Transforming physical education: online learning trough sport modification and mini-games

Transformando la educación física: aprendizaje en línea a través de la modificación deportiva y minijuegos

Authors

Yuni Astuti [1]
Rosmawati [2]
Erianti [3]
Oyatra Utama Warda [4]
Bayu Haryanto [5]
Rizki Almauli [6]

[1] Universitas Negeri Padang (Indonesia)
[2] Universitas Negeri Padang (Indonesia)
[3] Universitas Negeri Padang (Indonesia)
[4] Universitas Negeri Padang (Indonesia)
[5] Universitas Bung Hatta Padang (Indonesia)
[6] Universitas Bung Hatta Padang (Indonesia)

Corresponding author:
yuniastuti@fik.unp.ac.id

How to cite in APA

Astuti, Y., Warda, O. U., Almauli, R., Rosmawati, R., Haryanto, B., & Erianti, E. (2025). Transformando la educación física: aprendizaje en línea a través de la modificación deportiva y minijuegos. *Retos, 63*, 1003–1010. https://doi.org/10.47197/retos.v64.111193

Abstract

Background. This study considers The lack of learning media resources for students in online classes is the main cause of the poor learning outcomes of students in the field of modified sports and small games to be less able to understand the material provided.
Objective. is to develop a conceptualization of e-modules regarding the alteration of sports and small games with the intention of optimizing physical learning amid restrictions on face-to-face activities. In this context, online learning applications are designed to provide practical solutions in teaching sports and games that can be done in the open space without reducing the essence of sports modification learning.
Method. In this Research and Development (R&D), the ADDIE development model was used with a quasi-experimental approach to see the effectiveness of the products developed with a sample of 85 sports education department students. Data were analyzed with inferential statistics from the results of questionnaire data and skill tests used. What other activities are actually needed such as research methods, exploration of potential and existing problems, gathering information by developing and validating and revising and testing game models in connection Considering the model's efficacy and efficiency.
Result. According to the findings, material experts gave the development stage and validity level a score of 3.60, placing it in the very valid category with a 90.5 percentile. Additionally, media expert validation has been found to have a score of 3.65, falling into the high valid category with a 92.55% proportion.The results of this study are expected to contribute to the development of physical learning methods that are more flexible and accessible to various groups, especially in the growing digital era.

Keywords

Physical Education, Modification, Games

Resumen

Antecedentes. Este estudio considera los bajos resultados de aprendizaje de los estudiantes en la asignatura de modificación de deportes y pequeños juegos como un problema causado más por la falta de facilidades de medios de aprendizaje para los estudiantes en las clases en línea, lo que provoca que sean menos capaces de comprender el material proporcionado.
Objetivo. Es desarrollar una conceptualización de e-módulos en la asignatura de modificación de deportes y pequeños juegos con el fin de optimizar el aprendizaje físico en medio de las restricciones de las actividades presenciales. En este contexto, las aplicaciones de aprendizaje en línea están diseñadas para proporcionar soluciones prácticas en la enseñanza de deportes y juegos que se pueden realizar en el espacio abierto sin reducir la esencia del aprendizaje de la modificación de deportes.
Método. En esta Investigación y Desarrollo (I+D), se utilizó el modelo de desarrollo ADDIE con un enfoque cuasi-experimental para ver la eficacia de los productos desarrollados con una muestra de 85 estudiantes del departamento de educación deportiva. Los datos se analizaron con estadística inferencial a partir de los resultados de los datos del cuestionario y las pruebas de habilidad utilizadas. Qué otras actividades son realmente necesarias, como los métodos de investigación, la exploración de problemas potenciales y existentes, la recopilación de información mediante el desarrollo y validación y la revisión y prueba de modelos de juego en relación con la eficacia y eficiencia del modelo utilizado. Resultados. Los resultados mostraron de expertos en materiales que en la etapa de desarrollo y el nivel de validez obtuvo una puntuación de 3,60 incluyendo en la categoría muy válida con un porcentaje de 90,5. También hay resultados de la validación de expertos en medios de comunicación con una puntuación de 3,65 que se incluye en la categoría de alta validez con un porcentaje del 92,55%. Se espera que los resultados de este estudio contribuyan al desarrollo de métodos de aprendizaje físico más flexibles y accesibles para diversos grupos, especialmente en la creciente era digital.

