

## Research Article

## Challenges and Opportunities of E-Learning for Women's Education in Developing Countries: Insights from Women Online University

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### ABSTRACT

*This case study explores the challenges and opportunities of e-learning for women's education in developing countries, focusing on the experience of Women Online University. The purpose is to assess the impact of e-learning on women's empowerment and socio-economic advancement, examining factors influencing engagement with e-learning platforms. The study involved 220 female students across various faculties and age groups, utilizing surveys and statistical analysis to evaluate e-learning effectiveness. Results indicate a positive perception of e-learning, with significant relationships between e-learning contribution, empowerment, and socio-economic advancement. Access to technology is influenced by digital literacy, age, and faculty of study. In conclusion, the study highlights the transformative potential of e-learning for women's education, emphasizing the importance of addressing digital literacy gaps and enhancing institutional support. Recommendations include leveraging innovative pedagogical strategies to optimize e-learning outcomes and promote gender equality in education. This case study contributes valuable insights into the role of e-learning in empowering women in developing countries, informing future research and policy initiatives in educational development and gender equality efforts.*

**Keywords:** Developing Countries; Digital Literacy; E-Learning; Socio-Economic Advancement; Women's Education

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## 1. Introduction

In the realm of education, the advent of technology has catalyzed a significant shift, particularly with the emergence of e-learning. This transformation offers profound implications for educational access and delivery, especially in developing nations where traditional barriers to education persist. E-learning, characterized by the use of electronic technologies to facilitate learning, has garnered global attention as a potential solution to address the disparities in educational opportunities. However, its implementation in the context of women's education in developing countries is fraught with challenges and opportunities that warrant careful examination.

A series of studies have shed light on the multifaceted nature of e-learning's impact on women's education in developing regions. Al Alhareth (2013) conducted a pilot study in Saudi Arabia, exploring the contribution of e-learning to the enhancement of higher education opportunities for women. Similarly, Yamin and Aljehani (2016) conducted an empirical study focusing on e-learning and women in Saudi Arabia, providing valuable insights into the practical implications of e-learning initiatives. In Dubai, Gokah, Gupta,

and Ndiweni (2015) and Amiri et al. (2024) delved into the opportunities and challenges of e-learning in higher education, shedding light on the specific context of the region. Luppicini and Walabe (2021) conducted a comprehensive exploration of the socio-cultural aspects of e-learning delivery in Saudi Arabia, further enriching our understanding of the complex dynamics at play.

Beyond the Middle East, studies from Tanzania (Sanga et al., 2013) and other regions have examined the potential of e-learning to promote participation of female students in STEM disciplines and higher learning institutions. However, amidst these opportunities, numerous challenges persist. Bower and Hardy (2004) highlighted the changes and challenges in distance education, underscoring the need for innovative approaches to overcome existing barriers. Uhlig (2002) and Von Prummer (2005) explored the challenges and opportunities of distance education, with a particular focus on women's participation.

Sullivan (2002, 2001) provided valuable insights into the experiences of female college students in online classrooms, shedding light on the gender differences and the impact of societal norms. Similarly, Chick and Hassel (2009) and Kramarae (2003) discussed feminist pedagogy and gender equity online, emphasizing the need for inclusive and empowering educational environments. Additionally, studies such as those by Cheri and Kramarae (2001) and Al Alhareth et al. (2015) have examined the broader societal context influencing women's access to education.

Furthermore, empirical investigations by Sun et al. (2008) and Lee (2010) have identified critical factors influencing learner satisfaction and continuance intention toward e-learning, providing valuable insights for policy and practice. Weaver (2002) and Bertaux and Crable (2007) explored alternative approaches to women's education, highlighting the potential for transformative learning experiences.

In conclusion, while e-learning presents both challenges and opportunities for women's education in developing countries, it represents a transformative force with the potential to foster inclusive and equitable access to quality education. By addressing the digital gender gap, leveraging innovative pedagogical approaches, and fostering a supportive educational ecosystem, e-learning can contribute significantly to the socio-economic empowerment and advancement of women in these regions. However, realizing this potential requires concerted efforts from policymakers, educators, and stakeholders to create an enabling environment that prioritizes gender equality and educational equity.

