

E-learning as Part of Residency Education

Adam ABOVARDA^a, Helena VALLO HULT^{a,b,1}, Christian MASTER ÖSTLUND^a
and Paul PÅLSSON^{b,c}

^aUniversity West, School of Business, Economics and IT, Sweden

^bNU Hospital Group, Sweden

^cUniversity of Gothenburg, Sweden

Abstract. Through a literature review in combination with qualitative analysis of course evaluations, this study examines aspects that contribute to enhancing e-learning for physicians in a residency education program. The literature review and the qualitative analysis outline three main factors (pedagogical, technological, and organizational), highlighting the importance of a holistic approach that includes learning and technology in context when integrating e-learning strategies in adult learning programs. The findings contribute insights and practical guidance for education organizers on how to conduct e-learning during and after the pandemic.

Keywords. Covid-19, continuing professional development (CPD), residency education, digitalization, e-learning, healthcare, physicians.

1. Introduction

Like many education institutes, organizers of medical residency education had to switch to e-learning during the COVID-19 pandemic. In healthcare e-learning, individual digital skills and understanding of the usefulness of digitalization in practice, along with pedagogical factors, self-motivation and interactive learning methods can be facilitating factors [1,2]. This study contributes to enhancing e-learning for resident physicians in Sweden through the following research question: *how do resident physicians perceive and relate to e-learning, and what aspects should be considered when integrating e-learning as part of adult learning?* The paper adopts a sociotechnical approach to e-learning, stressing the importance of social situations and interactions, and technology aspects to foster an environment that creates engagement and motivation [3,4].

2. Methodology

The study was performed by conducting a literature review [5] combined with qualitative analysis on course evaluations, to investigate physicians' experiences, perceptions, and satisfaction with e-learning. Four online courses with resident physicians (79 individuals, 119 participants in total) in a Swedish hospital during 2020-2021 formed the base for the analysis. The questionnaires contained open-ended reflective questions about participants' experiences and were analyzed through thematic analysis [6].

¹Corresponding Author: Helena VALLO HULT, University West and NU Hospital Group, Trollhattan, Sweden; E-mail: helena.vallo-hult@hv.se.

3. Results

The main factors influential for e-learning identified in the literature review can be summarized as pedagogical (e.g., learner-instructor interaction), organizational (e.g., infrastructure, training) and technological (e.g., hardware and software). The qualitative analysis correspondingly revealed three main themes related to the physicians' perceptions, experiences and satisfaction with e-learning: i) views and ideas related to the technology used during their participation in the online courses. This could be about internet connection or sound and video using Zoom. ii) pedagogy-related issues, which could be about the lectures, group discussions and social interactions; and iii) course management issues, such as planning and disseminating of course materials.

4. Discussion and Conclusion

The participants in the study valued the enabling *pedagogical factors* of e-learning, such as facilitated discussions in break-out rooms and walk-and-talk groups. This is in line with the literature, where interactive functionalities were considered among the most important features [4,7]. *Technology factors*, such as reliable tools and connection, are among the characteristics that affect the usability and the effectiveness of e-learning [8]. Participants in this study were likewise unsatisfied when faced with technology-related issues such as poor audio quality and the absence of webcams by some of their colleagues. *Organization factors* related to management of course planning and activities, were also mentioned, such as access to course material, and communication during lectures [7]. In sum, similarities in the literature review and the qualitative analysis confirm that all factors should be considered, highlighting the importance of a socio-technical approach that includes learning and technology in context [3,4]. Altogether, the findings suggest that important lessons are to be learned, but in doing so, there is great potential for integrating e-learning strategies into post-pandemic residency education.

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