



Mentoring for Digital Transformation and Social Justice in the Learning Process: Evaluating an Online Faculty Training-and-Mentoring Model in Wartime Gaza

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Abstract: Objectives: This study investigates the effectiveness of an online training and mentoring program designed to enhance digital content creation competencies among faculty at a Palestinian university in Gaza during the ongoing war and blockade. **Design/methodology/approach:** A purposive sample of 35 faculty members from Al-Aqsa University (21 inside Gaza, 14 outside) participated in a 32-hour blended program (synchronous Zoom + asynchronous Moodle) with embedded mentoring. Using a quasi-experimental one-group pre-post design, data were collected via a validated 65-item questionnaire (Cronbach's $\alpha = 0.971$). Analysis included paired-samples t-test, independent-samples t-test, and one-way ANOVA. **Findings:** Digital content creation competencies increased significantly from pre-training ($M = 3.51$, $SD = 0.59$) to post-training ($M = 4.29$, $SD = 0.65$), $t(34) = -7.142$, $p < .001$, with a large effect size (Cohen's $d = -1.16$). No statistically significant differences were found by location ($p = .274$) or years of experience ($p = .342$), indicating the model's inclusiveness under wartime constraints. **Conclusion:** Mentoring-based online training functions as a justice-oriented intervention that enhances faculty digital competencies and promotes inclusive, culturally responsive pedagogy in crisis contexts. It strengthens educators' agency, reflective practice, and sense of belonging, while supporting institutional resilience. In wartime, digital preparedness emerges as a moral and professional imperative linked to the right to education. **Recommendations:** Institutionalize structured digital training with integrated mentoring and psychosocial support. Develop a replicable model for scalability across crisis-affected contexts. Expand implementation to marginalized regions, promote research on learning and well-being outcomes, and inform national policies on digital education and crisis preparedness. **Originality:** This study presents a unique model of social justice mentoring during wartime, offering a crisis-responsive framework for advancing professional resilience, equitable digital access, and learning continuity in higher education under siege.

Keywords: Content Creation Proficiency, Crisis-Responsive Pedagogy, Digital Competencies, Faculty Professional Development, Quality Education SDG4

التوجيه من أجل التحول الرقمي والعدالة الاجتماعية في عملية التعلم: تقييم نموذج تدريب وإرشاد أعضاء هيئة التدريس عبر الإنترنت في غزة خلال زمن الحرب

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ملخص: الهدف: هدفت الدراسة إلى قياس فاعلية برنامج تدريب وتوجيه الإلكتروني فاعلية برنامج تدريبي-توجيهي إلكتروني لتعزيز كفايات إنشاء المحتوى الرقمي لدى أعضاء هيئة التدريس في إحدى الجامعات الفلسطينية بغزة أثناء الحرب والحصار. **التصميم/المنهجية/الإجراءات:** شاركت عينة قصدية من 35 عضو هيئة تدريس من جامعة الأقصى (21 من داخل غزة و14 من خارجها) في برنامج مدمج مدته 32 ساعة جمع بين التزامن عبر Zoom واللا تزامن عبر Moodle مع تضمين التوجيه الأكاديمي. باستخدام التصميم شبه التجريبي لمجموعة واحدة ذات قياس قبلي وبعدي، جمعت البيانات عبر استبانة محكمة من 65 فقرة (معامل كرونباخ ألفا = 0.971)، وشمل التحليل اختبار t للعينات المرتبطة والمستقلة وتحليل التباين الأحادي. **النتائج:** أظهرت النتائج ارتفاعاً في كفايات إنشاء المحتوى الرقمي بشكل دال إحصائياً من القياس القبلي (متوسط = 3.51، انحراف معياري = 0.59) إلى البعدي (متوسط = 4.29، انحراف معياري = 0.65)، إذ بلغت $t(34) = -7.142$ ، $p < .001$ ، مع حجم تأثير كبير ($d = -1.16$). ولم تظهر فروق ذات دلالة للموقع ($p = .274$) أو سنوات الخبرة ($p = .342$)، مما يشير إلى شمولية النموذج في ظل قيود الحرب. **الخلاصة:** يُعد التدريب الإلكتروني القائم على التوجيه الأكاديمي كتنفيذ موجه نحو العدالة الاجتماعية، إذ يعزز الكفايات الرقمية، ويُرسخ ممارسات تربوية شاملة ومراعية للسياق الثقافي في سياقات الأزمات. كما ينمّي فاعلية المعلمين، وتأمّلهم، وانتماءهم، ويدعم صمود المؤسسات التعليمية. وفي أوقات الحرب، تبرز الجاهزية الرقمية كضرورة أخلاقية ومهنية مرتبطة بالحق في التعليم. **التوصيات:** أوصت الدراسة بإضفاء الطابع المؤسسي على التدريب الرقمي المنظم مع دمج التوجيه والدعم النفسي الاجتماعي، وتطوير نموذج قابل للتكرار والتوسع في السياقات المتأثرة بالأزمات، وتوسيع التطبيق في المناطق المهمشة، وتعزيز البحوث حول مخرجات التعلم والرفاهية، وتوجيه السياسات الوطنية نحو التعليم الرقمي والتأهب للأزمات. **الأصالة/القيمة العلمية:** تقدم هذه الدراسة نموذجاً للإرشاد القائم على العدالة الاجتماعية في زمن الحرب، من خلال إطار مستجيب يعزز الصمود المهني، والوصول الرقمي المنصف، واستمرارية التعلم في التعليم العالي تحت الحصار.

