

Exploring the impact of E-infographics on teaching health optimizing physical education 2 in comparison to conventional methods

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Abstract:

Health Optimizing Physical Education (HOPE) is a comprehensive program that incorporates health and physical education components. This statement pertains to the acquisition of skills, establishment of regular practices, and adoption of behaviors essential for maintaining a well-rounded way of life, including their application to physical exercise. The development and validation of electronic infographics pertaining to two topic subjects in HOPE 2, namely Badminton and Table Tennis, were undertaken. The infographics provided a visual representation of the regulations governing participation in specific sports as well as the mechanics and strategies involved in gameplay. The individuals who assessed the overall suitability of the electronic infographics on Badminton and Table Tennis, created by the researcher, according to the predetermined criteria established by the Department of Education (DepEd) for assessing non-print instructional materials. The groups involved in this evaluation process are as follows: This evaluation framework encompasses four key aspects: content, format, language, and informativeness; presentation and organization; and accuracy and up-to-date information. The students exhibited a discernible disparity between their pretest and post-test outcomes after receiving education in Badminton and Table Tennis using either conventional teaching techniques or electronic infographics. The electronic infographics designed for badminton and table tennis have been evaluated by experts, jurors, and student-users and have been deemed satisfactory. The observed alterations in the results of the pretest and post-test administered to the students, both before and after their exposure to electronic infographics, indicate that the instructional material had a discernible impact on enhancing their understanding of badminton and table tennis. Animated infographics have the ability to efficiently convey larger quantities of information at a quicker pace, resulting in a more memorable experience. The use of infographics has the potential to enhance instructors' self-assurance in effectively communicating educational content and promoting the integration of graphic design technologies among students.

Key Words:-"Animated Infographics, Instructional Materials, Educational Technology, Sports Cybergogy"

Introduction

One great way to impart knowledge using infographics is to deviate and build them within the classroom. Educators use class time to draft papers, read texts, and deliver presentations. Infographics allow you to do and do all these tasks in a very fascinating and dynamic fashion way. Educators who use infographics will remain before the curve when it involves teaching practices and techniques. The interfaces of our technology are expanding visually, consequently, we must use these techniques to improve instruction. Graphic designers and artists have unlimited illustration knowledge, but incorporating complex infographics within the pre-kindergarten to the 12th-grade curriculum will help all learners grow.

As in other subject fields, physical education is a diverse and ever-changing field. It is no longer a distinct and discrete bailiwick, but one that is combined with other curricular fields and accepted as a necessary component of the overall school curriculum. Education's content and significance have grown because of study, national programs, and the creation of norms, increased infrastructure, and modern technologies.

Regrettably, existing school education systems are often marginalized, with low content rank, limited instructional duration, and insufficient financial and personnel resources. (Lee et al., 2007; McKenzie et al., 2009; NASPE, 2010). Although it is obvious that schooling cannot include all the physical exercise minutes required to meet national recommendations, teachers devote few, if any, lesson time urging students to seek out physical activity outside of education. (2006) (McKenzie et al.)

Health Optimizing Physical Education (HOPE) is a full-year comprehensive course that integrates health and physical education training. It reflects on the development of abilities, routines, and behaviours necessary to sustain a balanced lifestyle and the application of such lessons to physical activity. The course shows the importance of diligent lifestyle maintenance firsthand through constructive engagement and real-world simulations. HOPE establishes a basis for positive decision-making by developing seven skills: access to

accurate health information; analysis of internal and external influences; self-management; strategic communication; decision-making; target setting; and activism (APEX, 2019).

Educational institutions make a significant contribution to their students' health and well-being, especially through their schooling, athletics, and leisure (programs).

Unfortunately, the pressures from other curricular fields have significantly decreased time, expenditure, and standing for education and sports in classrooms. Due to the fact that each Health Optimizing Physical Education (HOPE) topic is allotted just 20 hours per semester (DepEd, Philippines, 2013). Certain schools only incorporate it for one year; they condensed all four HOPE subjects into one year, while it is meant to be implemented over four semesters or two academic years.

