

Empowering Girls' Education with AI-assisted Online Forum in Post-2021 Afghanistan

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1. Introduction

Online Forums [1, 2] are considered the next generation democratic venues for large-scale learning [3]. These technologies not only serve as supporting tools to promote online education during pandemic [5] or crisis but also act as collaborators [6] to help making informed policy-making [7]. These tools adopted as educational tool to promote educational and higher collaborative support [8, 9]. The use of such these tools aims to overcome the limitations of traditional learning and continuously facilitate ongoing learning [8]. They can also consider opinions that may be challenging for communities like Afghanistan, where the traditional forms of public participation in the education learning process are untenable. In particular, due to gathering space difficulties and religious/culture issues in Afghanistan, women are restricted from joining schools and university and the female education [10] are nearly banned.

After banning girls from attending schools and universities by Taliban in 2021 [11, 12], the world of online education are perceived to be the alternative method to facilitate girls education in Afghanistan. However, researchers have found that many issues are associated with participation in online forums such as low level of interest to participate and interaction among students [13, 14]. These issues arise in online forums due to the absence of mutual interests, incentive mechanism and scalable facilitation in the design of some of these tools [15, 16, 17, 24].

Therefore, it is critical to find approaches that not only enable digital human participative processes but also provide incentive and facilitation to support interactions among users to encourage them to engage more with each other.

To address this, researchers previously proposed methods to incentivize and facilitates online discussion to boost participation in online discussion [15, 18, 19]. However, a case study on its social impact in view of facilitating girls' education in post-2021 Afghanistan is yet to be clearly articulated.

Toward this end, we propose to host girls' digital education program using D-Agree, an AI-assisted online discussion forum [15]. Guided by a case study approach to facilitate girls' education during a tumultuous time in Afghanistan, we collaborated with an NPO called Afghanistan Peace and Justice Organization (APJO) to host educational programs. Towards this end, we adopted video streaming functionality of YouTube and embed the link on D-Agree to boost the participation.

The main objective was focused on the "D-Agree" usage as an educational technology for supporting online education, being focused on how the platform can accelerate and improve interactive online educational environment, and for responding to equal educational course participation, specifically for women and minorities. This article presents valuable insights into the benefits of this combined approach as blended experience for societies and cities that are suffering from doesn't have accessibility to in-person education. The experimental method can be used as a

planning tool for NPOs for empowering girls' education in Afghanistan.

2. Related Work

In the context of D-Agree, a dialogue mapping model [21], Issue-Based Information System (IBIS) [22], and conversational agent (CA), and incentive mechanism [23] is utilized within online forum to facilitate collaborative design and problem-solving conversations [25]. The Automated Facilitation Agent in D-Agree employs the IBIS to effectively oversee and manage online discussions [25]. IBIS comprises four distinct types of elements of discussion: issues, ideas, pros, and cons, each of which is represented as a node. The relationships between these nodes are referred to as links [25]. The discussion structure is illustrated in Fig.1.

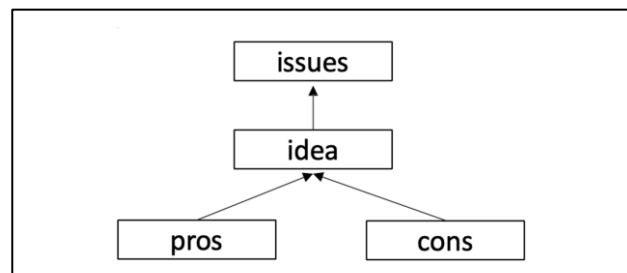


Fig. 1 Showing nodes and links of IBIS structure

The system has been utilized by municipal government in different countries to promote city-citizen engagement in city planning process. However, a case study on its social impact in view of facilitating girls education, particularly in post-2021 Afghanistan is yet to be clearly articulated. Therefore, it is importantly to facilitate female education to enable Sustainable Development Goals (SDGs) [26], Agenda 2030's, "Leave no one behind" [27].

3. Methodology

Our general approach is to host female education using AI-assisted online discussion forum, called D-Agree. Guided by a case study approach to facilitate girls' education during a tumultuous time in Afghanistan, we collaborated with an NPO called Afghanistan Peace and Justice Organization (APJO) to host educational programs. The main objective was focused on the "D-Agree" usage as an educational technology for not only supporting online education but also use conversational AI as collaborator [28] to lead human-AI agency collaboration, being focused on how the platform can accelerate and improve teaching, learning interactive engagement. The general research pipeline is shown in Fig 2.

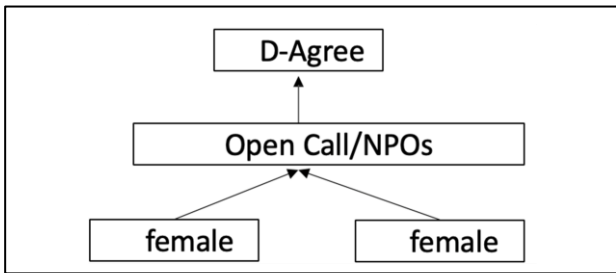


Fig. 2 Methodological Pipeline



Fig. 4 User Interface

3.1 Approach

In order to promote the participation step by step, we collaborated with Itlain-based Afghanistan NPO, called APJO.

