Investigating Mature Learners' Experiences of Social Inequality Stemming From Digitalisation in Higher Education

Eleni Meletiadou, London Metropolitan University, United Kingdom

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Abstract

Globalization, digitalization, and rapid technological advancements have been widely acknowledged as major forces reshaping both the labor market and Higher Education Institutions (HEIs). Mature learning workers, however, often face specific challenges in adapting to these transformations, particularly in relation to digital skill development and their sense of belonging in increasingly digitalized learning and professional environments. This study investigates how HEIs can better support mature learners in overcoming barriers to digital literacy, addressing employment inequalities, and preparing effectively for future career pathways. Despite the growing body of research on digital education, the experiences and needs of mature students remain underexplored, especially within cross-national contexts. An exploratory, mixed-methods design was employed, drawing on data from 105 mature learners across three HEIs in Cyprus, Albania, and the United Kingdom. Data collection involved anonymous online surveys, semi-structured interviews, and focus groups. Quantitative results were analyzed using SPSS, while qualitative data underwent thematic content analysis. Findings highlight the dual role of digitalization as both a driver of opportunity and a source of exclusion. Participants reported concerns about insufficient institutional support, limited access to tailored training, and persistent inequalities shaped by age and gender. Nevertheless, evidence also revealed that inclusive pedagogical approaches and targeted interventions can significantly enhance mature learners' digital competence, academic achievement, and employability prospects. The study offers practical recommendations for educators, policymakers, and employers to collaboratively develop strategies that foster digital literacy, belonging, and equitable participation of mature learners in higher education and beyond.

Keywords: mature learners, digital literacy, higher education, lifelong learning, employability, belonging, digital transformation

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Introduction

Globalization, digitalization, and rapid technological innovation have reshaped the labor market and Higher Education Institutions (HEIs), creating new challenges and opportunities for both educators and learners. As economies undergo profound transformations, digital competence has become a prerequisite not only for academic success but also for employability and social inclusion. Higher education is therefore expected to play a pivotal role in equipping students with the knowledge, skills, and confidence needed to navigate an increasingly digitalized world (Naeem & Mushibwe, 2025). However, despite widespread recognition of lifelong learning as a cornerstone of contemporary educational policy (Burns, 2020), mature learners remain one of the most under-supported groups in higher education. These students, who re-enter education later in life to reskill, upskill, or pursue personal development, often face significant barriers when engaging with technology-driven teaching and learning. Such barriers threaten their academic achievement, their sense of belonging in higher education, and ultimately their participation in the labor market.

Although younger generations are often described as "digital natives" who are familiar with technological environments from an early age (Evans & Robertson, 2020), digital competence is not determined solely by age but rather by access, training, and socio-cultural factors. Mature learners often encounter gaps in confidence and proficiency, which can lead to anxiety, disengagement, and even attrition when faced with digitalized curricula. Research on digital inequalities demonstrates that disparities in skills, access, and usage patterns reflect and reinforce broader social inequalities shaped by age, gender, and socio-economic status (Falloon, 2020). In this context, mature learners risk being further marginalized by institutional assumptions that all students are digitally fluent. The Covid-19 pandemic underscored this issue, as the rapid transition to remote and hybrid education exposed the vulnerability of those students, often mature learners, who lacked sufficient resources or digital support (Homer, 2022). Rather than enhancing inclusion, digitalization in higher education may reproduce patterns of exclusion if strategies are not specifically designed to meet the needs of diverse learners.

At the same time, the expansion of lifelong learning discourses has emphasized the role of HEIs in fostering employability by enabling learners to acquire and update skills throughout their working lives. In the digital economy, employability is increasingly associated with the mastery of advanced digital literacies, including the ability to critically evaluate information, collaborate online, and adapt to emerging technologies (Khuraisah et al., 2020). For mature learners, whose motivation for entering higher education is often closely tied to career progression or re-entry into the workforce (Chesters et al., 2020), digital literacy is not merely an academic requirement but a vital condition of labor market participation. Yet, HEIs often fail to provide targeted, contextualized opportunities for mature students to develop these competencies in ways that connect meaningfully with their professional trajectories (Ul Hassan et al., 2025). When teaching and assessment practices presume digital fluency, mature learners may be disadvantaged, resulting in diminished confidence, lower achievement levels, and reduced career opportunities. This situation reflects a broader tension between the rhetoric of lifelong learning and the reality of educational provision, where institutional practices remain oriented towards younger, traditional students.