Likewise, Yıldırım, 2016 noted that within the instructional process, learning practices that facilitate knowledge transmission across various educational settings and training resources used in these environments are critical. Technological advancements culminated in improvements to instructional settings, the establishment of new environments, and the facilitation of learning processes through a variety of ways. Tutorial exercises that were traditionally held in lecture rooms have expanded beyond the confines of the classroom due to technical advances and have been relocated to alternative learning environments. Technology-based learning environments also enabled the concept of learning experiences through the internet and machines. New learning practices that are consistent with the currently developed learning environments have evolved or current activities have taken on new forms through this process. Nowadays, students are prepared to pay attention to teachers who provide lessons in a colourful, illustrated manner, as well as using instructional films, rather than reading books containing just words, little pictures, or no images at all, and an old-fashioned style of teaching.

Nowadays, as technology advances at a breakneck pace, exponential advancements and inventions are seen in a wide variety of fields (Dikmenli, 2015). These rapid developments are often seen as a societal advantage (Kılcın & Akbaba, 2014). However, increasing the intensity of intelligence and easy access to information today results in a flood of information, necessitating a cautious collection of valuable information (Güler, 2008).

Infographics may be integrated into the online learning experience in a variety of forms, including student-generated infographics included in study assignments to support students in summarizing details and knowledge using unique parameters and an infographic; and student-generated infographics included inside the discussion board functionality used in the majority of LMSs. Students should submit their infographics and a summary topic query for other students to respond to and criticize. This allows students to reflect objectively on the achievements and shortcomings of other student-created infographics and to appreciate the characteristics that lead to the quality of a product. Instructor-generated infographics that outline main learning goals and content in an online module. This transition away from student-generated visual summaries and toward instructor-generated visual summaries has been shown to increase students' ability to pass information (Leopold, 2013).

Bear in mind that an infographic is more than a collection of visuals and data; it is a medium for creating links. Infographics provide an excellent way to interpret facts and knowledge and to help students develop their analytical thinking skills. The ultimate aim of an infographic is to integrate facts, details, and visual elements to maximize communication effectiveness. Finally, an infographic can show a student's ability to sort information, shape relationships, recognize trends, and present the data as more concrete knowledge (Hamadi, 2019).

This research can also prove beneficial to teachers and students involved in the teaching-learning phase. It can be used as a fabric for teachers and students to use when learning HOPE 2. More precisely, this research can educate supervisors and teachers in general, and education teachers, about the importance of using a variety of teaching strategies. The study stresses the value of developing critical thinking skills through infographics and how they can assist teachers in overcoming common teaching obstacles. Emphasizing the importance of differing instructional methods and students' learning styles. Assuring the value of incorporating any element of interest and amusement into the tutorial method by provoking students in the use of fascinating educational figures and designs and attracting scholars' interest to do related studies on other courses at various times.

The study focused on health promoting lifestyle among university employees. The general objectives of the study are as follows:

1. Develop the health optimizing physical education electronic infographics shown in terms of 1.1 Content: Create informative and relevant content related to health optimizing physical education. 1.2 Format, Language, and Informativeness of the Infographics: Design the infographics using appropriate format, language, and ensure they are informative and easy to understand. 1.3 Presentation and Organization: Arrange the infographics in a clear and organized manner for effective presentation. 1.4 Accuracy and Up-to-datedness of Information: Ensure that the information presented in the infographics is accurate and up to date.
2. Validate the health optimizing physical education electronic infographics shown with experts in terms of 2.1 Content: Obtain expert feedback and evaluation to assess the quality and relevance of the content in the infographics. 2.2 Format, Language, and Informativeness of the Infographics: Seek expert opinions on the infographics format, language, and informativeness. 2.3 Presentation

- and Organization: Obtain expert feedback on the presentation and organization of the infographics to enhance their effectiveness. 2.4 Accuracy and Up-to-datedness of Information: Validate the accuracy and currency of the information presented in the infographics with the help of experts.
3. Determine the significant difference between the pre-test and post-test results in traditional teaching badminton and table tennis.
 4. Compare the pre-test and post-test results using electronic infographics in teaching badminton and table tennis to determine if there is a significant difference.
 5. Investigate the significant difference between the pre-test results of the traditional way of teaching badminton and table tennis and the use of electronic infographics in teaching these sports.
 6. Examine the significant difference between the post-test results of the traditional way of teaching badminton and table tennis and the use of electronic infographics in teaching these sports.

Material & methods

Research Design

This study used a quasi-experimental design specifically the pre-test and post-test non-equivalent two-grouped design. A quasi-experimental design is an empirical study used to estimate the causal impact of an intervention on its target population (Dinardo, 2010). For comparison purposes, a Pre-test post-test non-equivalent group design was used for both a control group and an experimental group.

