

A Digital Initiative to Address Girls Education Challenges in Collaboration with NPO in Post-2021 Afghanistan

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Abstract

The Universal Declaration of Human Rights affirms that education is a fundamental right of every human being. However, due to cultural biases in such a war-ravaged country as Afghanistan, the traditional forms of female education are banned. Taliban introduced a ban on girls' education. Online education is perceived to be one of the potential alternatives that can securely facilitate the female education process. Despite the increasing use of digital-powered education, researchers have found that many issues are associated with participation in online forums, such as low access and interest to participate and interaction among students. However, few studies explore their efficiency in enhancing personalized learning accessibility and facilitating an open learning environment in Afghanistan, primarily to facilitate female education during a tumultuous time in Afghanistan. This study aims to investigate the online forums as tools on enhancing female engagement in an online-mediated education environment. The research question is focused on how the digital tools can be accessed and accepted to facilitate female education in Afghanistan. In this research, we only focused on the easiness and accessibility of online tools. Specifically, as a research method, we proposed that the evaluation of people logins should be separately performed over multiple sessions using different level of participation such that (1) their consent to participate in an online education program using an online form should be done by online questionnaire first, (2) then see their landing on an online forum called D-Agree, and finally (3) checking their actual engagement on D-Agree. The findings indicate that the number of users who participated in the first session significantly differs from the other two sessions, particularly the third session. These findings contribute to a better understanding of the role of internet access and ICT skills and offer several practical and social implications to design a digital initiative for female education.

Keywords: Digital education, open education, online forum, AI, SDGs, Taliban, Afghanistan.

1 Introduction

The United Nations (UN) Universal Declaration of Human Rights (UDHR) affirms that all human beings are born free and equal in dignity and rights, particularly regarding access to education and work [1]. However, due to cultural biases in some UN member states, such as Afghanistan, the exercise of crucial UDHR values in human life is untenable [2-3]. In particular, due to Afghanistan's Taliban's ultraconservative religious belief interpretations and deep cultural biases, millions of girls can no longer go to school beyond the sixth grade in all over Afghanistan, and

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particularly in Pashtun societies [4-5]. Thus, UDHR, fundamental UN values, and the central transformative promise of the 2030 for the Sustainable Development Goals (SDGs), Leave No One Behind (LNOB) [6] have not been upheld by Afghanistan's Taliban.

To not LNOB, all UN member states should work to end discrimination towards fundamental UN values and reduce inequalities that leave people behind, particularly in Afghanistan. Furthermore, to localize the Sustainable Development Goals (SDGs), agenda no.4 is to ensure inclusive and equitable education opportunities for all [6]. Therefore, it is critical to find approaches that not only securely revolutionize fundamental UN values but also provide meaningful and equal dignity and rights for all human beings.

Online education is perceived as the alternative method to facilitate girls' education in Afghanistan and facilitate the promise of LNOB. Online forums [7-10] are considered the next-generation education venues for their abilities to enhance personalized learning and help create an environment that what we call "left no one behind" at scale. These technologies are supporting tools to promote online participation during a pandemic or crisis to help make informed policy-making [11]. These tools are adopted as educational tools to promote academic and higher collaborative support for all [12-16].

Despite the increasing use of digital-powered education [17-22], researchers have found that many issues are associated with participation in online forums, such as low access and interest to participate and interaction among students [23-26]. However, few studies explore their efficiency in enhancing personalized learning accessibility and facilitating an open learning environment in Afghanistan, primarily to facilitate female education during a tumultuous time in Afghanistan.

1.1 Research Questions

The research question of interest was in what sorts of situations are users engaged in the online education process: in the education process using low-tech tools vs the education process using high-tech tools? To answer this question, we examined the performance informetric of users while using different level of online tools. We expected that joining the education process using low-tech tools would produce more engagement than using high-tech tools.

We categorized the online questionnaire tool as low-tech, as it only requires minimal internet resources and ICT skills. In contrast, the online forum was classified as high-tech, as it demands more internet resources and advanced ICT skills for use.