Despite the growing recognition of the potential benefits of e-learning in advancing women's education, significant challenges persist in its implementation and uptake, particularly in developing countries. Access barriers, including limited infrastructure, digital inequalities, and socio-cultural constraints, continue to hinder women's participation in e-learning initiatives. Moreover, the existing literature indicates a gap in understanding the specific challenges faced by women in accessing and benefiting from e-learning opportunities in these contexts. Therefore, this study seeks to explore the multifaceted challenges encountered by women in developing countries in engaging with e-learning platforms and to identify strategies to address these barriers effectively. By addressing these challenges, this research aims to contribute to the enhancement of women's education and empowerment in the context of e-learning within developing countries.

## **2. Literature Review**

E-learning, characterized by the utilization of electronic technologies to facilitate learning, has emerged as a promising avenue to address the educational disparities faced by women in developing countries. This literature review synthesizes empirical studies and theoretical perspectives to examine the challenges and opportunities of e-learning for women's education in these contexts.

Studies conducted in Saudi Arabia have provided valuable insights into the potential of e-learning to enhance higher education opportunities for women. Al Alhareth (2013) conducted a pilot study that underscored the contribution of e-learning to women's educational advancement, particularly in a conservative societal setting. Similarly, Yamin and Aljehani (2016) conducted an empirical study focusing on e-learning's impact on women in Saudi Arabia, highlighting its role in expanding access to education and providing women with the flexibility to balance their familial responsibilities with academic pursuits.

Beyond Saudi Arabia, Gokah, Gupta, and Ndiweni (2015) explored the opportunities and challenges of e-learning in higher education in Dubai, shedding light on the specific context of the region. Their findings emphasized the need for infrastructure development and policy support to maximize the benefits of e-learning for women. Luppicini and Walabe (2021) conducted a comprehensive exploration of the socio-cultural aspects of e-learning delivery in Saudi Arabia, providing valuable insights into the complex dynamics influencing women's participation in e-learning initiatives. Their study highlighted the importance of addressing cultural norms and societal expectations to create an inclusive e-learning environment. In Tanzania, Sanga et al. (2013) investigated the potential of e-learning to promote the participation of female students in STEM disciplines, highlighting the role of technology in breaking down traditional barriers to education. Their findings underscored the need for targeted interventions to address gender disparities in STEM fields and leverage e-learning as a tool for gender empowerment.

However, amidst these opportunities, numerous challenges persist. Bower and Hardy (2004) highlighted the changes and challenges in distance education, emphasizing the need for innovative approaches to overcome existing barriers such as limited access to technology and digital literacy skills. Uhlig (2002) and Von Prummer (2005) explored the challenges and opportunities of distance education, with a particular focus on women's participation. Their studies emphasized the importance of addressing socio-economic factors and providing adequate support structures to ensure equitable access to e-learning opportunities.

Sullivan (2002, 2001) provided valuable insights into the experiences of female college students in online classrooms, shedding light on the gender differences and the impact of societal norms on women's participation in e-learning. Similarly, Chick and Hassel (2009) and Kramarae (2003) discussed feminist pedagogy and gender equity online, advocating for inclusive and empowering educational environments that challenge traditional gender roles and promote women's active participation in e-learning initiatives. Furthermore, empirical investigations by Sun et al. (2008) and Lee (2010) have identified critical factors influencing learner satisfaction and continuance intention toward e-learning, providing valuable insights for policy and practice. Their studies emphasized the importance of user-centered design and the need for ongoing support and training to ensure the success of e-learning initiatives.

The landscape of education in Afghanistan is undergoing a significant transformation, marked by the integration of digital technologies and e-learning

platforms. Research by Hakimi et al. (2023) illuminates the impact of e-learning on girls' education at Samangan University, stressing the vital role of robust infrastructure and reliable internet access for active participation among female students. Additionally, Khudai Qul Khaliqyar et al. (2024) highlight the transformative potential of Artificial Intelligence (AI) integration in various academic disciplines, offering insights into enhancing educational outcomes and student experiences. Furthermore, Hasas et al. (2024) explore the feasibility of implementing Internet of Things (IoT) connected devices in Afghan classrooms, emphasizing the importance of institutional support to overcome technological challenges. In parallel, Fazil et al. (2023) advocate for cybersecurity education to ensure digital literacy and online safety among students, particularly in regions like Badakhshan Province. Moreover, Hakimi et al. (2023) shed light on cybersecurity awareness among women in academia, underscoring the need for targeted interventions to mitigate social engineering threats. Together, these studies underscore the potential of digital innovations to broaden educational opportunities and foster inclusivity in Afghanistan, prompting policymakers and educational institutions to address challenges and ensure equitable access to quality education for all.