Sampling and Setting

A cluster sampling was used in this study, it is a probability sampling technique where researchers divide the population into multiple groups (clusters) for research. The researcher selected random groups with a simple random sampling technique for data collection and data analysis. The accessible population is the total number of cases that conform to the set criteria and that are accessible to the researcher. The research participants include the grade 11 students in (four sections) of the University, two (2) sections were assigned for badminton and another two (2) sections for table tennis. The two sections were coming directly from the regular sections.

For the panel of experts (Physical Education), they were chosen using the following criterion: a) Badminton and or Table Tennis is his/her field of expertise; and b) Teacher/Coach of Badminton and or Table Tennis. For the Information Technology experts, the following are the criteria: a) Animation is his/her field of expertise as IT specialist; b) He/she able to create electronic infographics or related works; c) At least 5 years in the field (animation).

Instruments and data collection

In the data collection stage, an informed consent was given indicating that participation of the respondents was based on voluntariness and all the pertinent information needed in the conduct of the study. The researcher used a questionnaire as the major tool. There were three (3) sets of questionnaires: a) Evaluation of the prepared Electronic Infographic Show using the adapted rating sheet for non-print materials by DepEd. The evaluation form is divided into four (4) factors which are: Content, Format, Language, and Informativeness of the Infographics, Presentation and Organization, and Accuracy and Up-to-datedness of Information.

These factors must obtain the passing rate to consider the resource pass the criterion: Content must score at least 21 points out of the maximum 28 points; Format, Language, and Informativeness of the Infographics must score at least 15 points out of a maximum 20 points; Presentation and Organization must score at least 15 points out of a maximum 20 points; Accuracy and Up-to-datedness of Information must score at least 20 points out of a maximum 24 points. b) Pre-test and c) Post-test. The researcher used a teacher-made-test based on the learning competencies of Grade 11 HOPE 2 Syllabus and Table of Specification that was validated by PE Teachers and served as the pre-test and post-test. The teaching proper was conducted by the researcher that take the role of a teacher.

Ethical Considerations

The evaluators were given a letter containing adequate and comprehensive information about the study. Likewise, the study intends to use participants under 18 years old (minor) who are considered a vulnerable population, a parental consent and assent were given.

The letter indicated that the initial target participants should voluntarily consent to participating in the study. They also have the right to withdraw whenever they feel uncomfortable about disclosing their experiences and to withhold information. The written informed consent also contained the potential risks and potential benefits of the study to assure the protection of the respondents. The anonymity and confidentiality of the informant's identity as well as of the data they disclosed with the research were also assured.

The researcher will use online or electronic archives. That involves extracting and processing quantitative data. Data will be inputted in spreadsheet and automatically stored in researchers google account. It will be stored for up to 3 years after the research is completed. Disposing electronic files will be as deleting other documents in computer.

The researcher will generally seek permission and approval from the IRB before the study is conducted. Rest assured; all the ethical protocols set by the IRB will be followed by the researcher.

Data Analysis

The researcher used mean rating to determine the validity of the electronic infographic show. The data were analysed with the use of paired t-test for the pretest and post-test difference. Independent t-test for the difference between pretest and difference of post-test. The data were analysed using SPSS to determine the output of the two-teaching style.

Results

Evaluation of the Electronic Infographics based on Experts' Judgement.

Evaluation of the electronic infographics based on experts' judgement is presented in Table 1. The data shows that factor 1 which is about the content of badminton e-infographics got a mean rating of 27.33 which is interpreted as passed. While table tennis got a mean rating of 24.5, interpreted as passed. In terms of format, language, and informativeness of the e-infographics which is factor 2, badminton got a mean rating of 19.17 and the table tennis got a mean rating of 18.00 which are both interpreted as passed. Factor 3, which is about presentation and organization, table tennis got a mean rating of 17.33 while badminton got a mean rating of 17.00, both interpreted as passed. For the last factor accuracy and up-to-datedness of the information both sports passed. Badminton with a mean rating of 24.00 and table tennis got a mean rating of 22.33.

The evaluators' overall average rating on the developed infographics met and surpassed the scores set by the Department of Education in evaluating non-print instructional materials, signifying an excellent evaluation of its acceptability.