1.2 Research Model and Hypotheses

This paper contributes by conducting the first Proof of Concept (POC) experimental study [27] while aiming to investigate the online forum on enhancing female engagement in an online-mediated education environment in Afghanistan. The research question is focused on how the digital platform can be accessed and accepted to facilitate female education in Afghanistan. For settings, we collaborated with a non-profit (NPO) called Afghanistan Peace and Justice Organization

(APJO) to host English learning educational programs facilitated by D-Agree, an online forum as an instrument (for more details about D-Agree, please refer to Section 3.1).

In this research, we only focused on the easiness and accessibility of online tools. Specifically, as a research method, we proposed that the evaluation of people's logins should be separately performed over multiple sessions using different levels of participation such that (1) their consent to participate in an online education program using an online form should be done by online questionnaire first, (2) then see their landing on an online forum called D-Agree, and finally (3) the check their actual engagement on D-Agree. The research question is focused on how digital tool can be accessed and accepted to facilitate female education in Afghanistan. Furthermore, building upon above-described the information, we put forth two hypotheses to guide our research:

H1: There are quantitative differences in online participation using low-tech and high-tech tools, particularly in war-ravaged countries such as Afghanistan.

H2: Internet forums can be an alternative educational venue in communities where access to conventional learning methods is denied.

By investigating these hypotheses, we aim to enhance our understanding of the poor environments in using online tools and their supporting infrastructures for online education in Afghanistan. It will help us restructure online discussion forums to empower meaningful education [12]. The findings indicate that the number of users who participated in the first session significantly differs from the other two sessions, particularly the third session. These findings contribute to a better understanding of the role of internet access and ICT skills and offer several practical and social implications for designing a digital initiative for female education.

The paper is structured as follows. In the next section, we cover some of the related work. Then, we introduce our research methodology. In section 4, we provide the experimental results. Finally, we conclude and highlight the future directions.

2 Related Research

As per the UDHR of the UN, education should be open for everyone, and in line with this agenda, the future should be open to everyone. As more and more people join this movement, systems are designed to promote and support the open education process, namely open universities, open educational resources (OER) [13], and MOOCs [14]. Furthermore, online tools are designed to enable learners to create information, collaborate, and interact in the online learning environment [15].

In this section, we provide an overview of relevant related studies and its user behavior experiments and social impact using online forums, specifically focusing on using online discussion forums to empower the education process.

A study [16] shows the benefits and difficulties of using online discussion forums from the instructors' point of view. It lists strategies and improvements to mitigate the challenges, leading

to a more participatory platform. Another work studied the benefits and difficulties of using online discussion forums from the student's point of view in Iran [17]. It provided a list of strategies and improvements to mitigate the challenges and lead to a more participatory forum.

Nandi et al. [18] studied the quality of discussion in fully online courses by analyzing discussion forum activities from both the instructor's and students' points of view. They found that online forums allow students and instructors to share their interests and asynchronously collaborate. Another study [19] found that discussions in online forums led to the construction of new knowledge as individuals share learning and negotiate information through conversations. Discussion in the online forum also supports the development of skills for working in virtual teams and the effects on offline (civic) engagement [20].

Despite the increasing use of digital-powered education in many countries [21-22], researchers have found many issues associated with participation in online forums [23-26], such as low access and interest to participate and interaction among users [24-26]. These issues arise in online platforms due to the absence of mutual interests [26], incentive mechanisms [25], and scalable facilitation in designing some of these tools [7] and the need for more access to resources such as stable internet resources and bandwidth [2]. However, few studies explore this problem of accessing online tools, enhancing personalized discussion and learning accessibility, and facilitating an open learning environment in the context of Afghanistan, primarily to explore how to promote female education during a tumultuous time in Afghanistan. This study aims to investigate this problem while focusing on enhancing female engagement in an online-mediated education environment.

We are inspired by Elinor Ostrom's theory [28], which states that "local communities are the best at managing their natural resources as they are the ones that use them and that all regulation on the use of resources should be done at the local level" and "common pool problems sometimes are solved by voluntary organizations rather than by a coercive state". Our proposed initiative is guided towards empowering online education by learning the poor environments in using online tools and their supporting infrastructures for online education in Afghanistan while utilizing the collective opinion for informed policy making.