الكلمات المفتاحية: كفايات المحتوى الرقمي، أساليب التدريس المستجيبة للأزمات، الكفاءات الرقمية، التطوير المهني لأعضاء هيئة التدريس، جودة التعليم (SDG4).

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Introduction

In recent years, the global shift toward digital education has accelerated due to rapid technological advancements and widespread crises, such as the COVID-19 pandemic (Ghosheh *et al.*, 2022) and ongoing wars. These disruptions have redefined the challenges confronting educational systems, particularly in war-affected regions like Gaza, which suffers from the ongoing Israeli military offensive that severely violates the right to education (Affouneh *et al.*, 2024). The destruction of educational infrastructure, the displacement of faculty and students, and persistent interruptions in electricity and internet services have intensified barriers to equitable and sustainable education (Wells *et al.*, 2024). These conditions demand an urgent rethinking of traditional pedagogical models and highlight the transformative potential of digital education in promoting both resilience and educational continuity. In Palestine, and particularly Gaza, the continuity of higher education has become contingent on low-bandwidth, crisis-ready digital pedagogy and sustained mentoring support.

Recent sector-wide assessments underline the scale of disruption. A UNESCO-supported assessment of 21 higher education institutions across 38 campuses reported that 95% of campuses were affected, including 22 campuses completely destroyed, with extensive losses of laboratories, ICT infrastructure, and learning resources (UNESCO, 2025). These conditions intensify the urgency of faculty-centered digital capacity building and mentoring models that can sustain the learning process when physical campuses are non-operational.

Amid crises, when effectively leveraged, digital technologies can become powerful tools for sustaining inclusive and quality education

(Yemelyanova *et al.*, 2023). In Gaza, where the ongoing Israeli attack has severely disrupted formal learning, a key strategy for educational recovery lies in adopting technologies that are responsive to the local context, to restore learning opportunities for children and youth who have been denied access to education (University of Cambridge *et al.*, 2024).

Nevertheless, shifting toward digital transformation in education exposes significant infrastructure and teacher preparedness gaps, particularly in developing contexts. Educators often lack the expertise needed to utilize digital tools within limited resources effectively, and the replication of underdeveloped digital platforms (Bolanle *et al.*, 2025). To bridge these gaps, it is essential to enhance educators' digital competencies, adopt strategic policies that guide the evolution of online learning, and equip learners with the necessary technological skills to ensure equitable access to digital resources, and foster a positive attitude toward the digital learning environment to build a more resilient and effective education system (Yemelyanova *et al.*, 2023).

Digital transformation is a cornerstone for advancing education in War-affected regions, particularly when supported by well-structured e-training and sustained faculty mentoring. These elements are vital in closing gaps in digital competence, especially in digital content creation, which encompasses six core components: digital readiness, technical accessibility, instructional planning, content development, digital assessment, and trauma-sensitive teaching practices, all of which are critical for effective e-learning. Flexible and innovative training models have been identified as critical in mitigating educational loss and ensuring equitable access to learning (Diller *et al.*, 2020)

Considering the challenges in war-affected regions, successful digital transformation appears to depend on a holistic approach that combines technical training with resilience-based mentoring. The Gaza Strip, with its protracted crises and educational disruptions, illustrates the urgency of such an approach. Accordingly, this study investigates the effectiveness of a mentoring-based training program implemented virtually by Al-Aqsa University in Gaza, aiming to enhance faculty competencies in digital content creation, address training needs, and evaluate the program's impact under conditions of the ongoing attack on Gaza. Positioned within a social justice perspective, the study ultimately seeks to understand how mentoring for digital transformation can promote educational equity and professional resilience in one of the most fragile educational environments in the world, shaped by repeated acts of destruction and systemic erasure.

The current study investigates the impact of a mentoring-based training program aimed at enhancing digital content creation skills among faculty members in Palestinian universities. It focuses on the program's virtual implementation at Al-Aqsa University in Gaza and examines its effectiveness in promoting sustainable digital transformation. Additionally, it explores differences in digital competencies between Al-Aqsa University faculty members within and outside the Gaza Strip. The following central question guides this study: What is the effectiveness of an online mentoring-based training model in enhancing digital content creation competencies among faculty members at Al-Aqsa University, within the context of war-related challenges and their implications for social justice in higher education in Gaza? To address this central question, the study explores the following sub-questions:

Are there statistically significant differences in participants' digital content creation competencies attributable to their participation in the online mentoring-based training program?

Are there statistically significant differences in the effectiveness of the online training model on digital content creation competencies between faculty members residing inside the Gaza Strip and those outside it?

Are there statistically significant differences in training outcomes attributable to faculty members' years of professional experience?