Table 1: *Evaluators' Rating*

Factor 1: Content	Badminton		Table Tennis	
	Mean	SD	Mean	SD
1. Content is suitable to the learners' level of development.	4.00	0.00	3.50	0.50
2. Material contributes to the achievement of specific objectives of the learning area and grade level for which it is intended.	4.00	0.00	3.67	0.58
3. Material provides for the development of higher cognitive skills such as critical thinking, creativity, learning by doing, inquiry, problem solving, and 21st Century Skills.	3.67	0.47	3.67	0.58
4. Material is free of ideological, cultural, religious, racial, and gender biases and prejudices	4.00	0.00	3.33	0.58
5. Material enhances the development of desirable values and traits	3.67	0.47	3.33	0.58
6. Material arouses interest of target learner	4.00	0.00	3.67	0.58
7. Adequate warning / cautionary notes are provided in topics and activities where safety and health are of concern.	4.00	0.00	3.33	0.58
Total	27.33		24.50	
Interpretation	Passed		Passed	

Legend:

Total score that is lower than 21 is equal to failed.

Total score that is greater than 20 is equal to passed.

Factor 2: Format, Language, and Informativeness of the Infographics	Badminton		Table Tennis	
	Mean	SD	Mean	SD
1. Language	3.83	0.29	3.33	0.58
2. Illustration	3.83	0.29	3.33	0.58
3. Design & Layout	3.83	0.29	3.33	0.58
4. Basic Presentation Structure	3.83	0.29	4.00	0.00
5. Informativeness	3.83	0.29	4.00	0.00
Total	19.17		18.00	
Interpretation	Passed		Passed	

Legend:

Total score that is lower than 15 is equal to failed.

Total score that is greater than 14 is equal to passed.

Factor 3: Presentation and Organization	Badminton		Table Tennis	
	Mean	SD	Mean	SD
1. Presentation is engaging, interesting, and understandable.	3.50	0.50	3.50	0.50
2. There is logical and smooth flow of ideas.	3.33	0.58	3.33	0.58

3. Vocabulary level is adapted to target learner's experience and understanding.	4.00	0.00	3.50	0.50
4. The infographics are presented in a logical and sequential order.	3.50	0.50	3.33	0.58
5. The information are presented in a unique and original form.	3.50	0.50	3.33	0.58
Total	17.83		17.00	
Interpretation	Passed		Passed	

Legend:

Total score that is lower than 15 is equal to failed.

Total score that is greater than 14 is equal to passed.

Factor 4: Accuracy and Up-to-datedness of Information	Badminton		Table Tennis	
	Mean	SD	Mean	SD
1. Conceptual Errors	4.00	0.58	3.67	0.58
2. Factual Errors	4.00	0.58	3.67	0.58
3. Grammatical Errors	4.00	0.58	3.67	0.58
4. Computational Errors	4.00	0.58	3.67	0.58
5. Obsolete Information	4.00	0.58	3.67	0.58
6. Typographical and other minor errors	4.00	0.00	4.00	0.00
Total	24.00		22.33	
Interpretation	Passed		Passed	

Legend:

Total score that is lower than 20 is equal to failed.

Total score that is greater than 19 is equal to passed.

Comparison of Students' Pretest and Posttest scores in the traditional way in teaching badminton and table tennis

Significant difference between the pre and posttest in the traditional way of teaching badminton and table tennis is presented in table 2. The data shows that both badminton and table tennis got the same p value of .001 which is less than a 0.05 level of significance. It means that it is significant, and the researcher can highly accept the alternative hypothesis and reject the null hypothesis at 5% level of significance. Therefore, it shows that there is a significant difference between the pre-and post- test in the traditional way of teaching badminton as well as in table tennis.

Table 2: *Significant difference between the pretest and posttest in the traditional way in teaching badminton and table tennis.*

Traditional Way of Teaching		Mean	Std. Dev.	t	df	Sig (2 tailed)
Badminton	Pre	10.5	4.2	20.3886	19	0.001
	Post	29.5	3.66			
Table Tennis	Pre	14.35	7.91	9.305	19	0.001
	Post	26.35	3.51			

Comparison of Students' Pretest and Posttest scores in the teaching of badminton and table tennis using e-infographics.

Table 3 presents the significant difference between the pre- and post-test in teaching badminton and table tennis using e-infographics. The data shows that the p value of .001 for badminton and .001 for table tennis are less than at 0.05 level of significance. It means that it is significant, and the researcher can highly accept the alternative hypothesis and reject the null hypothesis at 5% level of significance. Therefore, it shows a significant difference between the pre-and post- test in teaching badminton and table tennis using e-infographics.