In addition to skills acquisition, the concept of belonging has become central to understanding student engagement, retention, and success in higher education (Pedler et al., 2022). Belonging refers to the sense of being accepted, valued, and supported within an academic community,

and has been consistently linked to positive academic and personal outcomes. For mature learners, who often feel like "outsiders" in predominantly younger student cohorts, belonging plays a critical role in determining whether they persist with or withdraw from their studies (Hope & Quinlan, 2021). In digitalized contexts, belonging increasingly extends into virtual spaces, with "digital belonging" shaping how students experience online participation, peer interaction, and institutional support (Smith & Watson, 2022). For mature learners, negative experiences with digital platforms, combined with intersecting challenges such as caring responsibilities, socio-economic disadvantage, or gendered inequalities, can undermine their sense of belonging and increase the risk of disengagement (Folabit et al., 2025). Conversely, inclusive digital pedagogies and supportive online communities have the potential to enhance belonging, empowering mature students to participate fully and equitably in higher education.

The experiences of mature learners are also shaped by intersectionality, as age intersects with gender, ethnicity, and class to create complex patterns of disadvantage. Intersectional research highlights how women returning to education later in life often face additional barriers, including lower confidence in digital skills, greater caring responsibilities, and persistent labor market inequalities (Crimmins et al., 2023). Similarly, students from lower socio-economic backgrounds may struggle with access to reliable internet connections or up-to-date devices, leaving them at a disadvantage compared to their peers (Lembani et al., 2020). Such overlapping inequalities reveal that digital exclusion is not merely a matter of skills training but also reflects broader structural inequities that HEIs must address if they are to support equity, diversity, and inclusion effectively. Without such interventions, mature learners risk becoming "doubly excluded": first, because of their age and atypical student status, and second, because of systemic barriers to digital engagement.

Despite the growing body of literature on digital literacy and employability, the perspectives and needs of mature learners remain underexplored. Much of the existing research continues to focus on traditional undergraduate populations, with insufficient attention to how digitalization impacts mature students' experiences of learning, belonging, and career development. Furthermore, cross-national comparative studies are scarce, leaving little understanding of how different cultural and institutional contexts shape these experiences. The scarcity of empirical evidence on how mature learners navigate digitalized higher education and how HEIs can best support them highlights a critical gap in the literature.

This article seeks to address this gap by examining the experiences of 105 mature learners enrolled in three HEIs in Cyprus, Albania, and the United Kingdom. Through surveys, interviews, and focus groups, the study explores mature learners' perceptions of digitalization, their sense of preparedness for the future labor market, and the institutional strategies that can either support or hinder their academic journeys. It investigates the barriers and drivers shaping mature learners' digital skill development and belonging, offering evidence-based recommendations for educators, policymakers, and employers. By focusing on the intersections of digital literacy, belonging, and employability, this study contributes to ongoing debates on how HEIs can design inclusive educational environments that respond to the realities of an increasingly digitalized world. Ultimately, it aims to answer the following research question:

- How can Higher Education Institutions enhance mature learners' digital literacy and sense of belonging to support their academic achievement, employability, and equitable participation in higher education?

Methodology

The present study adopted an exploratory mixed-methods approach to investigate the experiences of mature learners regarding digital literacy development, belonging, and employability in HEIs across three European contexts. The aim was to capture both the breadth of mature learners' perspectives through quantitative data and the depth of their lived experiences through qualitative inquiry. This approach was deemed appropriate given the complexity of the research question and the need to address both measurable trends and nuanced, context-specific insights (Gerzso et al., 2024). A total of 105 mature learners participated in this study, drawn from three universities located in Cyprus, Albania, and the United Kingdom. Mature learners were defined as individuals aged 55 and above who entered or re-entered higher education after an extended period away from formal learning. Participants represented diverse socio-economic and cultural backgrounds, with many balancing educational commitments alongside employment, family responsibilities, and caregiving roles. Their ages ranged from 56 to 70, with an average age of 58. Approximately 68% of the participants identified as female, 30% as male, and 2% as non-binary, reflecting the gendered dynamics often found in mature learning cohorts. The sample included both full-time and part-time students, and the majority were enrolled in undergraduate or master's programmes in the social sciences, business, and education.

