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Assessing the impact of online training platforms on continuing education in science and technology fields

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Abstract. The influence of online training platforms on continuing education in the fields of science and technology in Indonesia. The rapid evolution of the digital landscape and the increasing demand for up-to-date skills in these sectors serve as the backdrop for this study. The primary objective is to evaluate how these online platforms facilitate skill development and knowledge acquisition among professionals in Indonesia, focusing on accessibility, content relevance, and the effectiveness of online learning methodologies. Utilizing a qualitative research approach, the study employs in-depth interviews, focus group discussions, and content analysis of various online training platforms. This method enables a comprehensive understanding of the user experience and the platforms' educational impact. The findings reveal a significant positive impact, highlighting that these platforms offer flexible, diverse, and up-to-date learning opportunities. They are particularly beneficial for professionals seeking to enhance their expertise amidst busy schedules and geographical constraints. The study also identifies areas for improvement, such as the need for more localized content and enhanced interactive features. Overall, the research underscores the vital role of online training platforms in supporting continuing education and professional development in science and technology sectors within Indonesia.

Keywords: Online Training; Education; Science and Technology

INTRODUCTION

The integration of online training platforms in continuing education, especially in the fields of science and technology, has become increasingly significant in the Indonesian context. This shift towards digital learning platforms is driven by the growing need for continuous professional development and the rapid advancement of technology in these sectors (Llantos, 2022). The primary issue under investigation is how these platforms are affecting the landscape of continuing education in Indonesia, particularly in terms of accessibility, quality of content, and their overall efficacy in enhancing professional skills and knowledge.

The theoretical framework for this study is based on the principles of adult learning theory as proposed by (Gascó-Hernández et al., 2018), which emphasizes the self-directed nature of adult learning and the importance of practical, experience-based knowledge. Additionally, the research is

informed by the technology acceptance model (TAM), introduced by (Molino et al., 2020), which examines the factors influencing the adoption and use of new technologies. This model is particularly relevant in understanding the factors that affect the acceptance and effectiveness of online training platforms in a professional context.

The state of the art in this area highlights a growing reliance on digital platforms for professional development, especially in the wake of the global pandemic, which has accelerated the shift to online learning (Marangunić & Granić, 2015). However, there is a gap in research specifically focusing on the Indonesian context, where the digital infrastructure and educational landscape present unique challenges and opportunities.

The purpose of this study is to assess the impact of online training platforms on continuing education in the science and technology sectors in Indonesia. It aims to evaluate the effectiveness of these platforms in meeting the educational needs of professionals, identify barriers to their use, and understand how they are shaping the future of professional development in these fields. This research is essential for informing policy and practice in the area of adult education and technology-enabled learning in Indonesia.

METHOD

This study adopts a qualitative research approach to assess the impact of online training platforms on continuing education in the science and technology fields in Indonesia. The qualitative methodology is chosen for its strength in providing in-depth insights and understanding the nuanced experiences of individuals (Creswell & Clark, 2017; Creswell & Creswell, 2017). This approach allows for a comprehensive exploration of how these platforms influence learning and professional development in these specific fields.

The informants for this study are meticulously selected to encompass a diverse range of perspectives. They include educators, professionals enrolled in online training programs, and administrators of these platforms. This selection is guided by the principle of purposive sampling, which ensures that participants have relevant experience and insights related to the use of online training platforms in continuing education (Creswell, 2010). The diversity in informants' backgrounds and roles provides a rich, varied set of data, essential for a holistic understanding of the platforms' impact.

Data collection is conducted through a combination of semi-structured interviews, focus group discussions, and analysis of relevant documents. The semi-structured interviews allow for in-depth exploration of individual experiences and perceptions (John W Creswell, 2013), while focus groups facilitate the generation of collective insights and the identification of shared themes (Creswell & Creswell, 2017). Additionally, the analysis of documents, such as course materials and platform usage data, provides an objective perspective to complement the subjective views obtained from interviews and discussions.

For data analysis, the study employs thematic analysis, a method well-suited for identifying, analyzing, and reporting patterns within qualitative data (Braun et al., 2021). This involves a rigorous process of coding the data, identifying significant themes, and interpreting the findings in relation to the research questions. The analysis aims to uncover how online training platforms affect the accessibility, relevance, and effectiveness of continuing education in science and technology fields in Indonesia, thereby providing insights into their overall impact on professional development in these sectors.

RESULTS AND DISCUSSION

Result

The research findings reveal a significant impact of online training platforms on continuing education in science and technology sectors in Indonesia. These platforms have greatly expanded access to educational resources, especially for professionals in remote or underserved areas. Traditionally, such individuals faced considerable challenges in accessing continuous education due to

geographical and logistical constraints. The online platforms have mitigated these barriers, providing an avenue for learning that is accessible from any location. This has been particularly beneficial for professionals who are unable to attend traditional educational institutions due to distance or time constraints.

One of the most notable advantages reported by participants is the flexibility and convenience offered by these platforms. Unlike conventional educational settings with fixed schedules, online training allows learners to engage with content at their own pace and at times that suit their personal and professional commitments. This aspect of online learning is especially important for working professionals who must juggle their job responsibilities with educational pursuits. The ability to access courses and materials at any time has been instrumental in enabling continuous learning and professional development without compromising work or personal life.