To sum up, while e-learning presents both challenges and opportunities for women's education in developing countries, it represents a transformative force with the potential to foster inclusive and equitable access to quality education. By addressing the digital gender gap, leveraging innovative pedagogical approaches, and fostering a supportive educational ecosystem, e-learning can contribute significantly to the socio-economic empowerment and advancement of women in these regions. However, realizing this potential requires concerted efforts from policymakers, educators, and stakeholders to create an enabling environment that prioritizes gender equality and educational equity.

The primary focus of this article is to achieve the outlined research objectives:

- Assess the impact of e-learning on women's empowerment and socio-economic advancement in Women Online University.
- Investigate the factors influencing women's engagement with e-learning platforms, including digital literacy, access to technology, and support networks.
- Evaluate the effectiveness of pedagogical approaches in e-learning for promoting women's education and empowerment.
- Examine the strategies implemented by Women Online University to address challenges and enhance opportunities for women's education through e-learning in developing countries.

### **3. Method**

This study employs a mixed-methods research approach to investigate the challenges and opportunities of e-learning for women's education in developing countries. The methodology encompasses data collection, analysis, and interpretation to address the research objectives comprehensively. The following sections outline the key components of the methodology:

**Research Design:** The research design integrates both quantitative and qualitative methods to gain a comprehensive understanding of the topic. Quantitative data are collected through surveys and statistical analyses, while qualitative data are obtained through interviews and focus group discussions. This mixed-methods approach allows for triangulation of findings, enhancing the validity and reliability of the study.

**Sampling:** The study utilizes purposive sampling to select participants representing diverse demographics, including female students enrolled in Women Online University.

The sample size of 220 participants ensures adequate representation across faculties and age groups, facilitating a nuanced analysis of e-learning perceptions and experiences.

**Data Collection:** Quantitative data are collected through structured surveys administered to participants, focusing on variables such as e-learning platform usage, empowerment, socio-economic advancement, and perceptions of Women Online University's strategies. Qualitative data are obtained through semi-structured interviews and focus group discussions, allowing participants to express their views, experiences, and challenges related to e-learning.

**Data Analysis:** Quantitative data are analyzed using statistical software SPSS 26, employing descriptive and inferential statistical techniques. Descriptive statistics, including mean, median, and standard deviation, summarize the characteristics of the sample and variables of interest. Inferential statistics, such as ordinal regression analysis, explore relationships between variables and test hypotheses.

Qualitative data undergo thematic analysis, wherein patterns, themes, and categories are identified from interview transcripts and focus group discussions. This process involves coding, categorization, and interpretation of qualitative data to extract meaningful insights and themes related to e-learning challenges and opportunities for women's education.

**Reliability and Validity:** Measures are taken to ensure the reliability and validity of the study findings. Reliability analysis, including Cronbach's Alpha, assesses the internal consistency and reliability of survey instruments. Validity is ensured through triangulation of data sources, member checking, and peer debriefing, enhancing the credibility and trustworthiness of the study.

**Ethical Considerations:** Ethical guidelines and principles are adhered to throughout the research process. Informed consent is obtained from participants, ensuring voluntary participation and confidentiality of data. The study prioritizes respect, beneficence, and justice in all interactions with participants and stakeholders.

## 4. Results

The following section presents the results of the study, offering insights into the challenges and opportunities of e-learning for women's education in developing countries. Results are as follows:

**Table 1.** Normality, Validity, and Reliability Analysis for Perception of Women Online University's Strategies

Test	Value
Shapiro-Wilk Test	$p < 0.05$
Kolmogorov-Smirnov	$p < 0.05$
Cronbach's Alpha	$\alpha = 0.87$

This table presents the results of the normality, validity, and reliability analysis conducted for the perception scores of Women Online University's strategies. The Shapiro-Wilk test and Kolmogorov-Smirnov test both yielded a p-value less than 0.05, indicating that the data did not follow a normal distribution. Cronbach's Alpha coefficient, calculated at 0.87, demonstrates high internal consistency and reliability of the perception scores. These findings suggest that while the perception scores may not be



normally distributed, they exhibit strong internal consistency and reliability, enhancing the validity of the analysis.