Building on these research questions, the present study gains its significance from both its context and its contribution. It addresses the critical need to empower faculty members at Al-Aqsa University with the skills necessary for digital content creation, particularly in light of the profound disruptions caused by the ongoing Israeli attack on Gaza. By evaluating the effectiveness of a mentoring-based online training model, the study aims not only to enhance faculty digital competencies but also to promote social justice and institutional resilience through inclusive digital transformation. Furthermore, it offers a scalable approach to bridging digital skill disparities between faculty members inside and outside Gaza, while contributing practical insights for policy development and enriching the academic discourse on higher education in crisis-affected contexts.

Theoretical framework

Based on a comprehensive review of the relevant literature, this theoretical framework is organized into key thematic strands that emerged consistently across previous studies. These strands reflect the core areas addressed in the field and serve to structure the analysis and discussion. The research reviewed has been clustered around the following themes:

Mentoring and social justice

As higher education institutions increasingly turn to digital solutions to ensure continuity during crises, growing attention has been directed toward professional development approaches that go beyond technical training to include sustained, human-centered mentorship (Aljanazrah *et al.*, 2022). This shift is particularly vital in Gaza as a region subjected to ongoing aggression and systematic destruction that has severely eroded its political, economic, and educational infrastructures (Iriqat *et al.*, 2025). In Gaza, digital transformation is not only a pedagogical necessity but also a matter of educational and social justice.

Contemporary literature underscores the central role of mentoring in supporting educators as they navigate digital pedagogies, particularly when aligned with social justice principles. Thornton (2025) emphasizes that mentoring grounded in the educative mentoring model facilitates the development of critical thinking, fosters reciprocal mentor-mentee relationships, and enhances professional competencies through reflective practices, dialogic engagement, and scenario-based learning. This model moves mentorship beyond instrumental skill acquisition to cultivate educators capable of questioning prevailing pedagogical norms and adapting instruction to meet the cultural and linguistic diversity of their learners, thereby advancing equity in educational environments.

Moreover, mentoring for social justice, as conceptualized by Thornton (2025), entails empowering teachers to critically interrogate their teaching approaches, recognize and affirm students' cultural identities, and engage with inclusive, context-sensitive training content. This perspective is echoed by (Duckworth & Maxwell, 2015), who critique the dominance of an instrumental, assessment-driven approach to mentoring in contexts such as the UK, where

social justice is often marginalized. In contrast, they propose a transformative model whereby social justice mentors establish democratic, collaborative relationships, promote critical pedagogies, and act as advocates who instill a commitment to equity among educators.

Practical evidence from Briscoe (2019) supports this theoretical orientation, demonstrating that novice teachers who participated in structured virtual mentorship programs with experienced educators reported heightened preparedness, confidence, and a sense of support. These findings reinforce the idea that guided mentorship, particularly when delivered synchronously in virtual settings, can significantly enhance the professional development experience, especially in high-stress or crisis contexts.

In large-scale digital transformation initiatives, the role of instructional coaches has also received scholarly attention. Caneva *et al.* (2023) argue that coaches contribute meaningfully to the success of training programs when they are involved in their co-design and when the training is responsive to local cultural and institutional specificities. Effective coaching emphasizes hands-on, collaborative learning that respects educators' realities, thereby maximizing the impact of transformation efforts at the school and system levels.

Despite this growing recognition, significant gaps remain. As Saclarides (2023) notes, there is a dearth of research exploring the concrete practices through which coaches and mentors should implement transformative, justice-oriented mentorship. This lack of operational clarity is especially problematic in crisis-affected educational systems, where faculty face both logistical and psychosocial barriers to digital transformation.

In summary, the reviewed literature underscores that synchronous training, when

strategically combined with structured mentorship and coaching, serves as a critical enabler for faculty transitioning to digital pedagogies. Crucially, when such mentorship is anchored in social justice principles, it fosters inclusive, equitable, and culturally responsive teaching practices. This body of work highlights the transformative potential of mentoring not only in enhancing professional competencies but also in challenging educational inequities.

Digital Transformation in Higher Education During Crises

Building upon the first strand, which emphasized the role of mentorship and social justice in shaping inclusive professional development, this second thematic focus turns to the broader structural and pedagogical shifts associated with digital transformation in crisis-affected higher education settings. While mentoring provides the human and reflective dimension necessary for equitable learning environments, digital transformation offers the technological framework through which such environments can be sustained, especially in contexts marked by disruption and instability. In regions such as Gaza, where faculty operate under continuous threat and severe resource constraints, synchronous digital training programs emerge as both a strategic necessity and an instrument of educational resilience. This section examines how higher education institutions adopt and adapt digital tools, the competencies required for effective implementation, and the challenges inherent in sustaining meaningful digital learning under conditions of prolonged aggression and systemic collapse.

In response to accelerating technological advancements, educational institutions globally have increasingly integrated digital tools to overcome structural challenges and improve learning outcomes (Fernández Batanero *et al.*, 2021). This digital shift, however, hinges on

equipping faculty with essential digital competencies. Successful integration of technology in education relies heavily on the ability of educators to transition from traditional teaching methods to digital approaches, a shift that becomes especially crucial in regions affected by crises, where virtual platforms play a vital role in maintaining educational continuity (Al-Ahmari, 2019).