The study was conducted over the course of one academic year. A multi-stage sampling strategy was employed to recruit participants. Initially, institutional gatekeepers distributed an invitation email outlining the study's objectives, confidentiality measures, and voluntary nature. Students who expressed interest were then asked to complete an online consent form before participating. The researcher sought to ensure representation of genders and study modes to capture a wide range of perspectives. The data collection process involved three complementary instruments: an online survey, semi-structured interviews, and focus groups. The survey, distributed via institutional platforms, gathered quantitative data on participants' self-reported digital skills, frequency of digital tool usage, perceived preparedness for employment, and sense of belonging within their HEI. Questions were adapted from established digital literacy frameworks (i.e., van Deursen et al., 2022) and student belonging scales (Lingat et al., 2023). Responses were collected using mainly open-ended questions. A total of 105 valid survey responses were obtained, representing a response rate of 87%.

To gain deeper insights into learners' experiences, the researcher conducted 36 semi-structured interviews, each lasting between 45 and 60 minutes. Interviews explored participants' personal learning trajectories, challenges in acquiring digital skills, perceptions of institutional support, and the impact of digitalization on their academic confidence and career aspirations. These interviews were conducted online to accommodate participants' schedules and geographical locations, a format that also mirrored the digital environments under investigation. In addition, 8 focus groups were organized (2–3 per institution), each consisting of 5–8 participants. Focus groups provided an interactive forum where learners could discuss their shared experiences, reflect on institutional practices, and co-construct ideas for improving digital support in HEIs.

All survey data were exported into SPSS (version 26) for statistical analysis. Descriptive statistics were used to identify patterns in participants' digital literacy levels, employability perceptions, and belonging. Cross-tabulations and chi-square tests were employed to examine potential differences across gender, age brackets, and country. The qualitative data, comprising interview transcripts, focus group discussions, and open-ended survey responses, were analysed using thematic analysis (Braun et al., 2019). NVivo 12 software supported the coding

process. The researcher engaged in an iterative process of coding, moving from open coding of individual segments to the development of higher-order themes. To enhance the reliability of findings, a research assistant independently coded 20% of the data. Inter-coder agreement was calculated at 89%, and discrepancies were resolved through discussion until consensus was reached. The triangulation of data sources allowed the researcher to compare quantitative trends with qualitative accounts, ensuring a more robust and nuanced understanding of mature learners' experiences (Bans-Akutey & Tiimub, 2021). For example, survey findings on low self-reported confidence in advanced digital tasks were further illuminated by interview narratives describing the anxiety learners felt when required to use unfamiliar platforms for assessment. Similarly, focus group data provided collective reflections on institutional practices, highlighting structural barriers such as limited digital training opportunities and assumptions of universal digital fluency.

Ethical considerations were central to the research design. Ethical approval was obtained, and participants were assured of anonymity and confidentiality, with pseudonyms used in all qualitative reporting. They were reminded of their right to withdraw from the study at any point without consequence. Data were stored securely in compliance with GDPR, and care was taken to ensure that participants' reflections, particularly those touching on sensitive issues such as age discrimination or gendered barriers, were presented respectfully and without risk of identification. The research design thus enabled an in-depth exploration of the barriers and drivers shaping mature learners' digital literacy development and sense of belonging across diverse HEIs. By integrating quantitative and qualitative perspectives, the study not only captured the extent of challenges faced by mature learners but also illuminated the personal, emotional, and institutional dimensions underpinning their experiences. This methodology provided a strong foundation for the subsequent analysis and recommendations, ensuring that the voices of mature learners themselves remained central to the study's findings.

Findings

The analysis of the data collected through surveys, interviews, and focus groups revealed several dominant themes related to mature learners' experiences with digital learning, their development of digital literacy, and their sense of belonging in Higher Education. These themes emerged consistently across more than 60 participants and were corroborated by observations made by tutors and facilitators during online sessions and collaborative activities.