**Table 2.** Distribution of Female Students by Faculty and Age

Faculty	Age: 19-25	Age: 25-30	Age: 35-40
Medical	20	15	15
Computer Science	15	15	10
Economics	15	15	10
Law	15	15	10
Education	25	20	15

Table 2 presents the distribution of 220 female students across different faculties and age categories. Each cell represents the count of students within a specific faculty and age range. It is evident that the Education faculty has the highest number of students, with 25 in the 19-25 age range, 20 in the 25-30 age range, and 15 in the 35-40 age range. Conversely, the Law faculty has the lowest number of students across all age categories. This distribution ensures a balanced representation of female students across faculties and age groups, providing a comprehensive sample for further analysis of various research questions related to e-learning and women's education.

**Table 3.** Analysis of E-Learning Platform Usage among Female Students

E-Learning Platform	Count	Percentage
Moodle	20	9.09%
Zoom meeting	60	27.27%
Google Classroom	40	18.18%
Telegram and WhatsApp	30	13.64%
Google Meet	70	31.82%

Table 3 illustrates the frequency of usage for each e-learning platform option chosen by participants. Among the 220 female students surveyed, Google Meet was the most commonly used platform, with 70 students (31.82%) reporting its usage. Zoom meeting followed closely behind with 60 students (27.27%) using it for online learning. Google Classroom, Telegram and WhatsApp, and Moodle were less frequently used, with 40 (18.18%), 30 (13.64%), and 20 (9.09%) students respectively reporting their usage. This analysis provides insights into the popularity and usage patterns of different e-learning platforms among the surveyed participants.

**Table 4.** Impact of E-Learning on Empowerment and Socio-Economic Advancement

Measure	Empowerment Score	Socio-Economic Advancement Score
Mean	3.8	4.2
Median	4	4
Standard Deviation	0.9	0.7

In Table 4 the mean empowerment score is calculated to be 3.8, indicating a relatively high average level of perceived empowerment due to e-learning among the surveyed participants. The median empowerment score is also 4, suggesting that the majority of participants rated the impact of e-learning on empowerment quite positively. Similarly, the mean socio-economic advancement score is calculated to be 4.2,

indicating a slightly higher average level of impact on socio-economic advancement compared to empowerment. The median socio-economic advancement score is also 4, indicating overall positive perceptions among participants. The standard deviations for both measures are relatively low (0.9 for empowerment and 0.7 for socio-economic advancement), suggesting a relatively low variability in responses and a consistent perception of the impact of e-learning on empowerment and socio-economic advancement among the surveyed participants.

**Table 5.** Multivariate Analysis of Access to Technology for E-Learning

<b>Predictor Variable</b>	<b>Effect on Access to Technology</b>	<b>Statistical Significance</b>
Digital Literacy	Positive	$p < 0.001$
Age	Negative	$p = 0.003$
Faculty	Positive	$p = 0.001$

Multivariate analysis in Table 5 explores the influence of digital literacy, age, and faculty on access to technology for e-learning. Digital literacy exhibits a significant positive effect on access to technology (Regression Coefficient = 0.75,  $p < 0.001$ ), indicating that individuals with higher digital literacy levels are more likely to have better access to technology for e-learning activities. Age demonstrates a negative effect on access to technology (Regression Coefficient = -0.32,  $p = 0.003$ ), suggesting that older participants tend to have lower access to technology compared to younger participants.

Furthermore, the analysis reveals a significant positive effect of faculty on access to technology (Regression Coefficient = 0.48,  $p = 0.001$ ), highlighting that certain faculties are associated with better access to technology for e-learning. These findings emphasize the importance of digital literacy and demographic factors in determining access to technology for e-learning, underlining the need to address these factors to ensure equitable access to e-learning opportunities across various demographic groups.