Palabras clave

E-Módulo, modificación, cibergogía, juegos, digitalización

Introduction

As the world quickly enters the 21st century, the modern trends include the growing usage of technology and communication in all areas and especially education (Siddiq, Sudarma, 2020). In addition to teachers' increased use of online instruction, scientists are also having conversations about it (Guntoro et al., 2024). Despite its many benefits, there are a number of obstacles to overcome when implementing digital-based physical education models, (Indarto et al., 2024). In this case, the Internet is made to be fully functional in the context of the technology benefits in learning. One important metacognitive phenomenon that arises and changes throughout active learning activities based on the students' motivational orientation is learning competency (Umar, et al, 2023). The internet is used by generation Z of the industrial revolution's communicational and information technological advances and can be incorporated as a part of the teaching-learning method called Cybergogy. With no institutional support and no government regulations, the shift to online learning took place. Students and faculty members took individual initiative to transfer from the classroom to the Internet for communication, which allowed for the quick changeover (Álvarez-Mendiola, 2024).

This essay argues that the era's particular requirements are seen as a challenge for the implementation and application of the teaching-learning process across the board from the bottom to the highest education program which in this case can be explained as education within the Cybergogy based learning. The only way for organisations to improve learning is to better understand their personnel and their unique characteristics. Since learning styles vary from person to person, it's critical to identify employees' learning styles in order to better understand them and support their learning and growth (Aksoy & Üstündağ, 2023). However, the majority of the lecturers these days do not quite often move from the traditional method to the contemporary approach. Some studies show that one of the reasons why the educators remain in traditional way is lack of facilities in teaching-learning (Pramana, Jampel, 2018).

The rapid development of information technology today has brought significant impacts in various aspects of life, including education. One form of technology application that is now increasingly widespread is online learning, which allows the teaching and learning process to be carried out without time and space constraints. In the field of sports education, online learning provides an opportunity to develop more innovative and flexible teaching methods, including in teaching sports and small games.

In the Faculty of Sport Science, especially in the Department of Sport Education, online learning offers great potential to improve the quality of teaching and learning, both in theory and practice. However, to maximize its benefits, an appropriate approach is needed in designing learning materials and strategies that can overcome the challenges of limited physical interaction in cyberspace. One possible solution is the alteration of little games and sports as part of online learning materials, which not only retains the essence of teaching motor skills, but also introduces new ways to interact and practice in a digital environment.

This study aims to explore online learning applications with a focus on modifying sports and small games that are suitable for students of the Department of Sports Education at the Faculty of Sports Science. Through this discussion, it is hoped that effective ways can be found in delivering sports and small games material that is fun, relevant, and still productive even though it is done online.

A mandatory three-credit course with learning objectives that let students practice on a large or small scale and transform a sport or more into games is called "Sports and Small Games.". Learning must be modified to account for the pupils' emotional and physical immaturity. Students usually struggle to use adult tools and rules when compared to adults, which results in less motivated learning. Students' strengths and participation can be developed by the adjustment of tools and regulations, which encourages collaboration and happiness. The teacher must take into account four factors when it comes to sports modification: (a) changing the field's dimensions; (b) altering the equipment; (c) changing the game's duration; and (d) changing the game's rules. The goal is to lessen the physical demands on children by altering the field's dimensions and playing duration. Smaller bats, rackets, and sticks are among the modified equipment that will make it easier for students to use. The modifiable parts of the game at various levels (e.g., simply changing the game values, adding new elements, creating new games) from students coming from different motivations, and the students' benefits from game modifications in terms of improving their mindset (Selçuk et al., 2022). The ball's dimensions and

composition are also altered to improve student comfort; for instance, Aussie Sport creates kid-friendly volleyballs utilising premium materials. One could argue that when creating learning resources, educators must use their creativity. In team sports, small-scale games are utilised as game-based training to improve physical fitness and skill development. They also help to improve conditioning, decision-making abilities, and movement (Gür & Püren, 2019).