Perceived Impact of Digital Learning on Academic Confidence and Achievement

Participants consistently reported that engaging with digital tools and online learning platforms enhanced their understanding and retention of course content. Mature learners reflected on how digital resources allowed them to revisit complex materials at their own pace, engage in active problem-solving, and apply theoretical knowledge in practical exercises. Many participants noted that asynchronous learning materials, combined with interactive exercises, increased their confidence in tackling assignments, particularly those requiring critical thinking and analytical skills.

> I was hesitant about using online platforms at first, but being able to pause videos, revisit readings, and try interactive exercises made it so much easier to understand difficult concepts. I felt more prepared when completing my assignments, and I think my grades reflect that confidence. (Participant A)

Learners also highlighted that the combination of synchronous discussions and asynchronous exercises facilitated a deeper engagement with the material. Participants reported that they could reflect on course content, formulate questions, and discuss ideas with peers before applying them to assessments, which contributed to measurable improvements in academic performance. Tutors observed that students who actively participated in digital learning activities demonstrated higher-quality submissions, showing a greater ability to synthesize ideas and apply concepts critically, confirming previous research findings (Ong & Quek, 2023). Several learners emphasized that this digital engagement allowed them to feel more autonomous and in control of their learning journey. Unlike in traditional classroom settings, where opportunities for one-on-one clarification were limited, digital platforms provided a supportive environment for self-directed study. The structured yet flexible format of these learning interventions encouraged participants to take responsibility for their learning outcomes, reinforcing sustainable learning practices.

Development of Digital Literacy and Self-Efficacy

A second prominent theme related to the development of digital literacy and learners' confidence in navigating technological tools. Participants reported that engaging with online learning environments, collaborative platforms, and digital resources enabled them to acquire practical skills, such as using virtual meeting software, online research tools, and digital communication channels (also in Kumi-Yeboah et al., 2020). Many described an initial anxiety or lack of confidence with technology, which gradually diminished as they gained hands-on experience and peer support.

> I used to struggle with online tools, but after participating in group discussions and completing digital assignments, I now feel confident navigating different platforms. It's empowering to know that I can manage my learning digitally and even help my peers when they face difficulties. (Participant B)

The study also revealed that digital literacy development was closely linked to self-efficacy. Mature learners reported feeling more capable of handling tasks independently, which in turn improved their engagement and motivation. Participants indicated that digital exercises requiring decision-making, problem-solving, or collaborative input helped them practice resilience, adaptability, and critical thinking in ways that traditional learning did not always allow. Interestingly, learners highlighted that peer mentoring and collaborative digital activities were particularly valuable in building confidence. Working with peers to solve digital tasks allowed participants to learn from one another, share strategies for effective online learning, and provide mutual encouragement. This social dimension not only improved digital competence but also reinforced learners' belief in their own abilities.

Sense of Belonging and Social Inclusion

A third theme was the significant impact of digital learning on participants' sense of belonging and inclusion. Many mature learners reported that online platforms enabled them to interact with peers who shared similar academic interests and challenges, reducing feelings of isolation that often accompany adult learning (also in Abbas et al., 2022). Collaborative digital exercises, discussion forums, and team-based assignments created opportunities for social interaction, peer support, and networking, which were critical for fostering a sense of community.

> I often felt like I was alone in my studies before, but now I feel part of a group. Online discussions and collaborative assignments helped me connect with peers, share ideas, and feel supported. That sense of belonging motivates me to continue learning and engage more actively. (Participant C)

Participants noted that these experiences were particularly important for learners balancing education with work and family responsibilities. Digital environments offered flexible opportunities for interaction, allowing them to participate in meaningful discussions without the constraints of physical attendance. This flexibility contributed to their overall engagement and satisfaction, highlighting the role of inclusive digital practices in supporting mature learners.

Barriers and Challenges in Digital Learning

Despite the overall positive impact of digital learning, participants reported several challenges that affected their experiences. A recurring concern was technological anxiety, particularly among learners with limited prior exposure to online platforms (also in Sholeh & Muchibuddin, 2025). Some participants described initial frustration with navigating multiple systems, managing digital submissions, and troubleshooting technical issues. For instance, one of the participants indicated, “I sometimes felt overwhelmed by the number of tools we had to use. It took time to figure out how everything worked, and I worried that I might fall behind” (Participant D).