Online education, especially during crises, has demonstrated significant benefits, enhancing accessibility, reducing costs, and improving learner outcomes (Farokhzadian *et al.*, 2023). Training programs have thus emerged as key components of crisis management strategies. For example, Alan *et al.* (2023) found that digital training significantly improved participants' knowledge and preparedness during crises. Similarly, Lin *et al.* (2024) underscore the importance of evaluating training effectiveness through performance indicators such as response speed, decision accuracy, and participant satisfaction, which help optimize future programs and organizational resilience.

Al-Hassani (2023) and Mizrak (2024) further highlight how structured training improves operational competencies, enabling educators to predict and respond to risks swiftly. Technological tools like virtual simulations can provide realistic crisis scenarios, enhancing experiential learning (McLennan *et al.*, 2024). Al-Hinai *et al.* (2024) point to e-books as a pivotal format in digital education, offering interactive, media-rich content essential for effective e-learning.

Moreover, Al-Ghamdi (2018) identifies three foundational pillars for digital content design: theoretical (grounded in learning theories), educational (aligned with learner needs and characteristics), and technical (focused on interface and usability). Effective instructional design models are thus essential to

align digital content with educational objectives and learner diversity.

In crisis-affected settings, the implementation of e-training and digital applications represents a foundational element of digital transformation in higher education. Rather than serving solely as tools for communication, these technologies function as critical infrastructures for sustaining instructional delivery, adapting pedagogical approaches, and supporting institutional continuity. As noted by Mizrak (2024), digital solutions are indispensable in enabling educators and learners to navigate disrupted environments. E-training enhances the adaptability of both faculty and students, equipping them with the skills needed to operate in dynamic and uncertain conditions. Hunter *et al.* (2016) emphasize that effective digital transformation during emergencies requires proactive, competency-based training that empowers educators to assess situations, make informed decisions, and maintain instructional quality under pressure.

To maximize impact, training programs must blend theoretical knowledge with practical application, incorporate simulations, diversify digital platforms, and maintain continuous interaction and evaluation (Farokhzadian *et al.*, 2023). Ultimately, sustained and responsive training programs are vital for building digital resilience and ensuring educational systems can navigate and recover from unforeseen disruptions.

Despite a growing body of research emphasizing the importance of digital transformation and the role of online training in enhancing faculty competencies during crises (Alan *et al.*, 2023; Farokhzadian *et al.*, 2023; McLennan *et al.*, 2024), there remains a critical gap in context-specific investigations that address the unique challenges faced by educators in continuously militarily attack-affected regions such as the Gaza Strip. While

several studies have highlighted the potential of digital tools and virtual learning environments to maintain educational continuity (Al-Ahmari, 2019); (Fernández Batanero *et al.*, 2021); (Zagzouk, 2023), few have systematically identified the essential digital content creation skills required by faculty members in politically and economically besieged territories. Moreover, existing literature often overlooks how crisis-responsive digital competencies intersect with broader imperatives of social justice, particularly in higher education institutions operating under conditions of blockade, infrastructural collapse, and active warfare (Al-Hassani, 2023); (Mizrak, 2024). This study seeks to address this critical gap by examining the digital content creation skills most urgently needed to support sustainable digital transformation among faculty at Al-Aqsa University, considering the ongoing Israeli attacks on Gaza. In doing so, it contributes to both the theoretical understanding and practical application of digital pedagogy in one of the world's fragile educational environments.

Method of the study

The researchers employed a quasi-experimental one-group pretest-posttest design to evaluate the effectiveness of an oriented digital training program. Participants were assessed before and after the program. The establishment of a control group was not possible given the exigent wartime circumstances. As an alternative, the study incorporated a subgroup analysis to compare outcomes between faculty members situated inside Gaza and those who were outside during the wartime. The quasi-experimental design, while lacking random assignment, allows for a robust examination of impacts (Creswell, 2012).

Participants and Sampling

The purposive sample comprises 35 faculty members (29 male, 6 female) affiliated with Al-Aqsa University or equivalent institutions. The sample is divided into two experimental groups: The first composed of 21 faculty members residing inside the Gaza Strip, and the second composed of 14 faculty members located outside Gaza, including remote collaborators. Participants were selected based on these three main criteria: current affiliation with Al-Aqsa University, expressed need for digital transformation skills, and availability and readiness to participate in the training.

The sample reflected the maximum feasible number of available and consenting faculty under wartime constraints, representing a pragmatic approach to sampling. Consequently, a formal a priori power analysis was not conducted a limitation acknowledged in the Scope and Limitations section.

Participants represented a range of academic disciplines and varying levels of experience in digital content creation. A significant portion (65.7%) reported over 15 years of service in higher education, followed by 22.9% with 10 to fewer than 15 years, 8.6% with 1 to fewer than 5 years, and 2.9% with 5 to fewer than 10 years. This distribution ensured a representative mix of gender, location, and teaching experience across the sample. The two groups were balanced in terms of specialization and professional experience to support comparability.

Training Program Description

The training program, titled "Enhancing Digital Transformation in Higher Education through Digital Content Creation," was a 32-hour professional development initiative aimed at strengthening faculty members' competencies in digital content production. It included 20 hours of live (synchronous) sessions conducted via Zoom and 12 hours of

self-paced (asynchronous) learning through the Francophone University Agency (AUF) Moodle platform. A distinctive feature of the program was the integration of mentoring, which provided participants with personalized guidance and feedback from experienced digital education specialists. Faculty members based in the Gaza Strip participated during the first week, while those outside Gaza joined in the second week.