Education facilitation under the digital platform is generally beneficial, but there would be more advantages, such as boosting interaction under specific facilitation settings. For settings, we collaborated with an NPO to host English learning educational programs facilitated by an AI-assisted online platform called D-Agree. The objective was focused on the D-Agree usage as an educational technology for supporting online education and responding to equal academic course participation, specifically for women and minorities. Also, to conduct a POC experimental study at first, and then as a future direction, try to run a technology acceptance case study to study the feasibility of utilizing such a system to empower marginalized societies.

3 Methods

Our general methodology is to adopt an exploratory quantitative cross-online tool case study, specifically focusing on how online tools can be accessed and accepted to facilitate female education in Afghanistan, employing online questionnaires and online forums as study instruments. The study consisted of three phases of participation: (1) participation in an online education program by using an online questionnaire first, (2) signup on an online forum called D-Agree, and finally (3) actual engagement while posing on D-Agree. The general research pipeline is shown in Fig. 1.

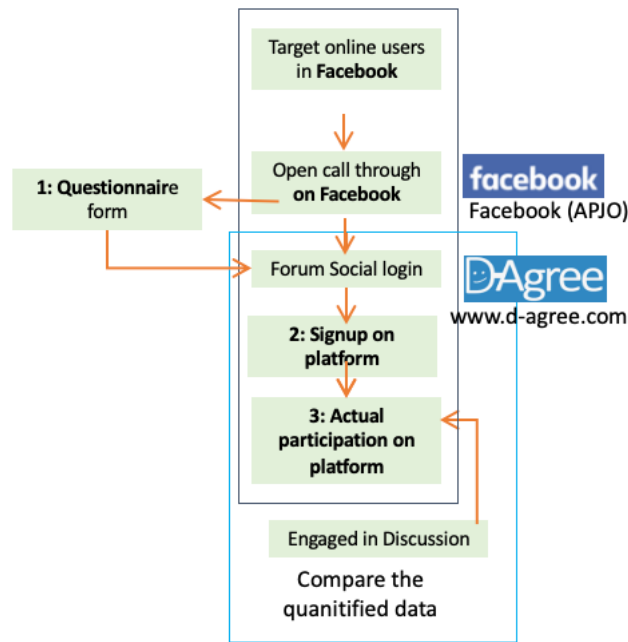


Figure 1: Research methodological pipeline

3.1 Study Instrumentation

The research used D-Agree [7], an AI-assisted text-based discussion tool designed for collaborative interactions. D-Agree consists of an artificial agent and a web platform that enables participants to exchange text with the agent and their peers. The automated facilitation agent fulfills a range of functions, including observing the textual content contributed by users, identifying argumentative expressions through the Issue-based Information System (IBIS) [29] framework, generating facilitation messages according to predefined guidelines, and posting these messages on the discussion board as responses to other participants' contributions (for more details about D-Agree, please refer to [7]).

To support video streaming on D-Agree, we adopted the video streaming functionality of Zoom [30] on YouTube [31]. We embedded the link on D-Agree to boost video communication besides text communication (see Figure 2).

3.2 Procedures

Participants were recruited through a NPO assistant, responding to an open online call for participation announced on the NPO's online social sites. In this study, open online call is a method to call upon undefined network of people through Facebook [31-32]. The recruitment process aimed to collect a pool of subjects for a comprehensive initiative. From this broader endeavor, the call collected over over 1000 participants in the Kabul area. The participants were female Afghan citizens residing in Afghanistan at the time of the study. Their age ranged from 23 to 37 and their educational backgrounds ranged from Bachelors to Masters degrees.