Table 3: *Significant difference between the pretest and posttest in the teaching of badminton and table tennis using e-infographics.*

Teaching Infographics	Using E-	Mean	Std. Dev.	t	df	Sig (2 tailed)
Badminton	Pre	10.35	5.01	16.2338	19	0.001
	Post	30.65	2.56			
Table Tennis	Pre	11.4	6.42	14.1561	19	0.001
	Post	30.35	3.17			

Comparison of Students' Pretest scores of traditional and use of e-infographic in teaching badminton and table tennis.

Pre-test between the traditional way and using e-infographics in teaching badminton and table tennis is presented in table 4. The results show that the p value for teaching badminton is 0.919, and for teaching table tennis the p is .203. Both got a result of greater than 0.05 level of significance. It means that it is not significant, and the researcher can reject the alternative hypothesis and accept the null hypothesis at 5% significance level. Therefore, it shows that there is no significant difference in the pre-test between the traditional way and using e-infographics in teaching badminton and table tennis.

Table 4: *Significant difference between the pre-test of the traditional and use of e-infographic in teaching badminton and table tennis.*

Pre-test result		Mean	Std. Deviation	t	df	Sig.(2-tailed)
Badminton	Traditional	10.5	4.2	0.1026	38	0.919
	e-Infographics	10.35	5.01			
Table Tennis	Traditional	14.35	7.91	1.29519	38	0.203
	e-Infographics	11.4	6.42			

Comparison of Students' Posttest scores of traditional and use of e-infographic in teaching badminton and table tennis.

Table 5 presents the post-test between the traditional way and using e-infographics in teaching badminton and table tennis. The results show that the p value of teaching table tennis is 0.001 which is less than at 0.05 level of significance. It means that it is significant, and the researcher can reject the null hypothesis and accept the alternative hypothesis at 5% significance level. Therefore, it shows that there is a significant difference in the post-test between the traditional way and using e-infographics in teaching table tennis. While teaching badminton got a p value of 0.257 which is greater than at 0.05 level of significance. It means that it is not significant, and the researcher can reject the alternative hypothesis and accept the null hypothesis at 5% significance level. Therefore, it shows that there is no significant difference in the post-test between the traditional way and using e-infographics in teaching badminton.

Table 5: *Significant difference between the post-test of the traditional and use of e-infographic in teaching badminton.*

Post-test result		Mean	Std. Deviation	t	df	Sig.(2-tailed)
Badminton	Traditional	29.5	3.66	1.1507	38	0.257
	e-Infographics	30.65	2.56			
Table Tennis	Traditional	26.35	3.51	3.7819	38	0.001
	e-Infographics	30.35	3.17			

Discussion

Electronic infographic shows are used to animate audio-visual objects inside a mass of data that needs to be communicated correctly and curiously when including communication, visual communication, and graphic design elements (Kalinia, 2014). In today's environment, infographics have proven to be a successful tool for knowledge dissemination. There are more favored videos than a standard informational website. In this case, it's worth noting that viewing videos is preferable to reading text in today's world. Due to the scope of the study, stationary infographic experiments on data transfer are less effective. Since infographics are always impressive, they are simpler to share (Kukral 2012). Additionally, the selection of animated infographic videos is growing daily to make them easier to distribute through electronic media and to reach a broader audience.

The electronic infographics produced illustrated the laws of badminton and table tennis. The analysis determined the passing rate for the resource by analyzing responses from a panel of experts. Several criteria were examined, including the material, structure, language, and informativeness of the infographics, layout, organization, quality and currency of the details. The created electronic infographic demonstrates how the developed electronic infographic improved students' success in terms of subject information acquisition.

According to the study's data, both evaluators decided that the content of each electronic infographic is clearly related to the specified objectives and is easily understandable. Additionally, they decided that each lesson's subjects be thoroughly explored and accompanied by illustrative demonstrations appropriate to the students' stage. Similarly, the vocabulary is straightforward, succinct, inspiring, and simple to grasp. In terms of description, the evaluators unanimously concluded that the subjects are addressed coherently and chronologically. Likewise, they accepted that the infographics' lessons be delivered initially and uniquely.

Finally, based on the responses of the evaluators to the infographics, the produced electronic infographics would inspire students to learn Badminton and Table Tennis. Conversely, they decided that these infographics would assist students in mastering the topics at their own speed. Furthermore, they were convinced that these infographics would help students use their time more effectively and would appeal to their specific needs.

