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Analysis of Issues and Challenges of Online Teaching Using BWM Approach

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Abstract

Online education has affected all components of learning of total education system not only in India but across the globe. Several empirical work had provided an overview on issues in online courses. However, It has been realized that Challenges of Online Teaching need to be identified and evaluated. The present assessment work is to compute relative weight age of the issues of Online teaching-learning in online education using newly developed Multi Criteria Decision Making technique 'Best Worst Method'. Total six Issues of Online Teaching have been identified as 'Technical complication of online teaching tools', 'LMS Complexities', 'Lack of candid interaction', 'Intermittent network connection', 'Lack of learning climate' and 'Laboratory demonstration'. Further we have ranked the Issues of Online Teaching using Best Worst Method. The results may be effectual for initiating adequate corrective actions to nurture adequate reforms and policies to effectively deal with Challenges of Online Teaching.

Keywords: Best Worst Method*;* Online Teaching*;* Issues; Challenges

1. Introduction

Online classes are a learning experience as a mode of instruction and their characteristics have met the requirements of various learners[1]. Online teachers are supposed to have a specific set of competencies[2]. Education institutions play a central role in enhancing the quality of online education by providing support for instructors, learners, and content development[3]. The government of India started emphasizing on ICT and use of online education at tertiary level. For successful implementation of educational change (shift from traditional teaching-learning methods to online teaching learning methods), implications of change need to be addressed[4]. Online education will be critical for the future of higher education [5].

Several empirical studies have been performed to check the quality of online classes for various parameters. Studies have identified critical issues affecting quality of online education such as pedagogy, technology and communication [6]. A number of studies suggested the importance of the support of educational institutions to actively improve the quality of online education [7]. Literature lacks in terms of addressing the issues of empowerment of online teachers, promoting critical reflection, and integrating technology into pedagogical inquiry. Moreover, the literature on online teaching has remained silent on the critical analysis of the use of competency-based teacher education models in online teacher education[8].

Hence, there has been a strong need for analysis of Issues and Challenges of Online Teaching in Indian perspective. In that way, the objectives of the present research are the identification and evaluation of Issues and Challenges of Online Teaching in Indian perspective. Literature review along with experts'

opinions has been used to identify Issues and Challenges of Online Teaching in Indian perspective. Literature review has been found a valid approach . Further, Best Worst Method has been identified appropriate to analyze the Issues and Challenges of Online Teaching in Indian perspective.

The Settling of the paper is as: critical review of literature is performed in next Section. Challenges of Online Teaching are identified through extensive literature review and provided in Section 3. Methodology used in the present research is explained in Section 4. Data analysis and results are provided in Section 5. Finally, concluding remarks are presented in the last section with scope for future work.

2. Review of relevant Literature

Tai (2015) emphasized the importance of interaction in the learning process and highlighted some of the issues and challenges of guiding enquiry based online students as opposed to campus based students who will have physical access to their educators, and therefore have the advantage of facial expressions and body language to further support interaction with staff[9]. Bawane et. al. (2009) reviewed the transformative learning theory as a lens for critical analysis of the literature on the roles of online teachers. They identified managerial, instructional designer, pedagogical, technical, facilitator, and social roles [10]. Taylor (1998) explained that 'competency and standards driven' efforts in online education as techno-centric approach, resulted in the replication of traditional approaches in the online environments and created one size-fits-all preparation and support programs for online teachers[11].

Mansureh et. al. (2017) concluded that higher education institutions need to provide professional development for instructors, trainings for learners, and technical support for the content development and delivery of online courses to address the challenges in online education and enhance the effectiveness of online teaching and learning[3]. Martin (2020) reviewed 619 articles from 12 leading online learning journal and highlighted an opportunity for the field to clarify terminology concerning online learning research, particularly in the areas of learner outcomes[12]. The policy makers are supposed to ensure the access of workable communication tools, better digital educational exposure and boost technology-assisted education for learners to manage and improve the education system [13]. Table 1 summarizes some of the latest research efforts to address Issues and Challenges of Online Teaching.

Table 1. Latest research of Issues and Challenges of Online Teaching

S. N.	Author	Objective & Outcome
1	Mansureh Kebritchi et. al. (2017)	They examined the literature to identify major challenges and issues in teaching online higher education courses, organized and provided the issues under topical classification, and provided some suggestions to address the issues for online educators.
2	*Tallent-Runnels et. al. (2006).*	They reviewed 76 research articles from 1993 to 2004 and observed a deficiency of scholarly research in this field and major educational bodies are not having formal policies available for training of teachers as well as for course development.
3	Liang, R., & Chen, D. –T. V. (2012)	They highlighted challenges that currently confront online learning as: ❖ Whose definition of online learning? ❖ Personal learning in social constructivism.