Language and communication barriers were another challenge for some learners, especially in collaborative online tasks. Participants explained that asynchronous discussions could lead to misunderstandings or slower responses, which sometimes hindered effective collaboration. In addition, a few participants highlighted intergenerational differences in technology use, where younger peers were more confident with digital tools, while mature learners needed extra guidance. However, these challenges were often mitigated through peer support, tutor guidance, and clear instructional design. Participants emphasized that structured training sessions, step-by-step guides, and accessible help resources significantly reduced anxiety and improved engagement. This indicates the importance of scaffolding digital learning experiences to accommodate diverse skill levels and backgrounds.

Professional and Career-Oriented Benefits

The study also revealed that participants perceived significant professional and career benefits from their engagement with digital learning. Mature learners reported that the skills developed through online activities, such as digital competence, problem-solving, decision-making, and collaborative teamwork, directly contributed to their employability and professional confidence (Martzoukou et al., 2020). Many participants highlighted that mastering digital tools and effectively working in virtual environments reflected the skills increasingly demanded by employers in a digitalized labor market. One of them said, “I can see how the skills I’m developing here are transferable to my job. Being able to collaborate online, manage tasks digitally, and think critically are all things my employer values. I feel more prepared for future opportunities” (Participant E).

Moreover, participants suggested that digital learning experiences fostered adaptability and lifelong learning attitudes, essential for career progression. By navigating technological

challenges, managing time effectively, and engaging in self-directed learning, mature learners felt better equipped to respond to workplace demands and rapidly changing industry contexts.

Recommendations for Institutional Support and Future Learning Design

Participants offered several recommendations for enhancing digital learning experiences for mature learners. A key suggestion was the need for ongoing institutional support, including technical training, accessible resources, and responsive tutor guidance (also in Burns, 2020). Learners stressed that clear instructions, timely feedback, and structured digital scaffolding were crucial for reducing anxiety and promoting engagement. One of the participants added that "Providing clear guidelines and support made a huge difference. I feel more confident knowing help is available when I need it, and it encourages me to participate more actively" (Participant F).

Another recommendation was the inclusion of collaborative and interactive activities that encourage peer engagement and social interaction. Mature learners valued opportunities to discuss ideas, share strategies, and mentor one another, which not only improved learning outcomes but also strengthened social connections and a sense of belonging. Participants suggested that digital learning should balance asynchronous and synchronous elements to accommodate diverse schedules and responsibilities. Finally, learners highlighted the importance of designing digital interventions that are relevant to professional contexts. Activities that simulate real-world scenarios, require problem-solving, or foster critical thinking were particularly motivating, as they allowed participants to directly connect learning with career development. This suggests that integrating practical, career-oriented content in digital learning can enhance both academic achievement and employability.

Summary of Findings

In summary, the findings indicate that mature learners perceive digital learning as highly beneficial for academic achievement, digital literacy development, and professional readiness (also in Steel et al., 2024). Engagement with online platforms and collaborative activities enhanced learners' confidence, autonomy, and sense of belonging, while also fostering transferable skills for the workplace. Participants did encounter challenges related to technology use, communication, and intergenerational differences, but these were largely mitigated through structured support, peer mentoring, and inclusive learning design. The study demonstrates that carefully designed digital learning interventions can provide mature learners with the tools, confidence, and social connections needed to succeed academically and professionally. Participants emphasized the transformative potential of these experiences for sustainable learning development, career progression, and overall engagement in Higher Education. These insights offer valuable guidance for educators, policymakers, and institutions aiming to support mature learners in increasingly digitalized educational contexts.