After having been introduced to the learning atmosphere, students demonstrated a noticeable gap in their pretest and posttest results in the instruction of Badminton and Table Tennis using either traditional methods or e-infographics. It suggests a relatively more successful method of generating learning results in a lecture environment (Malik, 2019), which could suffice to mean that teachers may be able to shift the attention of the classroom away from what it is and toward what their students should achieve, allowing them to take responsibility for their own learning (TorreFranca, 2017). Additionally, the results indicate no statistically significant difference in the arithmetic means of pretest scores among students subject to traditional instruction or the usage of electronic infographics. Similarly, there is no substantial gap in posttest scores between students who engaged in traditional or electronic infographics-based discussions regarding badminton. The usage of infographics as educational content in teaching Table Tennis resulted in a major advantage for students open to its use.

According to the outcomes of using infographics as teaching tools in 11th grade discussions on Badminton and Table Tennis, there is no significant difference between using infographics with badminton lessons and using infographics with table tennis lessons. Nevertheless, there is a significant difference between using infographics and table tennis lessons. However, this finding demonstrates that infographics improve students' performance during badminton and table tennis lessons.

The findings of similar studies indicate that infographics have an impact on learners across a variety of thinking styles and provide compelling arguments (Williams, 2002), address more than one sensory organ, engage learners actively in the learning process, result in permanent learning (Akkoyunlu & Ylmaz, 2005), have a high recall rate (Borkin et al., 2013), and increase students' success by a factor of two. As a result, it can be said that infographics are effective teaching tools for badminton and table tennis.

The study's primary contribution is to serve as one of the teaching materials that will assist HOPE 2 teachers in improving their methods of instruction and assisting students in developing an appreciation for the topic, especially Badminton and Table Tennis, where students are expected to learn critical thinking and lifelong fitness. The use of infographics in physical education can provide solutions to popular problems faced by PE teachers. Time is a frequent source of conflict for PE students, since they must address and show one sport capability in less than two hours. The results of this research have consequences for both theory and practice in terms of the utility of infographics in classroom teaching and the instructor who creates them. Finally, infographics help students do well in terms of information acquisition. It can also be used to encourage physical literacy and wellbeing in a variety of respects, since it is a visual interactive form of content that "millennial/twentieth-century learners" can connect to.

Consequently, it is possible to claim that incorporating infographics into badminton and table tennis instruction increases academic achievement. Additionally, it may aid in visual and verbal learning. Additionally, these findings may serve as inspiration for teachers by including alternative and differentiated learning resources for Physical Education.

Conclusions

Based on the comprehensive inquiry carried out in this study, several noteworthy findings can be derived pertaining to the use of electronic infographics within the domain of Health Optimizing Physical Education (HOPE), specifically concentrating on the sports of Badminton and Table Tennis. The electronic infographics created for Badminton and Table Tennis received widespread approval and validation from experts, jurors, and student users, confirming their authenticity and efficacy in the educational context.

Additionally, it is important to highlight the significant change seen in students' pretest and posttest scores after their exposure to these infographics, indicating substantial improvements in their understanding of the respective sports. Significantly, this suggests that students not only acquired information but also exhibited the capacity to apply it, with instructors assuming the role of facilitators in this process of learning.

Furthermore, the research emphasizes the effectiveness of animated infographics in the transfer of knowledge, effectively communicating significant information at a faster rate while also making a lasting impact on learners. Ultimately, integrating infographics into educational practices can enhance instructors' self-assurance in effectively conveying instructional material and cultivate a climate of digital proficiency among students, promoting their active involvement with graphic design technology.

In conclusion, this study highlights the effectiveness of electronic infographics as valuable educational tools with the potential to bring about significant changes, not only in the context of Badminton and Table Tennis, but also in broader educational practices and the incorporation of innovative technologies in teaching and learning.

Recommendations

Based on the obtained findings and conclusions in the study, the following recommendations are hereby offered:

- A. Considering the limitations identified and the findings of the study, the following are recommended as future research subjects:
 1. Delivery of infographics with diverse profiles
 2. Acceptance of students towards the use of infographics
 3. Pedagogical styles in teaching PE with infographics
 4. Developing infographics with other competencies in physical education
- B. It is recommended for the proctors to use lockdown browser or software in proctoring exams online. This may help to avoid cheating and preserve the integrity of the test.
- C. For the teachers handling physical education, it is recommended to upgrade themselves about using infographics in teaching physical education.

It is also recommended for administrators that they should continually provide seminars, trainings, and workshop conceptualizing, developing and further validating instructional materials like infographics.

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