**Table 6.** Statistics for the Effectiveness of Pedagogical Approaches

<b>Measure</b>	<b>Effectiveness Score</b>
Mean	4.1
Median	4
Standard Deviation	0.6

In Table 6 the mean effectiveness score for pedagogical approaches is calculated to be 4.1, indicating a relatively high average perception of effectiveness among the surveyed participants. The median effectiveness score is also 4, suggesting that the majority of participants rated the effectiveness of pedagogical approaches quite positively. Additionally, the standard deviation of 0.6 indicates a relatively low variability in responses, indicating a consistent perception of the effectiveness of pedagogical approaches among the surveyed participants. Overall, these findings suggest that the pedagogical approaches used in e-learning at Women Online University are perceived to be effective by the participants.

**Table 7.** Ordinal Regression Analysis for the Contribution of E-Learning to Empowerment

<b>Predictor Variable</b>	<b>Regression Coefficient</b>	<b>p-value</b>
E-Learning Contribution	0.82	$<0.001$
Age	-0.36	0.002
Faculty	0.45	0.001

Table 7 presents the results of an ordinal regression analysis examining the contribution of e-learning to empowerment, considering factors such as age and faculty of study. The regression coefficient for E-Learning Contribution is 0.82 ( $p < 0.001$ ), indicating a statistically significant positive relationship between the perceived contribution of e-learning to empowerment and the reported levels of empowerment. Participants who perceive e-learning to have a greater contribution to their empowerment are more likely to report higher levels of empowerment. Age also demonstrates a significant effect on empowerment perceptions, with older participants tending to report lower levels of empowerment compared to younger participants (regression coefficient = -0.36,  $p = 0.002$ ).

Furthermore, the analysis reveals a significant effect of faculty on perceptions of empowerment through e-learning. Participants from the Education faculty tend to report higher levels of empowerment compared to those from other faculties (regression coefficient = 0.45,  $p = 0.001$ ).

These findings provide valuable insights into the factors influencing participants' perceptions of empowerment through e-learning, underscoring the importance of addressing these factors to enhance the effectiveness of e-learning initiatives in promoting empowerment among participants.

**Table 8.** Descriptive Statistics for the Perception of Women Online University's Strategies

Measure	Perception Score
Mean	4.3
Median	4
Standard Deviation	0.5

In Table 8 the mean perception score for Women Online University's strategies is calculated to be 4.3, indicating a relatively high average perception of effectiveness among the surveyed participants. The median perception score is also 4, suggesting that most participants rated the strategies of Women Online University quite positively. Additionally, the standard deviation of 0.5 indicates a relatively low variability in responses, suggesting a consistent perception of the effectiveness of Women Online University's strategies among the surveyed participants. Overall, these findings suggest that the strategies implemented by Women Online University are perceived to be effective by the participants.

**Table 9.** Descriptive Statistics for the Perception of Women Online University's Strategies

Measure	Perception Score
Mean	4.3
Median	4
Standard Deviation	0.5

In Table 9 the mean perception score for Women Online University's strategies is calculated to be 4.3, indicating a relatively high average perception of effectiveness among the surveyed participants. The median perception score is also 4, suggesting that the majority of participants rated the strategies of Women Online University quite positively. Additionally, the standard deviation of 0.5 indicates a relatively low variability in responses, suggesting a consistent perception of the effectiveness of Women Online University's strategies among the surveyed participants. Overall, these findings suggest



that the strategies implemented by Women Online University are perceived to be effective by the participants.

## **5. Discussion**

The results of the study provide valuable insights into the challenges and opportunities of e-learning for women's education in developing countries. The findings underscore the multifaceted nature of e-learning, highlighting both its potential to empower women and the various barriers that hinder its effectiveness.

Firstly, the analysis reveals a high level of perceived empowerment and socio-economic advancement among female students enrolled in Women Online University. This aligns with the literature, which emphasizes the transformative impact of e-learning on women's education and empowerment (Al Alhareth, 2013; Sanga et al., 2013). E-learning platforms offer women flexibility and accessibility, enabling them to pursue education while balancing familial responsibilities and socio-cultural expectations (Yamin & Aljehani, 2016). The positive perceptions of empowerment and socio-economic advancement underscore the importance of e-learning in fostering gender equality and socio-economic development in developing countries.

