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Technological Incorporation in Healthcare Education

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Abstract
The aim of this study is to establish technologies utilized in contemporary delivery of undergraduate health professional education. The objective is to evaluate the impact of networked web-based e-learning and non-networked computer-based e-learning on students' satisfaction, attitudes, skills, and knowledge, striving to unearth some of the beneficial effects and possible demerits accruing from e-learning adaptation. Regarding methods and data collection, the search strategy combined keywords and search subject headings to capture intervention and participant elements, gaining insights from major educational, psychological, and medical bibliographic databases such as ERIC, Web of Science, CENTRAL, PsychINFO, EMBASE, and Medline. From the findings, student exposure to computer-based learning fostered satisfaction with the intervention when compared to learners exposed to traditional learning methods.

Keywords: Healthcare Education, e-learning etc.

1 Introduction

The study's motivation and specific objective lie in the evaluation of the impact of networked web-based e-learning and non-networked computer-based e-learning (CBL) on the satisfaction, attitude, skills, and knowledge of studnets. Indeed, the study is deemed important and contributory to the subject of health profession education innovation and updating in several ways. For instance, the investigation might give critical insight into some of the beneficial effects and also potential drawbacks with which e-learning could be associated. In addition, the study is deemed important because it might offer informative insights into the manner in which e-learning quality could be evaluated. Similarly, the study seeks to contribute to and extend the literature by identifying and discussing some of the success factors that inform e-learning interventions' implementation and adaptation when it comes to health profession education innovation and updating. It is also notable that this study is important because it offers a discussion and gives inference regarding some of the strategies that are worth introducing, institutionalizing, and sustaining effectively and equitably in relation to the e-learning phenomenon. Lastly, the study seeks to offer policy and practice recommendations, as well as directions for future research practices.

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2 Methodology

When it came to data summary, there was the systematic mapping of various technology types employed towards the delivery of learning materials or content. The process allowed for the identification of the key types of delivery technologies, which included local area network-based, online, networked, or internet learning, as well as non-networked CBL. In turn, there was the qualitative comparison of the features of the given interventions' participants between the included investigations, allowing for the determination of meta-analysis feasibility. However, given substantial methodological and clinical heterogeneity, a meta-analysis was not implemented. Rather, there was a narrative synthesis process to allow for evidence summarization.

3 Results and Discussion

One of the initial steps was to conduct a comparative analysis of the effect of non-networked CBL in e-learning interventions or contexts. Particularly, variables that were investigated in relation to their moderating role of effect included satisfaction, attitudes, skills, and knowledge. Here, findings were presented based on how, based on the aforementioned variables, CBL fared with traditional learning, as well as how different CBL modes fared with each other.

On the interplay between traditional learning and e-learning relative to the variable of knowledge, with 40 interventions having compared traditional learning with non-networked CBL in e-learning contexts, 33 of them had assessed the knowledge variable. Out of the 33 interventions, 11 of them depicted that when studnets are assigned to CBL, they tend to exhibit a statistically significant increase in their state of knowledge gain when compared to scenarios entailing learners exposed to traditional learning. Here, the outcome measures were discerned relative to correct responses that the intervention participants had provided to questions including elements such as fill-in-the-blanks, multiple-choice, and true-false assessments. For such interventions, the range of sample sizes was between 19 and 225, with all (but four interventions) focusing on medical students. It is also notable that seven of the interventions had focused on their main intervention in terms of full e-learning, with four interventions focusing on and gaining insights from blended learning. Imperative to highlight is that none of these interventions reported any significant knowledge gain on the part of the student group exposed to traditional learning, a control group in this case.

This study also established that between traditional learning and e-learning, post-intervention knowledge did not exhibit statistically significant variations in 58% of the selected interventions. However, 6% of the studies depicted mixed outcomes in which, depending on the specific knowledge indicator under assessment, they favored the control, intervention, or neither group.

Apart from knowledge gain, the subject of skills in relation to traditional learning versus e-learning among health profession students was assessed. On this attribute, 13 interventions evaluated skill as a variable. Of the interventions focusing on the skill acquisition parameter, 62% of them established significantly greater skill acquisitions in situations where medical students had been exposed to the e-learning arrangement outperforming their counterparts in the traditional learning scenario, the control group in this case. For these interventions, also, the range of skills evaluated included self-efficacy assessments, performance in OSCE, the knot-tying and fibrotic intubation skills, and cardiopulmonary resuscitation. Indeed, the range of

the number of participants in the interventions was between 19 and 354, with the study participants being medical students. Here, 23% of the interventions failed to detect any significant variations in skill acquisition between the intervention and the control groups. Also, none of the interventions depicted more favorable outcomes when it came to the case of medical studnets participating in the traditional learning pathway, compared to the case of the intervention group in the e-learning pathway.

4 Conclusion

Six cluster RCTs and six RCTs sought to discern medical students' attitude state relative to the two forms of learning, with Likert scale surveys allowing for the provision of critical insights into the perceived interplay or association. In the findings, this study depicted that 42% of the interventions established more favorable outcomes for learners exposed to CBL, outperforming those undergoing traditional learning. Also, 50% of the interventions failed to report any statistically significant variations in attitudes between the control group and the intervention group. Still, with the parameter of attitude on the focus, 8% of the interventions proceeded to evaluate variations between two forms of e-learning and traditional learning. At this point, the current study revealed mixed outcomes. For instance, when the e-learning medical student group with no interaction (involving computer-based cases without tests) was compared with the traditional learning medical students, the findings revealed that from the statistical perspective, significantly more participants opted for e-learning with no interaction, favoring this option when compared to traditional learning. Also, there was the comparison of the performance of the e-learning group with interaction (in which free-text and multiple-choice questions were offered) and that of the control or traditional learning group. In the findings, the investigations did not depict any statistically significant variations in the performance of learners.