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E-Portfolios in Medical Education: A Reflective Exploration of Learning Experiences from Faculty Perspective

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ABSTRACT

E-portfolios are electronic collections of evidence that the students gather over some time during their educational journey. The learner has the flexibility of incorporating not only written notes but also videos, audio and pictures in an e-portfolio. **Objectives:** To explore the perception of the mentors regarding the benefits and challenges of implementing an e-portfolio. **Methods:** It was a qualitative cross-sectional study. The mentors involved in mentoring the student's e-portfolio development process were invited for semi-structured interviews. Thematic analysis was performed to analyze the data and provide an understanding of the perception of the mentors regarding e-portfolios. **Results:** The -e-portfolio not only enhances digital literacy among the students but also promotes reflective practices through which they reflect on their learning experience and self-assess their areas of improvement while at the same time promoting lifelong learning. Implementation of e-portfolios is also associated with challenges which include technological hurdles, lack of digital infrastructure, internet connectivity, effective time management and content selection. **Conclusions:** It was concluded that despite the challenges, the ability to enhance skills through e-portfolios remains evident. The provision of digital structure and training can help the institutes achieve the full benefits of an e-portfolio.

INTRODUCTION

Portfolios are systematic collections of varied data sources that showcase evidence of activities and achievements throughout an educational experience. They enhance learning, encourage critical thinking, and support a lifelong commitment to learning. By allowing individuals to document their accomplishments, portfolios act as an invaluable assessment tool, providing insights into performance over time [1]. Besides their role in assessment, portfolios also facilitate self-reflection and self-evaluation, affirming ongoing professional development. These attributes render portfolios vital instruments in both academic and professional growth [2].

Paper-based portfolios first became important instruments in the mid-1980s. However, technological advancements resulted in the creation of e-portfolios, which overcome traditional forms' limitations, such as accessibility, bulkiness, and management [3]. E-portfolios provide a digital platform for students and professionals to collect, organize, and present material relevant to their long-term development. These digital resources offer a structured and flexible approach to documenting learning events, making them highly adaptable to a variety of disciplines and educational settings [4]. E-portfolios offer various advantages over traditional portfolios. One

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significant advantage is the ease of administration and reduced danger of data loss. Unlike conventional portfolios, which are susceptible to damage or loss, e-portfolios allow users to safely save their work in digital formats [5]. Furthermore, e-portfolios enable remote engagement between instructors and students, allowing educators to provide comments, track progress, and direct learning from a distance. This feature is consistent with the increasing reliance on technology in education, establishing e-portfolios as a practical answer for modern learning contexts [6]. E-portfolios are vital in competency-based medical education because they allow students to demonstrate both theoretical knowledge and practical skills over time. They encourage reflective activities, which are essential for developing critical thinking skills, ethical reasoning, and lifelong learning habits [7]. For example, medical students can use e-portfolios to track their progress in acquiring essential qualities like clinical communication and decision-making while receiving continuous feedback from their supervisors [8]. Furthermore, e-portfolios are very adaptable to a variety of educational methodologies, such as problem-based and case-study learning. They can record students' interactions with real-world settings, problem-solving tactics, and reflections on significant learnings [6]. This versatility makes e-portfolios useful not only for personal development but also for institutional assessment and accreditation, providing insights into program efficacy and student outcomes [9]. E-portfolios can contribute significantly to lifetime learning by encouraging continuous documentation and reflection. For professionals, they serve as a repository for credentials, research, and clinical accomplishments, facilitating career growth and accreditation processes [4]. They also improve reflective behaviours, which are well-suited to the demands of medical and allied students and professionals looking for tools for competency-based learning and career development [10].

This study aims to investigate the mentors' opinions on the benefits and obstacles of deploying e-portfolios.

METHODS

This was a cross-sectional qualitative study that explored the perspectives of mentors involved in mentoring the development of e-portfolios in an undergraduate medical program. The study was conducted in Fatima Memorial Medical College from 1st February to 1st March 2024. An integrated curriculum is being implemented in the institute that spans over five years. E-portfolios were recently introduced in the 1st year of MBBS. Competencies for each year to be recorded in the portfolio were identified. Before formal implementation, students were trained to create e-portfolios using Google Sites. The entire class was divided into six groups, and each group was allocated a mentor, who supervised the e-portfolio development of their respective mentees' group. Only the mentors of the 1st year MBBS integrated curriculum were included in the study; the mentors of the traditional MBBS curriculum were not included in the study. The study was submitted to the Institutional Review Board for approval. Mentors were encouraged to participate voluntarily after gaining IRB approval (FMH-13/12/2023-IRB-1350). All participants provided written informed consent before the interviews began. Data were gathered using semi-structured interviews. Two main frameworks helped shape the guide's development. First, Kallio et al., suggested a framework that focuses on methodical activities such as setting objectives, examining relevant literature, and piloting questions to refine content. Second, the guide benefited from Jordan et al., and has practical advice, such as framing open-ended questions to promote meaningful debates in medical education. The handbook completed a pilot test with a group of medical educationists, and adjustments were made based on their comments [11, 12]. Purposive sampling was used to choose mentors, focusing on those who were directly involved in e-portfolio-building mentoring within the integrated curriculum. Six mentors in all were interviewed. The duration of each interview was 45 to 50 minutes. After the interviews were recorded, they were transcribed. The transcribed data were cross-checked with the field notes for consistency, and member checking was done to confirm the accuracy of the transcriptions. To determine the advantages and difficulties of e-portfolio implementation, a thematic analysis was carried out. Throughout the study, ethical standards were upheld, including participant confidentiality and anonymity. Transcripts were coded, and all data were safely stored. To guarantee this, participants were made aware of their freedom to leave the study at any time without facing any repercussions.