However, the results also point to several challenges that need to be addressed to maximize the benefits of e-learning for women's education. Digital literacy emerges as a significant predictor of access to technology for e-learning activities, highlighting the importance of enhancing digital literacy skills among female students (Sun et al., 2008). Age and faculty of study also influence access to technology, indicating the need for targeted interventions to ensure equitable access across demographic groups (Hasas et al., 2024). Additionally, while certain e-learning platforms such as Moodle and Zoom meeting are popular among female students, there is a need to diversify and optimize platform usage to cater to varying learning preferences and needs (Sun et al., 2008).

Furthermore, the effectiveness of pedagogical approaches in e-learning is perceived positively by female students, emphasizing the importance of innovative teaching methods and learner-centered approaches (Lee, 2010). However, ongoing support and training for both educators and students are essential to ensure the successful implementation of e-learning initiatives (Bower & Hardy, 2004). Moreover, while e-learning contributes to women's empowerment, age and faculty differences influence perceptions of empowerment, suggesting the need for tailored strategies to address diverse needs and preferences (Chick & Hassel, 2009).

The discussion highlights the complex interplay between challenges and opportunities in e-learning for women's education in developing countries. While e-learning holds immense potential to empower women and advance socio-economic development, addressing barriers such as digital literacy, access to technology, and pedagogical effectiveness is crucial to realizing this potential. By adopting a holistic approach that combines infrastructure development, capacity building, and inclusive pedagogy, policymakers and educational institutions can create an enabling environment that fosters gender equality and educational equity through e-learning initiatives.

## **6. Conclusion**

In conclusion, the study provides a comprehensive understanding of the challenges and opportunities of e-learning for women's education in developing countries. The

findings highlight the transformative potential of e-learning in empowering women and promoting socio-economic advancement, while also underscoring the need to address various barriers to maximize its effectiveness.

Firstly, the results demonstrate that e-learning has a significant positive impact on women's empowerment and socio-economic advancement. Female students enrolled in Women Online University perceive e-learning as a valuable tool for enhancing their educational opportunities and achieving personal and professional growth. The flexibility and accessibility offered by e-learning platforms enable women to overcome traditional barriers to education, including geographical constraints and socio-cultural norms.

However, the study also identifies several challenges that must be addressed to ensure the equitable and effective implementation of e-learning initiatives. Digital literacy emerges as a critical factor influencing access to technology for e-learning activities, highlighting the importance of investing in digital skills training and support programs for female students. Additionally, age and faculty differences impact perceptions of empowerment and access to technology, emphasizing the need for tailored interventions that address the diverse needs and preferences of female learners.

Furthermore, while certain e-learning platforms are popular among female students, there is a need to diversify and optimize platform usage to accommodate varying learning styles and preferences. Moreover, ongoing support and training for both educators and students are essential to enhance the effectiveness of e-learning initiatives and ensure positive learning outcomes.

In light of these findings, policymakers and educational institutions must prioritize investments in infrastructure development, capacity building, and inclusive pedagogy to create an enabling environment for e-learning in developing countries. By addressing barriers such as digital literacy, access to technology, and pedagogical effectiveness, stakeholders can unlock the full potential of e-learning to promote gender equality and educational equity.

Overall, the study underscores the importance of e-learning as a catalyst for women's empowerment and socio-economic development in developing countries. By leveraging the opportunities offered by e-learning while addressing its associated challenges, stakeholders can work towards building a more inclusive and equitable education system that empowers women and promotes sustainable development.

## **Recommendations**

**Investment in Digital Literacy Programs:** Governments and educational institutions should prioritize investment in digital literacy programs aimed at equipping women with the necessary skills to navigate e-learning platforms effectively. These programs should be accessible, tailored to the needs of diverse learners, and offered in multiple languages to reach a wider audience.

**Infrastructure Development:** Efforts should be made to improve access to reliable internet connectivity and technology devices, particularly in rural and underserved areas. Infrastructure development projects should prioritize areas with high concentrations of female learners to ensure equitable access to e-learning opportunities.

**Promotion of Inclusive Pedagogy:** Educators should adopt inclusive pedagogical approaches that cater to the diverse learning styles and preferences of female students. This may include incorporating multimedia content, interactive learning activities, and collaborative projects that engage and empower learners.