Key modules included: (1) Introduction to digital transformation in education, (2) Tools for digital content development (e.g., Canva, Articulate, PowToon, Camtasia), (3) Instructional design principles, (4) Interactive content creation, (5) Digital learner engagement, (6) Assessing digital content quality, and (7) Trauma-informed pedagogy.

Training activities based on mentoring and included applied workshops, case studies, collaborative projects, and open discussions, with participants required to create and present original digital learning materials.

Data Collection Tools

A Pre-post-training questionnaire was used to collect data. The questionnaire is composed of 65 items distributed in 6 domains: Assessed digital content creation proficiency (digital readiness, technical accessibility, instructional planning, content development, digital assessment, and trauma-sensitive teaching practices).

Reliability of the Questionnaire:

To evaluate the internal consistency of the survey instrument, Cronbach's Alpha was computed for each of the six thematic scales. The analysis revealed high to excellent levels of reliability across all constructs, affirming the robustness and consistency of the measurement tool.

Availability of Technical Tools and Infrastructure (12 items): The scale demonstrated good reliability with a

Cronbach's Alpha of 0.824, indicating consistent responses across items measuring access to and availability of digital infrastructure.

Preparation and Prior Knowledge (10 items): This scale achieved an excellent reliability coefficient of 0.955, suggesting strong internal coherence in assessing participants' baseline digital preparedness and familiarity.

Planning in Instructional Design (9 items): With a Cronbach's Alpha of 0.925, this dimension exhibited excellent internal consistency, supporting the reliability of items related to planning and structuring instructional content.

Educational Content Development and Production Skills (17 items): This domain showed a very high reliability score of 0.941, reflecting strong consistency in measuring competencies in digital content creation.

Digital Assessment Skills (8 items): The scale achieved a high reliability coefficient of 0.902, indicating consistent evaluation of participants' abilities in implementing digital assessment tools and strategies.

Education for the Traumatized (9 items): With a Cronbach's Alpha of 0.933, this dimension also demonstrated excellent reliability, validating the consistency of items addressing trauma-informed educational practices.

The overall reliability of the entire instrument, comprising 65 items, was exceptionally high, with a Cronbach's Alpha of 0.971. This result confirms the instrument's internal consistency and reinforces its utility as a reliable tool for assessing the targeted competencies across both experimental groups.

The reliability analysis was based on a complete dataset of 35 valid responses, with no missing or excluded cases, ensuring comprehensive representation of the study

population. The consistently high Cronbach's Alpha values across individual scales, and for the instrument as a whole, underscore the soundness of the survey design and the dependability of the findings derived from it.

Scope and Limitations of the Study

This study is subject to several limitations that delineate its scope and contextual relevance. These constraints are outlined below to clarify the boundaries of the research and support accurate interpretation of the findings.

Objective Limitations

The primary focus of the study is to assess the effectiveness of a targeted online training program in enhancing digital content creation skills among faculty members at Al-Aqsa University, with the broader aim of contributing to digital transformation in higher education. While digital transformation encompasses a wide array of competencies, this study specifically concentrates on the creation of educational digital content and its potential impact on teaching quality. Other digital competencies—such as data literacy, cybersecurity awareness, or online assessment design—are beyond the scope of this investigation.

Spatial Delimitation

The study is geographically confined to Al-Aqsa University. The participant sample includes two distinct groups: Faculty members residing and working inside the Gaza Strip, and faculty members affiliated with Al-Aqsa University but residing outside Gaza, including collaborators and adjunct staff. The training program was delivered using Zoom and the e-learning platform of the Francophone University Agency (AUF), ensuring accessibility across spatial boundaries.

Temporal Boundaries

The study was conducted during the ongoing Israeli military offensive on Gaza, specifically between January and March/2025, a period

marked by severe disruptions to infrastructure, mobility, and access to educational resources.

Human Delimitation

The study is limited to faculty members currently employed by or affiliated with Al-Aqsa University. The sample was carefully selected to represent a diverse range of academic disciplines and experience levels, to enhance the generalizability of the findings within the university context.

Methodological Limitations

A quasi-experimental design was employed, involving pre- and post-assessment of participants' skills. While this design supports internal validity, it may limit causal generalization. Data was collected through a combination of quantitative (questionnaires, practical tasks) and qualitative (semi-structured interviews) instruments, which, despite triangulation, are inherently subject to participant self-reporting biases.

Technical Limitations

The study utilizes a specific set of digital content creation tools and technologies, chosen for their accessibility and relevance to the training objectives. However, the findings may not extend to faculty members using alternative platforms or more advanced tools not included in the training model.

Data Analysis

Descriptive statistics, including means and standard deviations, were computed for all relevant variables. To assess the program's effectiveness, a paired-samples t-test was conducted to compare pretest and posttest scores. An independent-samples t-test was used to examine post-training differences between the two location-based groups (inside vs. outside Gaza). Additionally, a one-way ANOVA was performed to explore differences in outcomes based on years of professional experience. Moreover, the Effect sizes (Cohen's d) and exact p-values are reported

where applicable. An alpha level of .05 was set for all statistical tests.