Furthermore, the participants displayed English language skills, which was essential for effective engagement in the English-language discussions facilitated by the AI-based D-Agree platform. After collecting initial consent of participation, we introduced an opening phase as trial session for this experiment as shown in Fig. 1. In this ceremony we trained the participants how to sign up on D-Agree and attend their classes virtually there. Ethical considerations, including informed consent and confidentiality safeguards, were adhered to throughout the recruitment and assignment procedures

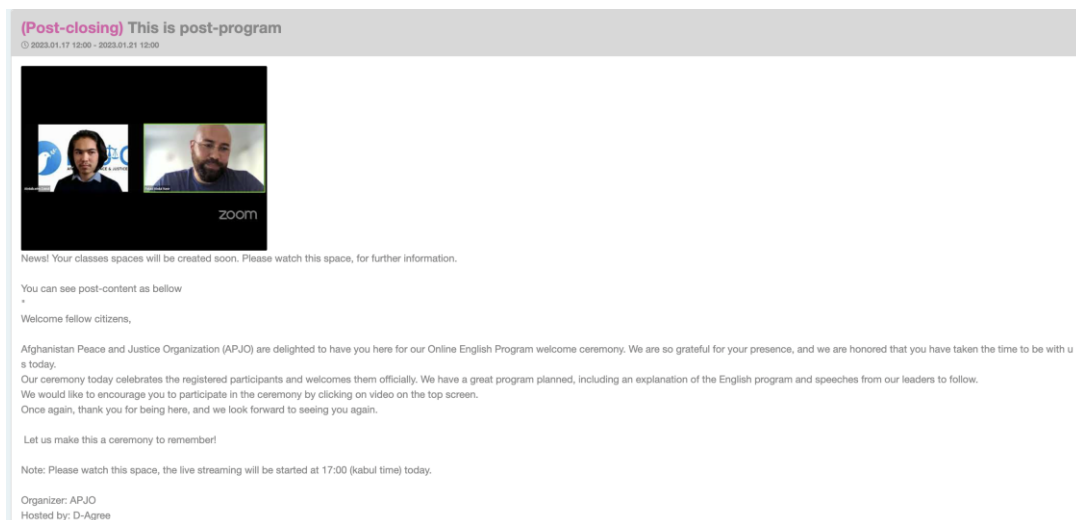


Figure 2: Screenshot of D-Agree User Interface (UI) – program opening ceremony

3.3 Evaluation

The research procedures were structured to investigate the easiness of online tools in the online education environment in Afghanistan, guided by distinct task-based observation while looking at the system's usefulness and its computability and acceptance use among girls and women in Afghanistan.

We relied on the distinct task-based observations that contain:

1. Call for participation (filling out the questionnaire).

2. Sign up for the D-Agree.
3. Participating in virtual space on D-Agree while engaging with each other.

We then used measures to compare the participation number at different levels (first, second, and third; see Figure 1). To assess the proposed approach quantitatively, we measured the level of participation metrics during each phase. This focused research design allowed for an in-depth exploration of the ease of online tools usage in an online education environment while observing the performance metrics during three distinct phases.

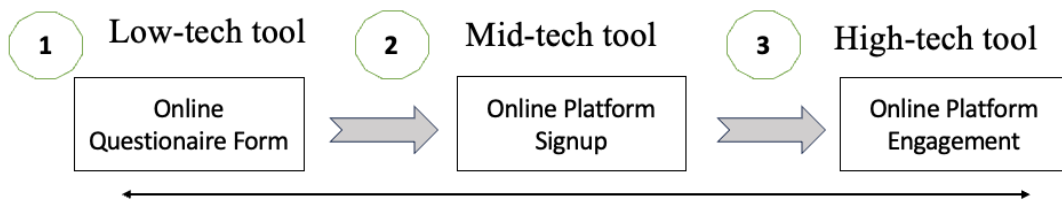


Figure 3: Compare the quantified data user performance metrics within three phases.

4 Results

Our study involved over 1000 participants in the first phase, 654 in the second phase, and 30 in the third phase. In general, the number of interests (consented during an open call) and signup (on D-Agree) were significantly more significant than the number of participation and engagement (posting on D-Agree). This result demonstrates statistical significance when comparing the number of applicants intent to participate versus practical involvement on the digital platform, D-Agree. The results of the quantified data of participation and number of posts are shown in Figure 4.