**Support for Faculty Development:** Educational institutions should provide ongoing training and support for faculty members to enhance their digital teaching skills

and familiarity with e-learning platforms. Faculty development programs should focus on effective instructional design, online assessment methods, and strategies for promoting student engagement in virtual classrooms.

**Awareness Campaigns and Community Engagement:** Governments, NGOs, and educational institutions should collaborate to launch awareness campaigns and community engagement initiatives that promote the benefits of e-learning for women's education. These campaigns should target parents, community leaders, and other stakeholders to garner support for women's educational empowerment through digital technologies.

**Research and Evaluation:** Continuous research and evaluation are essential to monitor the effectiveness of e-learning initiatives and identify areas for improvement. Researchers should conduct longitudinal studies to assess the long-term impact of e-learning on women's educational attainment, employment opportunities, and socio-economic status.

**Partnerships and Collaboration:** Building partnerships with private sector organizations, international development agencies, and civil society groups can facilitate resource mobilization and knowledge sharing to support e-learning initiatives for women's education. Collaborative efforts should prioritize sustainability, scalability, and inclusivity to maximize impact.

### **Future Research**

Future research endeavors in the realm of e-learning for women's education in developing countries could delve deeper into the long-term impacts of digital literacy programs on women's socio-economic empowerment. Additionally, studies exploring innovative pedagogical strategies tailored to the specific needs of female learners in diverse cultural contexts would offer valuable insights. Investigating the effectiveness of mentorship programs and peer support networks in enhancing women's engagement and retention in e-learning initiatives could further enrich our understanding. Furthermore, longitudinal research examining the role of e-learning in bridging the digital gender gap and promoting women's participation in STEM fields is essential for informing policy interventions. Finally, comparative studies across different regions and countries would facilitate the identification of best practices and the development of context-specific strategies to maximize the benefits of e-learning for women's education.

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## **References**

Al Hareth, Y. (2013). E-learning contribution to the enhancement of higher education opportunities for women in Saudi Arabia (Pilot study). *US-China Education Review A& B, USA*, 3(9), 637-648.

- Al Alhareth, Y., Al Alhareth, Y., & Al Dighrir, I. (2015). Review of women and society in Saudi Arabia. *American Journal of Educational Research*, 3(2), 121-125.
- Amiri, F., Quraishi, T., Hakimi, M., & Fazil, A. W. (2024). Assessing The Efficiency of Web-Hosted E-Learning Platforms in Afghanistan Academic Settings: An Exploration at Herat University. *EDUTREND: Journal of Emerging Issues and Trends in Education*, 1(1), 39-56. <https://doi.org/10.59110/edutrend.309>
- Bertaux, N., & Crable, E. (2007). Learning about women. Economic development, entrepreneurship and the environment in India: A case study. *Journal of Developmental Entrepreneurship*, 12(04), 467-478.
- Bower, B. L., & Hardy, K. P. (2004). From correspondence to cyberspace: Changes and challenges in distance education. *New directions for community colleges*, 2004(128), 5-12.
- Cheris, K., & Kramarae, C. (2001). The Third Shift: Women Learning Online. *International Women Online Journal Of Distance Education*, 4(2).
- Chick, N., & Hassel, H. (2009). " Don't Hate Me Because I'm Virtual": Feminist Pedagogy in the Online Classroom. *Feminist Teacher*, 19(3), 195-215.
- Fazil, A. W., Hakimi, M., Sajid, S., Quchi, M. M., & Khaliqyar, K. Q. (2023). Enhancing Internet Safety and Cybersecurity Awareness among Secondary and High School Students in Afghanistan: A Case Study of Badakhshan Province. *American Journal of Education and Technology*, 2(4), 50–61. <https://doi.org/10.54536/ajet.v2i4.2248>
- Fazil, A. W., Hakimi, M., Shahidzay, A. K., & Hasas, A. (2024). Exploring the Broad Impact of AI Technologies on Student Engagement and Academic Performance in University Settings in Afghanistan. *RIGGS: Journal of Artificial Intelligence and Digital Business*, 2(2), 56–63. <https://doi.org/10.31004/riggs.v2i2.268>
- Gokah, T. K., Gupta, N., & Ndiweni, E. (2015). E-Learning in higher education—opportunities & challenges for Dubai. *International Journal on E-learning*, 14(4), 443-470.
- Hakimi, M., Fazil, A. W., Ahmady, E., Qarizada, A., & Quraishi, T. (2024). Cyber Opportunities: Fostering Women’s Empowerment through E-Commerce in Afghanistan. *Room of Civil Society Development*, 3(1), 1–12. <https://doi.org/10.59110/rcsd.275>
- Hakimi, M., Fazil, A. W., Khaliqyar, K. Q., Quchi, M. M., & Sajid, S. (2023). Evaluating The Impact of E-Learning on Girl’s Education in Afghanistan: A Case study of Samangan University. *International Journal of Multidisciplinary Approach Research and Science*, 2(01), 107–120. <https://doi.org/10.59653/ijmars.v2i01.368>
- Hakimi, M., Shahidzay, A. K., Fazi, A. W., & Qarizada, A. (2024). Empirical Assessment of ICT Impact on Teaching and Learning in High Schools: A Study in the Context of Balkh, Afghanistan. *EIKI Journal of Effective Teaching Methods*, 2(1). <https://doi.org/10.59652/jetm.v2i1.96>
- Hakimi, M., Shahidzay, A. K., Fazil, A. W., Khaliqyar, K. Q., & Quchi, M. M. (2023). Strengthening Resilience to Safeguard Women from Social Engineering Attacks in Afghanistan. *Cognizance Journal of Multidisciplinary Studies (CJMS)*, 3(12), 88-97. <http://dx.doi.org/10.47760/cognizance.2023.v03i12.009>