To enhance the specificity of the discussion structure, we adopted an "open call" a method to call upon undefined network of people through Facebook Ad [29] on social platforms, which included over 1000 participants in the Kabul area using open call.

We introduce opening phase as trial session for this experiment as shown in Fig 3.



Fig. 3 Opening session

4. Discussion

The preliminary experiments were conducted to check the efficiency of online platform. The results from the experiments demonstrated that the number of applicant while registration with NPO outperformed the number of practical sign up and real participation on D-Agree.

The analysis of the evolution of number of sign up and participation counts on contents reveals that there are lots of issues for girls online education. These issues arise in online forums due to the absence of mutual interests, incentive mechanism and scalable facilitation in the design of some of these tools [15, 16, 17, 24]. The experiment performance metrics is shown in Fig 5.

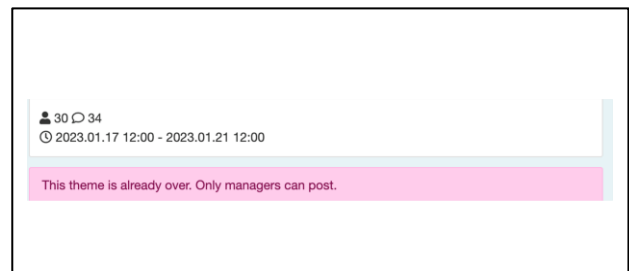


Fig. 5 Performance metrics

3.2 Evaluation

To assess the proposed approach quantitatively, we conducted a set of preliminary experiments targeting opening trial classes. For example, we conducted an experiment to evaluate the efficiency of sign up and participation online forum.

We called upon over 1000 registered users with NPO to sign up using D-Agree, as a result 654 girls able to sign up time while only thirty girls could join the online classes and engage in interactive discussion.

The user interface (UI) is shown in Figure 4 and results of the experiment quantified data of participation and number of posts are shown in Figure 5.

In the general, the number of interest and sign up were significantly greater than the number of participation and engagement. This result demonstrates statistical significance at when comparing the quantity of applicant to participation versus practical participation.

The prescribe goal here was to promote discussion, particularly number of participations. However, due to issues such as lack of internet number of application received at NPO side were higher than number of sign up on D-Agree. This result is consistent with our hypothesis that implementing an online forum for hosting education encourages female to participate in the process, however, as a result, it less participation were online, compared to traditional registration at NPO side.

This evolution shows the lack of access to internet, and could be very helpful as a precondition on setting to critically facilitate and question proposed solutions in order to form a diverse consensus on common problems and their solutions.

The number of participants in the online discussions did not exhibit any correlation with the the number of registration. However, we hypothesized that a higher presence of 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 [19].

While online discussion platforms can serve as valuable tools for effectively gathering people's insights and concerns regarding urban policy and decision-making, our study encountered several limitations and challenges that warrant attention in future endeavors.

In Afghanistan, literacy, poverty, and limited access to the internet and smartphones emerge as prominent constraints to online participation. The adult literacy rate in Afghanistan stands at 43% (as of 2018), the per capita GDP is \$502 (as of 2019) [19], and internet access is limited to 13.5% (as of 2017) [19]. Addressing these constraints requires the adoption of diverse tools and methods. This may include introducing mediation techniques, incorporating local languages such as Dari and Pashto into the system, and establishing internet access points [19] in city-related gathering halls to enhance accessibility.

Efforts to overcome these challenges are essential to ensure broader and more inclusive participation in online discussions, particularly among populations facing literacy and socioeconomic barriers. By implementing these measures, we can foster greater engagement and capture a more comprehensive range of perspectives in female online education.

Furthermore, To support female digital education in the future, it is crucial to provide support for internet services, such as the installation of Wi-Fi zones [19].

5. Conclusion

To conclude, we proposed host to host girls' digital education program using D-Agree, an AI-assisted online discussion forum [15]. Guided by a case study approach to facilitate girls' education during a tumultuous time in Afghanistan, we collaborated with an NPO called Afghanistan Peace and Justice Organization (APJO) to host educational programs.

The objective was focused on the "D-Agree" usage as an educational technology for supporting online education, being focused on how the platform can accelerate and improve interactive online educational environment, and for responding to equal educational course participation, specifically for women and minorities.

We conducted set of experiments to validate the efficient of our proposed approach.

It is worth to note that, this study contributes to the understanding of valuable insights into the benefits of this combined approach as blended experience for societies and cities that are suffering from doesn't have accessibility to in-person education. As a future work, we will go deeper into mix quantitative and qualitative comparative analysis of current study and conduct a comparative evaluation of proposed approach.

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