physical performance-based learning (Hornbæk et al., 2018)

E-learning students had considerably higher intrinsic motivation than traditional classroom learners (Rovai et al., 2007). The paradigm of flow captures the peak experiences of intrinsic motivation, and most flow experiences happened when actively engaged in a hard task; consequently, this understanding should be applied to the usage of e-learning (Lee, 2010). This study implies that context-based videos in online courses have the potential to enhance learners' retention and motivation. In addition, the learners reported that the video-based instruction was more memorable than traditional text-based instruction. The usage of particular instructional videos in classrooms has a favorable influence on the learning process of specific movement skill performance (Born et al., 2018) embedded into a long-term educational concept (i.e. university class setting. Improvements

in movement technique performance that are highlighted in the instructional videos are most noticeable when extra instructions to encourage self-studying are provided.

## Conclusions

We utilize a skilled system to create an interactive sport teaching E-Learning structure based on the E-Learning platform and network teaching. The suggested technique introduces a new teaching paradigm as well as a novel learning point. Knowing the research findings that have been described above, it is concluded that the video media based on e-learning volleyball.com is appropriate to be used as a volleyball service-learning medium for students. Beside that, when Indonesia enforces social distance regulation and physical distance regulation caused by Covid-19 Pandemic, the utilization of media like this is extremely suitable to be used in long distance learning.

## Conflict of interest

The authors state no conflict of interest.

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## ЕФЕКТИВНІСТЬ ЕЛЕКТРОННОГО ВІДЕО ЗАСОБУ З НАВЧАННЯ ПОДАЧІ У ВОЛЕЙБОЛІ ДЛЯ СТУДЕНТІВ ФАКУЛЬТЕТУ СПОРТИВНИХ НАУК ДЕРЖАВНОГО УНІВЕРСИТЕТУ У МЕДАНІ, ЯКІ ПОСТРАЖДАЛИ ВІД COVID-19

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Авторський вклад: А – дизайн дослідження; В – збір даних; С – статаналіз; D – підготовка рукопису; E – збір коштів

Реферат. Стаття: 5 с., 3 табл., 4 рис., 35 джерел.

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**Мета дослідження.** Відомо, що система онлайн-навчання, медійні засоби та ресурси, які використовуються викладачами для досягнення навчальних цілей у волейболі, не є оптимальними. Дане дослідження було спрямоване на розробку електронного навчального відео засобу, який може бути використаний студентами як навчальний ресурс для оволодіння матеріалом з верхньої подачі, подачі у стрибку та плаваючої подачі у волейболі.

**Матеріали і методи.** Досліджуваними були студенти, яких розділили на експериментальну та контрольну групи, кожна група складалася з 40 осіб. У дослідженні застосовано експериментальний метод із планом тестування «до-після» (план попереднього та підсумкового тестування однієї групи). Рейтинговий тест – це інструмент, який було використано для оцінки ефективності відео засобу у вдосконаленні навичок подачі у студентів.

**Результати.** Результати дослідження та аналіз даних показали, що за допомогою електронного навчального відео засобу навички подачі (верхня подача, подача у стрибку та плаваюча подача) в експериментальній групі стали краще, ніж у контрольній групі, у якій не використовувалося електронне навчання.

**Висновки.** В експериментальній групі навички подачі покращилися порівняно з контрольною групою. Під час пандемії Covid-19 викладачам рекомендується використовувати електронні навчальні відео засоби у викладанні матеріалу з подачі у волейболі.

**Ключові слова:** медійне електронне навчання, подача у волейболі.

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