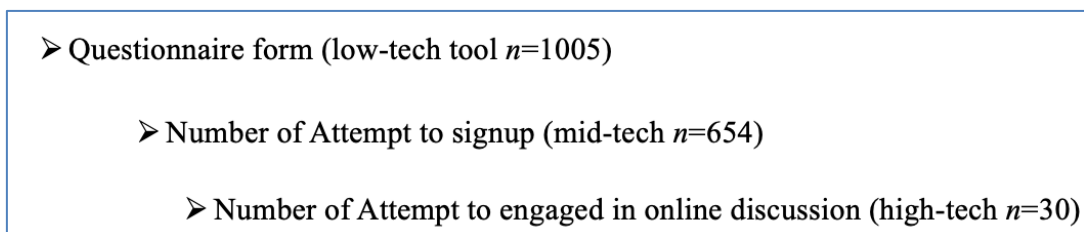


Figure 4: Quantified data user performance metrics within three phases.

5 Discussion

The preliminary experiments were conducted to check the inefficient usage and accessibility of online tools as an alternative educational tool to access digital educational venues. The results from the experiments demonstrated that the number of applicants while using online questionnaire tool to register themselves for online education course with NPO outperformed the number of practical signups (enroll in online class) and actual participation (participate and engage in online course) on D-Agree.

The analysis of the evolution of the number of signups and actual participation counts on user performance metrics reveals that there are lots of issues for girls to access online education using online tools. These issues arise in online tools due to the absence of mutual interests, incentive mechanisms, internet connection, and scalable facilitation in designing some of these tools [2, 9]. The experiment performance metrics is shown in Fig 4.

The prescribed goal was to promote discussion, particularly the number of participants. However, due to issues such as lack of internet, ICT skill and bandwidth, the number of applications received on the NPO side was higher than the number of signups on D-Agree. This result is consistent with our hypothesis that there are quantitative differences in online participation using low-tech and high-tech tools, particularly in war-ravaged countries such as Afghanistan.

This evolution shows the lack of internet access. The number of participants in the online discussions did not correlate with the number of registrations. However, a higher presence to register may experience inadequate internet access, leading residents in these areas to not able to join in participating, discussing, and sharing their needs and suggestions online. This assumption was substantiated and in line with [2, 9] which states the important of internet connection to use these online tools.

5.1 Limitations and Future Directions

While online education is perceived as the alternative method to facilitate girls' education in Afghanistan and facilitate the promise of LNOB, researchers have found that many issues are associated with participation in online education using online forums, such as low access and interest to participate and interaction among students.

In Afghanistan, poverty and limited access to the internet and smartphones are prominent constraints to online digital education. Internet access is limited to 13.5% (as of 2017). Addressing these constraints requires the adoption of diverse tools and methods.

Efforts to overcome these challenges are essential to ensure more inclusive participation in online discussions, particularly among populations facing literacy and socioeconomic barriers. To support and promote female digital education in the future, it is crucial to support internet services, such as installing Wi-Fi zones [2] and establishing an education internet package plan to enhance accessibility, and designing online tools that require low bandwidth. Implementing these measures can foster greater engagement and capture a more comprehensive range of perspectives in female online education.

6 Conclusion

Our research has shed light on the efficacy of digital tools as an alternative venue for girls' education in Afghanistan. By collaborating with NPO, we established an initiative to facilitate digital education for Afghan girls inside Afghanistan. Our research is guided by a case study approach to promote girls' education during a tumultuous time in Afghanistan.

The objective was focused on the how online tools usage as an educational technology for supporting online education can be accessed.

We use distinct task-based observation in digital communities to evaluate the efficiency of online tools as tools to access digital education venues. We conducted a set of experiments to investigate the efficiency of our proposed method. It is worth noting that this study contributes to the understanding of valuable insights into the benefits of online tools to access the online alternative venue for education in Afghanistan. Furthermore, these findings contribute to a better understanding of the role of internet access and ICT skills and offer several practical and social implications to design a digital initiative for female education.

In future work, we will go deeper into a mixed quantitative comparative analysis of the case study and conduct a comparative evaluation of the proposed approach while providing a group of people with and without an internet access package.

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