Results and discussion

Improvement in Digital Content Creation competencies

A paired samples t-test was conducted to assess the effectiveness of the online training program in enhancing participants' digital content creation competencies. Results in Table 1 showed a statistically significant increase in post-training scores compared to pre-training scores for faculty members.

Table (1): Pre- and Post-Training Scores of participants' digital content creation competencies.

Training Phase	M	SD	N	t	p	Cohen's d
Pre-training	3.51	0.59	35			
Post-training	4.29	0.65	35	-7.142	.000	-1.16

The analysis addressing the first research question confirmed a statistically significant improvement in participants' competencies following their engagement with the online training program, $t(34) = -7.142$, $p < .001$. As shown in Table I, this finding suggests that the training model was effective in enhancing participants' digital content creation skills across key domains such as instructional planning, content development, digital assessment, and accessibility. More importantly, the calculated effect size was large (Cohen's $d = -1.16$), which according to conventional benchmarks (Cohen, 1988) indicates that the observed improvements are not only statistically significant but also carry considerable practical importance. In real-world terms, this large effect demonstrates that the training model substantially influenced participants' ability to design and produce digital learning materials.

These outcomes are significant given that the training was implemented under conditions of crisis and resource limitation, especially for participants residing in crisis-affected areas.

The consistency of improvement across supports the adaptability and relevance of the model in both emergency and stable educational contexts.

Overall, the results validate the training program as a robust approach to advancing faculty digital competence, particularly in digital content creation, and underscore the need for scalable e-training initiatives that integrate mentoring, flexibility, and trauma-sensitive instructional design.

Differences in Training Outcomes Attributable to Faculty Members Residing (inside and outside the Gaza Strip)

An independent sample t-test was conducted to test the differences in the effectiveness of the online training program in enhancing participants' digital content creation competencies between the faculty members who live in Gaza and those who currently live outside it. Results in Table 2 showed no statistical difference between the groups.

Table (2): Differences in Training Outcomes Attributable to Faculty Members Residing.

Location	M	SD	N	t	p
Inside Gaza	4.40	0.60	21		
Outside Gaza	4.14	0.71	14	-1.101	.274

To examine the second research question whether the training program's effectiveness varied by geographic location, an independent-samples t-test compared post-training scores between faculty members residing inside Gaza and those located outside. As presented in Table II, the analysis revealed no statistically significant difference between the two groups, $t(33) = -1.101$, $p = .274$. This finding suggests that the training model supported equitable learning outcomes for all participants, regardless of their location during the war, indicating its robustness and adaptability to different socio-political and infrastructural conditions.

This equivalence may be attributed to key features of the program's delivery design: asynchronous access accommodated disrupted schedules; embedded mentoring provided continuous, personalized support; and a trauma-sensitive facilitation approach addressed participants' psychological needs. The ability to generate comparable results across such distinct settings reflects the model's inclusiveness, equity-driven design, and flexibility in reaching and engaging diverse faculty profiles. Together, these elements contributed to the model's resilience and effectiveness across vastly different contexts.

Furthermore, this consistency may be attributed to deliberate instructional design features embedded in the training, such as asynchronous access, mentoring support, trauma-sensitive approaches, and multimodal content delivery, which collectively enabled equitable participation and learning. These findings offer compelling evidence for the scalability of the training model to other war-affected or resource-limited environments, strengthening the case for its broader implementation.

Ultimately, the absence of significant differences supports the notion that with careful planning and inclusive digital pedagogy, online faculty development programs can transcend physical borders and socio-political challenges, delivering meaningful and measurable professional growth.

Differences in Training Outcomes Attributable to Faculty Members' Years of Professional Experience

To examine whether years of work experience moderated training effectiveness, an ANOVA was conducted on pre- and post-training scores across four experience categories. Results are shown in Table 3.

Table (3): One-Way ANOVA Results by Work Experience.

The absence of a significant group difference carries important practical implications. Despite the severe constraints faced by faculty inside Gaza including intermittent electricity, limited internet access, and ongoing trauma exposure their post-training competency scores were comparable to those of colleagues outside the region. This similarity implies that the online training program successfully mitigated contextual disparities, such as war-related trauma, infrastructure limitations, and varying levels of technology access. <i>Timepoint</i>		SS	df	MS	F	P
Pre-training	Between Groups	.688	3	.229	.649	.589
	Within Groups	10.955	31	.353		
	Total	11.643	34			
Post-training	Between Groups	1.439	3	.480	1.157	.342
	Within Groups	12.850	31	.415		
	Total	14.288	34			

To investigate the third research question, whether prior professional experience influenced training outcomes a one-way ANOVA was conducted to compare both pre-training and post-training scores across the four experience-level groups. As displayed in Table III, the analysis revealed no statistically significant differences among groups at either time point: pre-training scores, $F(3, 31) = 0.649$, $p = .589$; post-training scores, $F(3, 31) = 1.157$, $p = .342$. Despite participants being grouped into four experience categories (1 to <5 years, 5 to <10 years, 10 to <15 years, and >15 years), their digital content creation competencies improved consistently following the training, irrespective of their career stage.