Additionally, the following conclusions can be made on the efficacy of sports modification in learning: (a) Boosting students' enthusiasm and motivation for physical education classes at school; (b) Enhancing student learning activities. (c) Enhancing students' learning outcomes in physical education; (d) Helping address the dearth of infrastructure and facilities for components of physical fitness and strength development, as well as for throwing and catching the ball. Teachers of physical education can enhance the learning resources for practical subjects by using their analytical experience, which will give the students other ideas for teaching-learning procedures. Practically speaking, these findings offer much-needed guidance to game designers, especially those creating learning and cognitive skill development games, regarding the visual design features of game characters that can be used to elicit strong emotions in players to aid in learning or to elicit high emotional arousal to aid in the training of cognitive skills (Plass et al., 2020). As with in-person instruction, it is crucial that students actively engage in the learning process when learning online (Sönmez & Korucuk, 2023).

E-modules are digitally packaged instructional resources that help teachers and students learn. They are organised in a methodical way so that students can learn on their own and solve issues (Asrial, 2020; Citrawathi, 2016; Diantari, 2018; Udayana, 2017). By making studying easier, e-modules can also improve student learning outcomes process, according to studies (Wirawan, 2017). Additionally, interactive electronic modules have the potential to greatly enhance student learning outcomes, according to Aryawan (2018). According to Sugihartini (2017), e-modules play a key role in online teaching and learning processes and offer the following advantages: a) students can use them interactively on digital platforms; b) learning materials can be supported by video-audio, animation, graphics, texts, and exams that provide immediate feedback. Additionally, one of the greatest options for raising students' comprehension and learning results is the e-module (Hastari, 2019). In conclusion, students may find that The sports and little game modification e-module based on Cybergogy is the finest substitute approach, particularly for online courses.

According to Yusron (2018), the Cybergogy is a learning approach in which students learn online or digitally connected to a network that allows teachers and students to keep the situation more engaging and relevant without being constrained by things like schedules, curricula, or classrooms. By adjusting students' demands in relation to their internet connection, the Cybergogy strategy is implemented regardless of time or place, allowing them to access comprehensive and diverse content (Y. Ocaña-Fernández, LA). Fernandez Valenzuela, WE S. Gallarday-Morales and Mory Chiparra (2020). Additionally, according to Sumarsono (2020), the Cybergogy also makes learning easier by creating communities where students actively share their thoughts and work out answers. According to Koehler, M. J., & Mishra (2006), the Cybergogy learning strategy Task vision, evaluation, grouping, instructor and student roles, learning model, and learning environment are all examples of cognitive, emotional, and social elements that can be utilized to promote engaged learning. Furthermore, as the example below illustrates, it is recognized as a paradigm of creative learning techniques for ICT-based learning.

Method

The research technique known as research and development (R&D) begins with an activity that will be monitored and developed in order to ultimately bring innovation to life. In order to create learning goods, this research project involves gathering data on customer demands and creating activities. This development research's flow chart looks like this: 1) Gaining an understanding of the research topic through preliminary research using questionnaires and interviews to determine issues, learning resources, and student motivation. 2) Creating a model through student engagement and observation of the learning process (planning, execution, and evaluation). Professional specialists will now debate the produced model in order to offer immediate feedback on everything from the fundamental concepts to the intricate implementation. 3) Examining, 3) Surveys and test tools are used to examine the model's

efficacy and assess the learning process and outcomes. Modifications, adjustments, and deletions are made at this point, and additional elements may be added based on the trial and error phases.

This study adopted a quantitative research approach, employing experiments to evaluate the effectiveness of online learning in enhancing physical skills, participation, and students' understanding of sports and small games. A quasi-experimental design was utilized, with the population comprising 85 students enrolled in sports and game modification courses. The sampling technique used was saturated sampling, ensuring all members of the population participated. The research was conducted in the Department of Sports Education, Faculty of Sports Science, Universitas Negeri Padang, between Juli - and December 2024. Product validation was carried out by two expert lecturers with over 15 years of experience teaching modified sports game courses. Data collection involved questionnaires to assess perceptions and the effectiveness of the online application, alongside skill tests to measure participants' physical abilities and sports skills before and after using the application. Data analysis was performed using descriptive and inferential statistical methods via SPSS to evaluate significant changes in the collected pretest and posttest data.