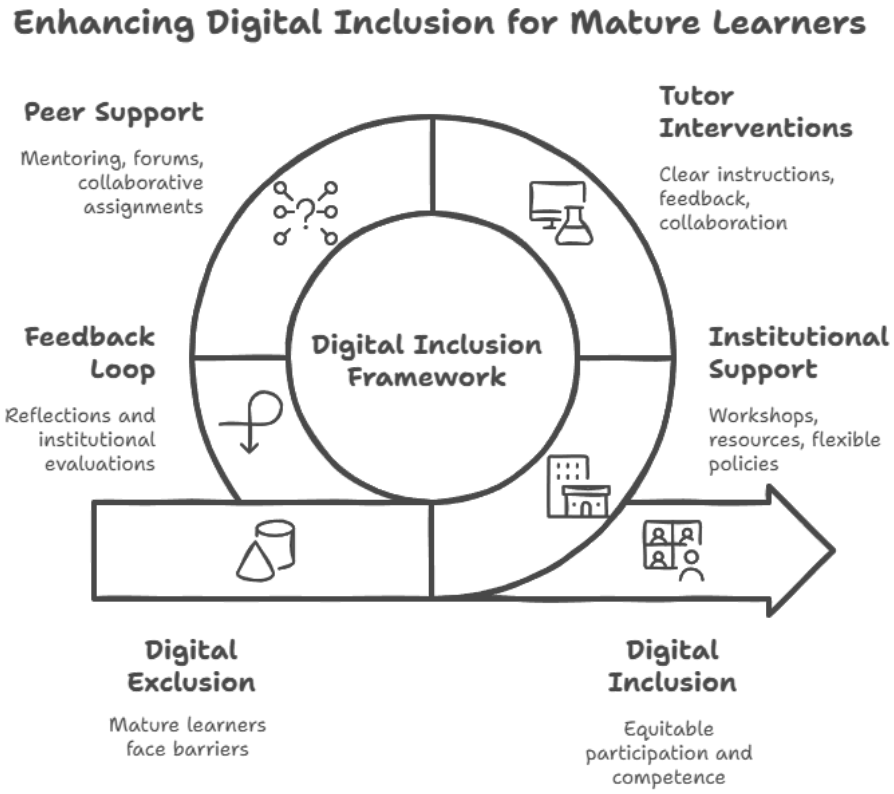
Conclusion

The present study has provided valuable insights into mature learners' experiences of social inequality stemming from digitalisation in higher education. Findings demonstrate that digital learning environments offer both opportunities and challenges for this student cohort (Mhlongo et al., 2023), whose diverse backgrounds, prior experiences, and professional responsibilities shape their engagement and outcomes. While digital technologies can facilitate access, flexibility, and collaborative learning, they may also exacerbate inequalities for learners who

face barriers such as limited digital literacy, inadequate access to devices, technological anxiety, or time constraints due to work and caregiving commitments (also in Beaunoyer et al., 2020). The findings illustrate that these challenges are not merely technical but deeply intertwined with social, cognitive, and emotional dimensions of learning. Participants consistently reported that tasks embedded in interactive digital learning, such as collaborative assignments, simulations, or problem-solving activities, enabled them to engage more deeply with theoretical concepts, develop practical skills, and foster meaningful peer interactions. These experiences often enhanced learners' critical thinking, creativity, and resilience, while also improving their self-efficacy and motivation. Importantly, collaborative digital exercises provided a space for learners to share knowledge, clarify misunderstandings, and develop interpersonal and intercultural skills, demonstrating the value of peer-supported learning in mitigating feelings of isolation and fostering inclusion (Männistö et al., 2020). However, minor challenges, such as unequal participation or language barriers within peer groups, were noted, highlighting the need for structured guidance, clear rules of engagement, and facilitator intervention to ensure equitable involvement.

Building on these findings, the study proposes a Mature Learners' Digital Inclusion Framework (Figure 1), which conceptualizes the interaction between learner characteristics, digital learning environments, barriers to engagement, support mechanisms, and learning outcomes. This framework situates learners' individual attributes, including prior digital experience, socio-economic background, and professional and caregiving responsibilities, as fundamental determinants of engagement with digital tools. These characteristics shape learners' confidence, digital skills, and willingness to participate actively in online and blended learning activities. The digital learning environment itself, encompassing platforms, tools, accessibility, and flexibility, plays a pivotal role in either enabling or constraining participation (Berezi, 2025). Well-designed, user-friendly platforms that offer interactive and collaborative features facilitate engagement, knowledge construction, and skill development. Conversely, complex interfaces, insufficient support, or rigid structures may heighten cognitive load, impede understanding, and reinforce inequality. The framework highlights that environmental affordances interact with learners' characteristics to influence their experiences and learning outcomes.