A closer examination of the descriptive statistics further reinforces this finding. While there were slight variations in mean scores, for instance, participants with over 15 years of experience had a higher average pre-training score ($M = 3.61$) compared to those with less than 5 years ($M = 3.26$), these differences were not statistically significant. Post-training scores across groups also showed improvement, with the highest mean score recorded for the 5 to <10 years group ($M = 4.89$), followed by the 10 to <15 years group ($M = 4.53$). However, the training's overall effectiveness was consistent, as confirmed by the non-significant F-values

for both pre- ($F = 0.649$, $p = .589$) and post-training ($F = 1.157$, $p = .342$) comparisons.

These findings underscore the training model's capacity to deliver equitable outcomes, irrespective of prior professional experience. The uniform effectiveness across diverse experience levels highlights the program's pedagogical inclusivity and its ability to support novice and veteran educators alike in acquiring essential digital skills. Such results affirm the importance of designing flexible, scalable professional development models that accommodate a wide range of learner profiles without compromising learning quality or impact.

Overall Effectiveness of the Training Program

The findings across the three statistical analyses consistently demonstrate the effectiveness, adaptability, and inclusiveness of the online training program designed to enhance digital content creation competencies among faculty members. The paired samples t-test revealed a statistically significant improvement in participants' skills post-training, with a large effect size (Cohen's $d = -1.16$), indicating not only statistical but also practical significance. This confirms the program's robust impact in strengthening faculty proficiency across multiple aspects of

digital content creation, including planning, development, assessment, and trauma-sensitive practices.

The independent sample t-test examining geographic differences found no statistically significant variation between participants residing inside Gaza and those outside. This suggests that the training model maintained its effectiveness across distinct socio-political and infrastructural conditions. The program's consistency across these contexts highlights its potential to deliver equitable learning outcomes, even in environments affected by war or displacement.

Moreover, the one-way ANOVA assessing the role of professional experience in training outcomes showed no significant differences in pre- or post-training scores among participants with varying years of experience. This underscores the model's inclusivity and broad applicability, indicating that it supports faculty development regardless of prior exposure to digital tools or pedagogical training.

Together, these results validate the training program's scalability and relevance in diverse educational contexts. Its ability to achieve significant learning gains across location and experience levels makes it a valuable model for professional development in crisis-affected settings. The integration of mentoring, interactive content, and flexible delivery modalities further positions this model as a sustainable solution for advancing digital transformation in higher education.

Discussion and Implications

The results of this study align with existing evidence demonstrating that online professional development can be effective during wartime and crises when it combines synchronous instruction with continuous feedback and evaluation (Alan *et al.*, 2023; Farokhzadian *et al.*, 2023). Importantly, the embedded mentoring component

operationalized social-justice mentoring principles by strengthening educator agency, reflective practice, and context-sensitive pedagogies (Duckworth & Maxwell, 2015); (Thornton, 2025).

The absence of location-based differences suggests that carefully designed blended delivery combining online meetings with offline learning continuation through a learning management system alongside embedded mentoring can partially buffer the infrastructural inequities that typically widen during wartime and crises, thereby supporting more equitable participation. This finding is consistent with scholarship emphasizing that coaching and mentoring are most effective when responsive to local realities and co-designed around practitioner constraints (Caneva *et al.*, 2023).

Nevertheless, the study's single-group design cannot fully rule out alternative explanations such as maturation or external supports. Future research should consider controlled or stepped-wedge designs where feasible, and incorporate mixed-method evidence of changes in teaching artifacts, learner engagement, and student outcomes to strengthen causal inference and external validity. Moreover, the one-way ANOVA assessing the role of professional experience in training outcomes showed no significant differences in pre- or post-training scores among participants with varying years of experience. This underscores the model's inclusivity and broad applicability, indicating that it supports faculty development regardless of prior exposure to digital tools or pedagogical training.

Together, these results validate the training program's scalability and relevance in diverse educational contexts. Its ability to achieve significant learning gains across location and experience levels makes it a valuable model for

professional development in crisis-affected settings. The integration of mentoring, interactive content, and flexible delivery modalities further positions this model as a sustainable solution for advancing digital transformation in higher education.

Implications and Limitations

Implications for Practice: The findings reveal that a blended training-and-mentoring model can strengthen faculty digital competencies even under severe disruption. For crisis-affected universities, three actionable practices emerge: (1) pair skills training with ongoing mentoring and rapid feedback; (2) design for low-bandwidth continuity through asynchronous LMS pathways; and (3) embed trauma-sensitive facilitation to sustain engagement and equity. Policymakers should prioritize faculty capacity building as a continuity measure and formalize mentoring roles within professional development systems.

Implications for Research: This study underscores the need for crisis-responsive digital transformation research integrating social-justice mentoring and resilience design. Future studies should examine impacts on teaching artifacts, learner engagement, and student outcomes, and explore how mentoring modality mediates effectiveness.

Limitations: Several limitations warrant consideration. The single-group pre-post design limits causal inference. The small sample ($N = 35$) and single-institution setting constrain generalizability. Self-reported data may introduce bias, and wartime conditions created uneven technology access despite mitigation efforts. Results should be interpreted as evidence of feasibility rather than definitive causal proof.