RESULTS

Four major themes emerged from the thematic analysis of faculty opinions on the use of e-portfolios in student learning, each supported by more specific participant insights and minor sub-themes. These findings paint a clear picture of the advantages, difficulties, and requirements that educational institutions must meet for e-portfolios to be successful. Teachers reported that by integrating several aspects of their student's academic and personal development, e-portfolios allowed them to see the larger picture of how students learn (Figure 1).

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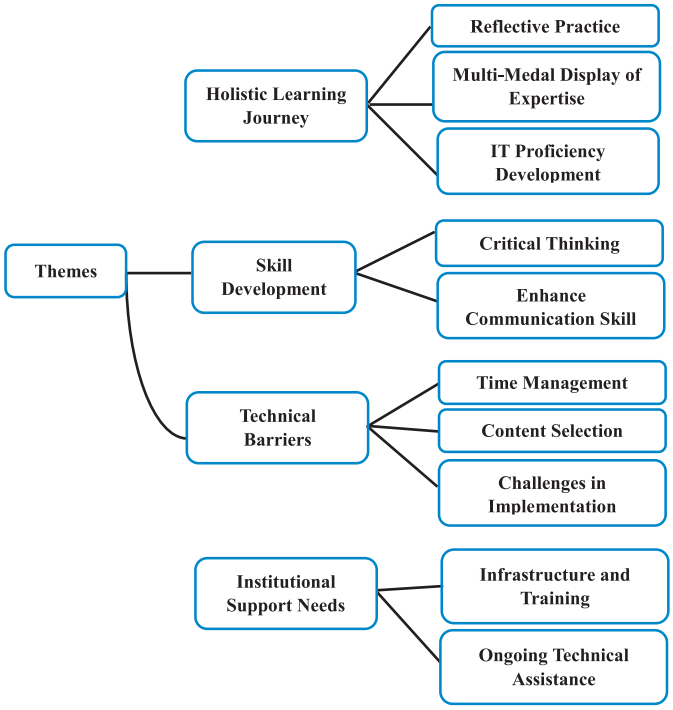

Figure 1: Themes and Subthemes

Teachers reported that e-portfolios helped students become more self-aware of their academic strengths and areas for improvement by encouraging them to participate in reflective practices. As one faculty member mentioned reflection on their assignments helped students identify where they excelled and where improvement was needed. Another faculty member observed that students gained a clearer understanding of their academic journey and long-term goals. Faculty saw e-portfolios as a useful addition to exams because they gave students a chance to demonstrate their abilities and achievements outside of the confines of traditional assessments. In support of this, one faculty member stated that E-portfolios allowed students to highlight achievements in areas like design and creativity that exams often overlook. Another participant remarked this platform revealed talents that may not have surfaced in standard assessments. The process of creating and maintaining e-portfolios enhanced students' digital literacy, a benefit faculty recognized as essential in today's technological landscape. As one faculty member explained Students' engagement with digital tools through e-portfolios improved their IT skills, which is critical for their future careers. Another faculty member added many students gained confidence in navigating online platforms and tools, a skill that will serve them well beyond the classroom. Faculty found that the process of developing e-portfolios improved students' critical thinking and communication skills significantly. Structured reflection and curation of e-portfolios required students to think critically about their work, which was constantly highlighted by professors. One faculty member noted the reflective nature of e-portfolios encouraged students to delve deeper into the significance of their work. Another pointed out that students were learning to connect their academic efforts with broader learning objectives. Faculty found that creating e-portfolios increased students' capacity to explain their ideas and show their work in an organized manner. One faculty member shared that the e-portfolio process significantly enhanced students' ability to communicate their ideas effectively. Another commented that this platform helped students develop structured and clear ways of expressing their academic and personal achievements. While faculty recognized the benefits of e-portfolios, they also identified significant problems for both students and instructors. The challenges were divided into three sub-themes. Faculty frequently encountered technological concerns, such as system navigation problems and unstable internet connectivity, which hampered the e-portfolio process. One faculty member expressed that Both students and faculty faced frustrations with system usability and internet connectivity. Another reported that there were instances where students lost progress due to system crashes or poor connectivity. Balancing the time required for e-portfolio construction with other academic duties presented substantial hurdles for students and instructors. One faculty member remarked that students struggled to manage their coursework alongside creating e-portfolios. Another added that Providing detailed and timely feedback on e-portfolios was more time-consuming than anticipated. Faculty reported that students often needed extensive guidance in deciding which elements to include in their e-portfolios, adding to the workload for educators. As one faculty member explained students frequently sought help to determine what content was relevant and meaningful for their portfolios. Another noted that Guiding students through content curation required considerable time and effort from faculty. Faculty stressed the importance of institutional support in overcoming the hurdles connected with e-portfolio deployment. Reliable technological infrastructure and comprehensive training for both students and instructors were regarded as necessary for successful e-portfolio utilization. One faculty member stressed that seamless internet connectivity is crucial; its absence created significant hurdles in the e-portfolio process. Another faculty member noted that Training sessions on efficient use of the platform would have alleviated many of the initial challenges. Faculty underscored the necessity of continuous technical support to address issues promptly, minimizing disruptions to the e-portfolio process. As one faculty member pointed out technical assistance should be readily available to ensure smooth progress for students and faculty. Another faculty member suggested that Having immediate troubleshooting support would save time and