- Hasas, A., Sadaat, S. N., Hakimi, M., & Quchi, M. M. (2024). Interactive Learning in Afghanistan: Feasibility of Implementing IoT Connected Devices in Classrooms. *American Journal of Smart Technology and Solutions*, 3(1), 8–16. <https://doi.org/10.54536/ajsts.v3i1.2342>
- Khaliqyar, K. Q., Katebzadah, S., & Hakimi, M. (2024). A Comprehensive Analysis of the Effectiveness of AI Platforms in Improving Student Educational Skills. *International Journal of Integrated Science and Technology*, 1(6), 883–898. <https://doi.org/10.59890/ijst.v1i6.1103>
- Kramarae, C. (2003). Gender equity online, when there is no door to knock on. *Handbook of distance education*, 18, 261-272.
- Lee, M. C. (2010). Explaining and predicting users' continuance intention toward e-learning: An extension of the expectation–confirmation model. *Computers & education*, 54(2), 506-516.
- Luppardini, R., & Walabe, E. (2021). Exploring the socio-cultural aspects of e-learning delivery in Saudi Arabia. *Journal of Information, Communication and Ethics in Society*, 19(4), 560-579.
- Madsen, S. R., & Cook, B. J. (2010). Transformative learning: UAE, women, and higher education. *Journal of Global Responsibility*, 1(1), 127-148.
- Sanga, C., Magesa, M., Chingonikaya, E. 1., & Kayunze, K. (2013). Can e-learning promote participation of female students in STEM disciplines in higher learning institutions of Tanzania?. *International Journal of Education and Development using ICT*, 9(3).
- Sullivan, P. (2001). Gender differences and the online classroom: Male and female college students evaluate their experiences. *Community College Journal of Research and Practice*, 25(10), 805-818.
- Sullivan, P. (2002). "It's easier to be yourself when you are invisible": Female college students discuss their online classroom experiences. *Innovative Higher Education*, 27, 129-144.
- Sun, P. C., Tsai, R. J., Finger, G., Chen, Y. Y., & Yeh, D. (2008). What drives a successful e-Learning? An empirical investigation of the critical factors influencing learner satisfaction. *Computers & education*, 50(4), 1183-1202.
- Uhlig, G. E. (2002). The present and future of distance learning. *Education*, 122(4), 670-674.
- Von Prummer, C. (2005). Women and distance education: Challenges and opportunities.
- Weaver, E. B. (2002). *Convent theatre in early modern Italy: spiritual fun and learning for women*. Cambridge University Press.
- Yamin, M., & Aljehani, S. A. (2016). E-learning and women in Saudi Arabia: an empirical study. *BVICA M's International Journal of Information Technology*, 8(1), 950.