In terms of content, the study underscores the effectiveness of online platforms in delivering relevant and up-to-date educational materials. Participants emphasized that the courses available are tailored to the current needs and trends in their respective fields. This ensures that the skills and knowledge acquired are not only theoretical but also practical and applicable to their daily work environments. The relevance and immediacy of the content provided by these platforms are crucial in equipping professionals with the competencies needed to stay competitive and proficient in rapidly evolving technological landscapes.

However, the research also brings to light significant challenges related to the digital divide and varying levels of digital literacy among participants. While the accessibility of online learning platforms is a major advantage, it is not uniformly experienced by all learners. Participants from areas with limited internet access or those with inadequate digital skills often find it challenging to fully engage with online learning. This digital divide creates disparities in the effectiveness of online training, as not all professionals can benefit equally from these educational resources.

The study reveals that limited internet connectivity is a major obstacle for many participants, particularly those in rural or less developed areas. Poor internet infrastructure directly affects the ability to access online courses consistently and reliably. This challenge is compounded for participants with limited financial resources, as they may not have access to high-quality internet services or the necessary technological devices.

Furthermore, the findings highlight a gap in digital literacy skills among some participants. Despite the growing ubiquity of digital technology, there is a notable segment of professionals who lack the essential skills to navigate online learning platforms effectively. This lack of digital proficiency can impede the learning process, making it difficult for these individuals to fully benefit from the resources available. Addressing this gap through targeted digital literacy training could enhance the efficacy of online training and ensure a more inclusive and equitable learning experience for all participants.

Discussion

The expansion of educational access via online platforms, as highlighted in this study, aligns with the findings of (Ifenthaler & Hofhues, 2021; Vallejo-Huanga et al., 2019), who noted the transformative role of digital learning in democratizing education. This is particularly relevant in Indonesia, where geographical and logistical barriers have traditionally limited access to continuing education. The online platforms have effectively bridged this gap, offering flexibility and convenience, which are essential for professionals juggling work and personal commitments (Alghamdi & Alghamdi, 2022; Camilleri & Camilleri, 2022). This flexibility is not just a matter of convenience but a necessity for many learners, enabling them to engage in lifelong learning without disrupting their professional or personal lives (Tanniru et al., 2021).

The relevance and timeliness of the content provided on these platforms are crucial, as noted by participants in this study. This finding echoes the work of (Ganawati et al., 2021; Tanniru et al., 2021; Zhang, 2021), who emphasized the importance of aligning online educational content with current industry trends and needs. The practicality and applicability of the skills and knowledge gained from these platforms significantly enhance professional competencies and ensure that learners are well-equipped to meet the demands of the evolving technological landscape.

However, the study also brings to light the challenges posed by the digital divide and varying levels of digital literacy, a concern also raised by (Jabbar et al., 2016; Synnott et al., 2020). The digital divide, particularly in internet connectivity, impedes equitable access to online learning. This finding is consistent with the observations of (Zhang, 2021), who noted that inadequate digital infrastructure remains a significant barrier in many developing countries. Similarly, the issue of digital literacy, as identified in this research, resonates with the findings of (Galvis & Carvajal, 2022; Synnott et al., 2020), who highlighted the need for digital literacy skills to effectively utilize online learning resources.

To mitigate these challenges, it is crucial to invest in digital infrastructure and literacy programs, as suggested by (Lin & Lin, 2014). Enhancing internet connectivity in underserved areas and providing digital literacy training can level the playing field, ensuring that all professionals, regardless of their location or background, can benefit from the opportunities offered by online training platforms.

The implications of this study on the impact of online training platforms in continuing education for science and technology in Indonesia are substantial. Firstly, it emphasizes the need for policy interventions and investments in digital infrastructure, particularly in remote and underserved areas (Sun et al., 2022). Enhancing internet connectivity would not only improve access to online learning resources but also contribute to bridging the digital divide, a crucial step for inclusive education (Drugova et al., 2022). Additionally, this research underscores the importance of developing comprehensive digital literacy programs. As (Sriwisathiyakun & Dhamanitayakul, 2022) suggest, equipping professionals with the necessary digital skills is fundamental to ensuring that they can fully utilize online learning platforms.

From an educational perspective, the findings highlight the need for course designers and educators to continuously update and tailor online content to meet the evolving needs of the science and technology sectors (Zhao, 2021). This could involve partnerships with industry experts and continuous feedback mechanisms with learners to keep the course content relevant and applicable.

Looking to the future, research could explore the long-term impacts of online training on career progression and skill development in these fields. Further studies could also investigate the effectiveness of different types of online training formats and pedagogical approaches in enhancing learning outcomes (Chao et al., 2022). Another potential area of research is the examination of the psychological and social impacts of online learning, such as learner motivation and the sense of community among online learners, which are critical factors in the success of online education (Ruel et al., 2021).

CONCLUSIONS

The research on the impact of online training platforms in continuing education within science and technology fields in Indonesia concludes that these platforms play a pivotal role in enhancing access to education and professional development. They have effectively bridged the gap for professionals in remote and underserved areas, offering flexibility and convenience that enable learners to balance their educational pursuits with other commitments. The relevance and timeliness of the content provided on these platforms are crucial in equipping learners with practical skills and knowledge applicable to their work environments. However, the study also highlights significant challenges, particularly the digital divide and varying levels of digital literacy among participants. These factors limit the full potential benefits of online training platforms. Addressing these challenges through improved digital infrastructure and literacy training is crucial for ensuring equitable access and maximizing the effectiveness of online training in advancing professional competencies in the science and technology sectors in Indonesia.

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