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reduce frustration. In summary, the teachers saw e-portfolios as an effective approach to promoting well-rounded learning and skill development activities in students. However, getting them up and running was not easy. Big challenges were technical difficulties, time management issues, and the need to lead students through the process of developing valuable content. Faculty stressed the importance of strong institutional support, such as solid infrastructure, rigorous training, and continuing technical assistance, in making e-portfolios successful in education.

DISCUSSION

The findings of this comprehensive study are strikingly consistent with the vast body of existing literature, which emphasizes the importance of e-portfolios as innovative tools that significantly improve students' learning experiences by expertly integrating reflective practices while simultaneously showcasing a diverse array of skills that students possess. Faculty observations about the critical role that reflection plays in developing self-awareness in students are strikingly similar to the findings that emphasize how e-portfolios facilitate productive learning through the mechanism of self-assessment and organized reflection [13]. This intricate reflective process allows students to gain a profoundly deeper understanding of their individual strengths, weaknesses, and long-term goals, which is entirely consistent with observations about the enormous value of critical self-reflection in higher education [14]. E-portfolios have the astonishing ability to empower students by allowing them to highlight their successes in creative domains such as creativity and design, which goes far beyond the restrictions of traditional assessment methods that are frequently used. This noteworthy discovery is consistent with research that has identified e-portfolios as dynamic platforms for educational innovation, supporting students in demonstrating a wide range of talents that traditional testing techniques may inevitably fail to effectively capture [15]. Similarly, the development of digital literacy a benefit that faculty members have notably recognized is inextricably linked to ongoing discussions about how active engagement with e-portfolios significantly improves the technical skills that are critical for student's future career prospects [16]. The observed improvements in students' critical thinking and communication skills reflect a multitude of insights on how e-portfolios, particularly those reinforced with advanced analytics, stimulate much deeper engagement with specific learning objectives [17]. While these various benefits are certainly substantial, the limitations found in this study ranging from technological difficulties and time restrictions to the critical need for extensive guidance are not uncommon in the deployment of e-portfolios. Similar issues have been documented in various evaluations of postgraduate medical training, highlighting the importance of the usability of the systems used and the reliability of internet connectivity in determining the overall success of these educational initiatives [18]. Technical challenges, such as unexpected system crashes and limited connectivity, were specifically noted in the study's findings, implying that a smooth technological infrastructure is vitally necessary for the effective operation of e-portfolio operations [19]. Furthermore, time management appeared as a major worry for both students and staff members. Faculty members reported that they frequently struggled to strike a balance between the demanding requirements of coursework and the intricate process of e-portfolio development, a concern echoed in extensive research emphasizing the time-intensive nature of e-portfolios in assessing student achievement [20]. Furthermore, the need to provide detailed and constructive feedback on e-portfolios increased the overall workload, which is consistent with the findings that highlight the resource-intensive nature of guiding students in the curation of meaningful and relevant portfolio content [21]. Institutional support was widely acknowledged as a critical factor in overcoming the identified challenges, with faculty members advocating for the establishment of dependable technological infrastructures, comprehensive training programs, and ongoing technical assistance. These sensible recommendations are consistent with the findings, which emphasize the critical importance of ensuring that e-portfolio deployment is effectively linked with institutional capabilities to ensure a smooth adoption process [22]. Similarly, the necessity for timely troubleshooting support to ease irritation and maintain continuous progress is consistent with research highlighting the importance of proactive technical support in efficiently minimizing possible disruptions [15].

CONCLUSIONS

It was concluded that regardless of the limitations, the benefits of using an e-portfolio to improve students' skill sets are clear. It is critical that institutes address these problems and provide ongoing support to staff and students in order to facilitate the successful adoption of e-portfolios and improve the overall student learning experience.

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Conceptualization: HT
Methodology: HT, AZ, HS, SNM, MMHN, TA
Formal analysis: AZ
Writing review and editing: HS, MMHN

All authors have read and agreed to the published version of the manuscript

Conflicts of Interest

All the authors declare no conflict of interest.

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