Results

Research and development has produced e-modules that use Cybergogy to modify sports and little games, which improves students' learning methodologies. Students will test the material and practicality, and media professionals will construct the module's feasibility assessment based on practical material with an emphasis on validity and practicality. The phases of analysis, design, and development make up the ADDIE development model used in this study. It is simple to implement with organised procedures and evaluation sessions.

a) Need Analysis Stage

The first step in evaluating the creation of an e-module based on the needs in teaching-learning was discussing the content for sports modification courses and Cybergogy-based minigames with the teaching team and students during the needs analysis stage. Therefore, it was determined to make the following changes: Athletic sports; (4) rhythmic gymnastics; (5) floor exercises; (6) physical health games; (7) self-defense games; (8) water activities; (1) big ball games like football, basketball, and volleyball; (2) small ball games like table tennis, badminton, softball, and rounders; and (4) athletic sports.

b) Designing Stage

Before creating the product, the researchers used the Kvisoft Flipbook Maker application as the framework to support all of the needs analysis observation results and offer answers to the issues using the Cybergogy-based e-module. In order to finally achieve the learning objectives, this stage seeks to offer the best instructional resources that meet the needs of both teachers and students. The book cover, preface, table of contents, e-module usage instructions, introduction, learning materials (game models and theories), formative evaluations for each of the materials created, and the video of the game models are all parts of the e-module. The storyboard for the adapted sport and game that makes use of Cybergogy learning is shown below..

1. The cover of the e-module is designed to engage readers and includes the module title, author information, an image, and the institution's identity.

Figure 1. E-Module Book Cover

2. The preface serves as an introductory statement that precedes the table of contents.
3. The Table of Contents serves as a navigational tool, guiding readers through the structure of the e-module
4. The title and a description of the content are included in cryptogy-based learning resources for sports and little game modification courses.

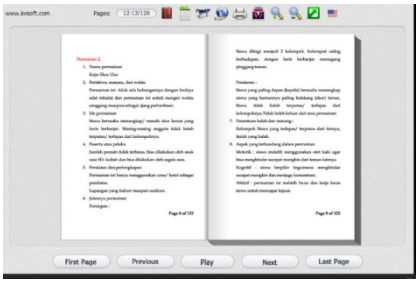

Figure 2. Learning Materials

5. The video showcases various types of modified games for sports and small games, as identified during the needs analysis phase

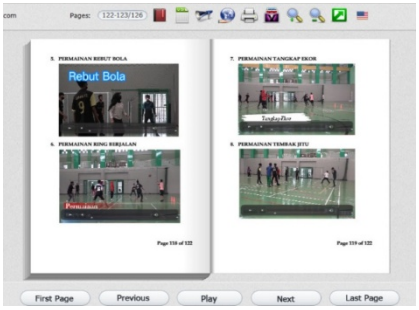

Figure 3. Games Model Video

6. The references utilized by researchers in developing e-modules serve as foundational sources of information, guiding the design and content of these educational tools

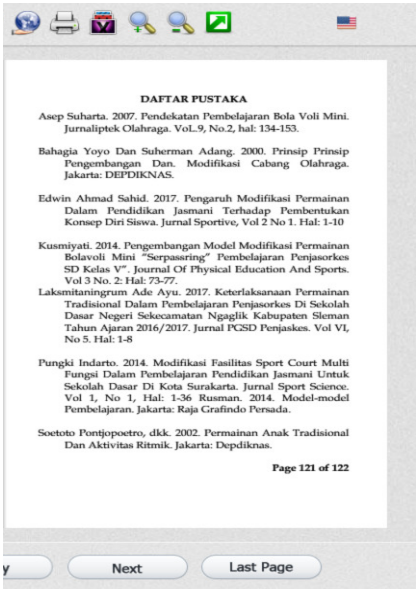

Figure 4. References

c) Development Stage

Using the KVISoft Flipbook Maker tool, the researcher began designing the Cybergogy-based e-module during this stage of development. The evaluation and measurement of the developed product's viability

and usefulness would then be permitted. Two subject-matter lecturers and material specialists conducted validation, and the results showed that the field testing category had a legitimate average score of 3.60. The final validation by media specialists with two technology specialists yielded an average score of 3.70 with the high valid category for field testing.