Figure 1
Mature Students' Digital Inclusion Framework



Barriers and inequalities form a central component of the framework, emphasizing the social and structural dimensions of digitalisation. Technological anxiety, lack of confidence, restricted access to devices or high-speed internet, and language or cultural differences were all reported by participants as obstacles that could hinder participation and achievement. These factors underscore that digital inclusion is not merely a question of providing access but also ensuring that learners can meaningfully engage with content and collaborative activities in a way that fosters equitable learning experiences (Pittman et al., 2021). To address these challenges, the study identifies three levels of support mechanisms. At the institutional level, digital skills workshops, accessible online resources, flexible access policies, and structured guidance can scaffold learners' engagement and reduce inequalities. At the tutor level, interventions such as clear instructions, formative feedback, facilitation of collaborative tasks, and reflective exercises are critical for enhancing both individual and group learning experiences. Peer support, through collaborative assignments, mentoring, and discussion forums, also emerged as a crucial factor in mitigating isolation, enhancing motivation, and promoting social inclusion. These support mechanisms are mutually reinforcing and, when aligned, can significantly enhance learners' confidence, competence, and sense of belonging.

The framework also emphasizes outcomes across multiple dimensions. Academically, mature learners' engagement with interactive digital tasks was associated with improved performance, better understanding of theoretical concepts, and more effective application in assignments (Capone & Lepore, 2022). From a digital competence perspective, learners reported increased confidence, autonomy, and problem-solving skills, reflecting the importance of experiential learning in digital contexts. Socially, participation in collaborative activities fostered a sense of inclusion, peer connection, and intercultural understanding, highlighting the role of digital

learning in promoting social justice. Professionally, learners developed transferable skills such as strategic thinking, communication, and teamwork, which support lifelong learning and readiness for complex, multicultural workplaces (Burns, 2020). Finally, the framework incorporates a feedback loop, recognizing that learners' reflections and institutional evaluations are essential for iterative improvements in pedagogy, resource allocation, and support strategies. Participants consistently highlighted the importance of reflection, structured debriefing, and feedback to consolidate learning and translate digital experiences into sustained skills and competencies. This cyclical process ensures that digital learning interventions remain responsive to the evolving needs of mature learners and contribute to equitable educational outcomes.

Overall, the findings underscore that digitalisation in higher education is a double-edged sword: while it can enhance flexibility, access, and engagement, it can also amplify existing inequalities if learners' individual characteristics and structural barriers are not addressed. The proposed Mature Learners' Digital Inclusion Framework provides a practical and conceptual model for educators, curriculum designers, and policymakers to design inclusive digital learning experiences that recognize and respond to these complexities. By integrating learner characteristics, digital environments, barriers, support mechanisms, and outcomes into a coherent framework, the study highlights pathways for promoting equitable participation, enhancing digital competence, and supporting sustainable learning development.

Future research should explore the framework's applicability across different disciplines, levels of study, and cultural contexts. Comparative studies could examine how variations in digital infrastructure, pedagogical design, and learner demographics influence the efficacy of digital inclusion strategies. Longitudinal research is also warranted to assess the long-term impact of inclusive digital interventions on academic performance, professional preparedness, and social inclusion. Moreover, incorporating quantitative measures of digital engagement and competence alongside qualitative reflections would strengthen the evidence base and enable more robust evaluation of digital inclusion initiatives. In conclusion, the study advances understanding of how mature learners experience social inequality in digitally mediated higher education and provides actionable insights for enhancing inclusion and engagement. By adopting a holistic, multi-level approach to digital learning design, educators can create environments that not only mitigate inequality but also empower mature learners to thrive academically, socially, and professionally. The Mature Learners' Digital Inclusion Framework offers a roadmap for translating these insights into practice, guiding future interventions that foster equitable, inclusive, and transformative digital learning experiences.

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Declaration of Generative AI and AI-Assisted Technologies in the Writing Process

The author declares that no AI or AI-assisted technologies have been used to generate, refine, or correct the content in the manuscript. The ideas, design, procedures, findings, analyses, and discussion are originally written and derived from careful and systematic conduct of the research.

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Contact email: elenim@outlook.com