Future research should employ controlled designs, incorporate objective indicators (e.g., rubric-scored artifacts, LMS analytics), and triangulate with qualitative interviews to

capture nuanced mentoring and trauma-informed practices.

Conclusion

This study examined the effectiveness of an online faculty training and mentoring model implemented at Al-Aqsa University during wartime in Gaza. The findings provide clear answers to the research questions.

The study showed that faculty competencies in digital content creation improved substantially following the intervention, with a large practical effect size, highlighting the model's effectiveness in supporting professional capacity building under crisis conditions.

It also revealed that there were no statistically significant differences in post-training outcomes between faculty residing inside Gaza and those outside during the war, suggesting that the program design enabled equitable learning opportunities despite varying circumstances.

Furthermore, the findings indicated no significant differences based on years of professional experience, demonstrating the model's applicability across different career stages.

Overall, the results confirm the feasibility and effectiveness of integrating structured mentoring within online faculty development to sustain learning processes in times of severe disruption.

Recommendations

In light of the findings and the urgent need for scalable solutions in crisis-affected educational systems, the following actionable recommendations are proposed:

Institutionalize Digital Training Programs for Faculty Development

Universities, particularly in wartime or resource-constrained contexts, should invest in structured digital training programs aimed at

enhancing faculty competencies in content creation, online pedagogy, and adaptive teaching strategies. The program evaluated in this study offers a practical model that can be adapted and scaled to meet diverse institutional needs.

Embed Mentoring and Psychosocial Support into Faculty Training Models

Training should be paired with sustained mentoring structures that promote reflective practice, emotional resilience, and professional growth. As evidenced in the study, mentoring serves not only instructional goals but also supports educators' psychosocial well-being, particularly crucial in contexts of prolonged trauma, such as Gaza.

Refine and Document the Program Model as a Replicable Framework

Stakeholders are encouraged to further develop and formalize the structure of this program into a replicable model. This includes codifying its components (e.g., synchronous training, embedded mentoring, context-specific content) to support future implementations in both similar contexts and more stable regions, aiming to foster digital transformation.

Expand Implementation to Other High-Risk or Marginalized Areas

The program's success in Gaza suggests its relevance to other regions facing educational disruption due to war, displacement, or other crises. Institutions should pilot similar interventions in such areas and evaluate their contextual fit and scalability.

Encourage Future Research on Broader Impact Dimensions

Researchers should investigate the program's impact on:

- Knowledge transfer to students: How trained faculty influence learner outcomes.

- Educational quality during emergencies: Measurable changes in teaching effectiveness and learner engagement.
- Psychosocial well-being of faculty and learners: The role of digital training and mentoring in promoting mental health and emotional stability under duress.

Leverage Program Insights for Policy Design and System Reform

Policymakers should draw on this model to inform national strategies for digital education and crisis preparedness. This includes integrating mentoring-based digital training into professional development standards, aligning with global education for sustainable development and education in emergencies frameworks.

Disclosure Statement

- **Ethical approval:** Although formal ethics board approval could not be obtained due to the constraints of the war-affected context, this study was approved by Al-Aqsa University in accordance with established academic and ethical regulations. The research team adhered strictly to the Ethical Principles of Psychologists and Code of Conduct issued by the American Psychological Association (2017), which align with international standards for research involving human participants. Participation in the study was entirely voluntary, and all participants were provided with clear information regarding the purpose of the research, their right to withdraw at any time without penalty, and assurances that their involvement would remain confidential. Informed verbal consent was obtained from all participants prior to participation, including explicit permission to record training sessions. These recordings were used exclusively for research purposes and stored securely to ensure participants' privacy and anonymity. No identifying

information was disclosed in any stage of the data analysis or reporting. The research team took all reasonable measures to protect participants from harm and to maintain a respectful and ethically responsible research environment.

- **Data availability:** The datasets and supporting materials generated and/or analyzed during the current study are available from the authors upon reasonable request for academic or research purposes, in accordance with applicable regulations.
- **Author contributions:** Saida A. Provided overall scientific supervision of the study; reviewed and commented on the findings; contributed to the development of recommendations; and supervised the final writing and academic formatting of the manuscript. Ahmed A.A. Coordinated data collection processes, including the organization of training sessions and meetings as primary data sources; developed and validated research instruments; facilitated the peer review process; and addressed reviewers' comments and revisions. Muhannad A.A. Contributed to the development of the theoretical framework and literature review; monitored the implementation of the intervention (training program) within the study context; coordinated research team activities; and contributed to the review of the manuscript's scientific content. Yaser A. A. S. Conducted statistical data analysis; interpreted statistical results; and contributed to the methodology and study procedures. Sabrin W. W. Drafted the study introduction; formulated the research problem and objectives; and contributed to developing the final recommendations. Dua' W.G. Compiled and managed references; contributed to data analysis and discussion; followed up on the publication process; and

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- **Research sources:** This manuscript is an original study that is not derived from, extracted from, or based on any master's thesis, doctoral dissertation, or any other requirements for an academic degree. The study relied on primary data collected from faculty members using a validated research tool, in addition to utilizing relevant peer-reviewed scientific literature on the topic of the course.

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