d) Implementation

The e-module for modifying sports and small games based on Cybergogy is now prepared for testing with students enrolled in courses. A questionnaire in the form of statements will be used to gather responses. This comes after the product validity. As a consequence, the e-module's average score was 3.60, using "very interesting" as the criterion or interpretation. It is clear that the sports and small-games e-module modification is highly engaging for online learning.

e) Evaluation

The last steps in this review stage are assessment and evaluation, which describe the usefulness of the modules' availability and verify the testing results of modified sports and small game e-modules.

The instrument used is using a questionnaire that has provided questions and answers so that experts only choose according to the feasibility of learning media with presentations in terms of material relevance and media feasibility from presentations in terms of media quality and usefulness. The criteria for selecting validators are lecturers who have taught for more than 10 years. Then the data is processed using inferential statistics using spss.

According to the stages of the study that were employed, specifically the ADDIE paradigm. The e-module received a score of 3.60 from the material experts, which placed it in the high valid category with a percentage of 90.5%; a score of 3.65 from the media experts, which similarly placed it in the high valid category with a percentage of 92.55%. Meanwhile, the product received a score of 3.85 from the students who tested it, placing it in the high attractive category with a 94.85% percentage. Students are clearly very driven to take part in online classes and learn on their own using this Cybergogy-based.

The findings of this study revealed significant improvements in students' comprehension of theoretical concepts and practical skills. Theoretical understanding showed notable enhancement, as students demonstrated a better grasp of the principles of sports modification and small games. The application proved effective in helping students adapt games for diverse purposes, including motor skill development, teamwork, and customizing game settings based on age and ability. Observations of practical skills also indicated progress, with students exhibiting greater competence in designing and modifying games after using the application. Furthermore, the study highlighted increased student engagement and interactivity in online learning compared to traditional methods. Features such as video demonstrations, peer grading, and feedback mechanisms fostered an interactive learning environment. The integration of videos, animations, and interactive graphics significantly enhanced students' ability to understand game dynamics and techniques, even in the absence of physical instructor presence.

The developed application offers several advantages, including ease of access to learning materials and the flexibility to engage with content at convenient times. It significantly enhances students' understanding of small game modifications, allowing for adaptation to diverse learner needs across various ages and abilities. However, some students faced challenges with unstable internet connections, and the absence of direct interaction with instructors and peers was identified as a limitation of the online learning experience. Despite these challenges, students showed notable improvements in designing and managing sports learning sessions, excelling in game organization, delivering clear instructions, and tailoring activities to learner characteristics. Additionally, the application fostered collaboration, as students worked together to design and test small game modifications, enhancing essential social skills such as communication, teamwork, and leadership within the sports education context.

Conclusions

Online learning apps designed specifically for sport modification and small games have proven effective

in improving students' understanding of sport teaching materials. It provided easy access and enriched the learning experience, although there were still challenges related to technical issues and limited face-to-face interaction. The application can be expanded by developing features that support more in-depth interaction between instructors and students, as well as improvements in technical management such as server capacity to overcome internet connection problems.Further research can focus on testing this application on a larger scale, including comparison with traditional learning methods, as well as developing additional features that can enhance the student learning experience.

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Authors' and translators' details:

Yuni Astuti	yuniastuti@fik.unp.ac.id	Autor/a
Rosmawati	rosmawati@fik.unp.ac.id	Autor/a
Erianti	erianti@fik.unp.ac.id	Autor/a
Oyatra Utama Warda	oyatrautamawarda@fik.unp.ac.id	Autor/a
Bayu Haryanto	bayuharyanto@bunghatta.ac.id	Autor/a
Rizki Almauli	rizkialmauli@bunghatta.ac.id	Autor/a