From literature review, it is clear that Challenges of Online Teaching are important form the point of view of academics, but a complex task to be addressed. Therefore, it becomes essential to identify Issues of Online Teaching. Next section deals with identification of Issues and Challenges of Online Teaching.

3. Identification of Issues and Challenges of Online Teaching

Various databases were reviewed and then six issues in have been sorted from literature and expert's inputs. Emerald; Science direct; DOAJ; Scopus; Google scholar and Google search have been utilized for collecting supporting literature. A group discussion with online classes academicians and students was performed to spot Issues and Challenges of Online Teaching. The key issues include 'Technical complication of online teaching tools', 'LMS Complexities', 'Lack of candid interaction', 'Intermittent network connection', 'Lack of learning climate' and 'Laboratory demonstration'.

To obtain the prime objective of our study that is the evaluation of Issues of Online Teaching, identified issues of Online Teaching are as mentioned in Table 1.

Table 1. The Issues and Challenges of Online Teaching

Issue of Online Teaching	Abbreviation
Lack of learning climate	LLC
LMS Complexities	LMSC
Technical complication of online teaching tools	TC
Intermittent network connection	INC
Lack of candid interaction	LCI
Laboratory demonstration	LD

3.1. Lack of learning climate [LLC]

Based on the evidence, effective learning environments are learner-centered, knowledge-centered, assessment-centered, and community-centered. Although the components for designing effective learning environments are similar for the face-to-face classroom and an online learning environment but designing for an online environment raises the stakes. To create effective online learning environments, we need to take a systematic methodological approach of evidence based pedagogy and evaluate the effectiveness of our efforts.

3.2. LMS Complexities [LMSC]

Educational institutions challenges on the cost of online technologies, maintenance cost, training costs and obtaining suitable 'state of the art' technologies to foster an effective online learning environment. Technological complexity can possibly be in the form of the learning management systems or the seamlessness of operation between the hardware and software in providing an effective online learning experience.

3.3. Technical complication of online teaching tools [TC]

The students lack confidence, time and willingness to learn new technology for teaching a blended course. The students complain on the complexity of technologies installed by their educational institutions for online activities, as such, students spend significantly more time on learning how to use these technologies.

3.4. Intermittent network connection [INC]

Since online learning requires students and teachers to have access to technology, the challenges of technological accessibility cannot be ignored. Students may possibly feel the adoption of online learning as a biased mode by rendering them unequal with their peers concerning the level of online learning technologies. Access to modern technologies for online learning activities are troubled by low speed internet and unstable network connection, intermittent signal issues.

3.5. Lack of candid interaction [LCI]

The lifelong learner should have the ability to learn, unlearn and relearn effectively to change and adapt to new challenges. There are not appropriate feedback methods in place and what was in place was similar to courses in the format of earlier distance or correspondent education. Also, conversations through forums or blogs may be asynchronous, with delays in receiving a reply.

3.6. Laboratory demonstration [LD]

Teachers express their grave concerns over the laboratory activities for the research scholars during online studies. Teachers demand the simulation techniques in laboratory practical. One resembling concern is the data collection for respective research projects and doctoral and post-doctoral research activities.

4. Methodology : Best Worst Method

In the present work a newly developed MCDM method by Rezaei, best worst method, has been utilised [30]. It's method is based on two evaluation vectors, The Best criterion against the Other criteria, the Other criteria against the Worst criterion. The weights of the criteria are determined by solving a linear [31] or a nonlinear model. The ability of BWM to obtain more consistent results due to its structured pairwise comparison system makes it much employable [32].

Compared to the popular pairwise comparison based MCDM method AHP, it allows to determine several reliable results according to previous analyses[30]. The Best-Worst Method utilises ratios of the relative importance of criteria in pairs on the basis of the analysis performed by decision-makers[33]. The BWM incorporates determining a solution of a nonlinear model to derive the weights from the comparisons. A linear model had been developed in a follow-up to approximate the initial nonlinear model [34].

There are three effective methods to get the quantum of importance of the attributes within the Best-Worst scaling. These may be the object case, the profile case, the multi-profile case. In object case, the respondent is said to pick the best and worst alternatives out of a series of objects, without showing any characteristic. In the profile case, the respondent is said to select the best and worst from a list of attributes, the selection is made between the different characteristics. Third case is related to the classic discrete alternative experiments, while the alternatives are made between a group of alternatives consisting of different characteristics with different levels[35]. The steps of the BWM have been shown in Figure 1.

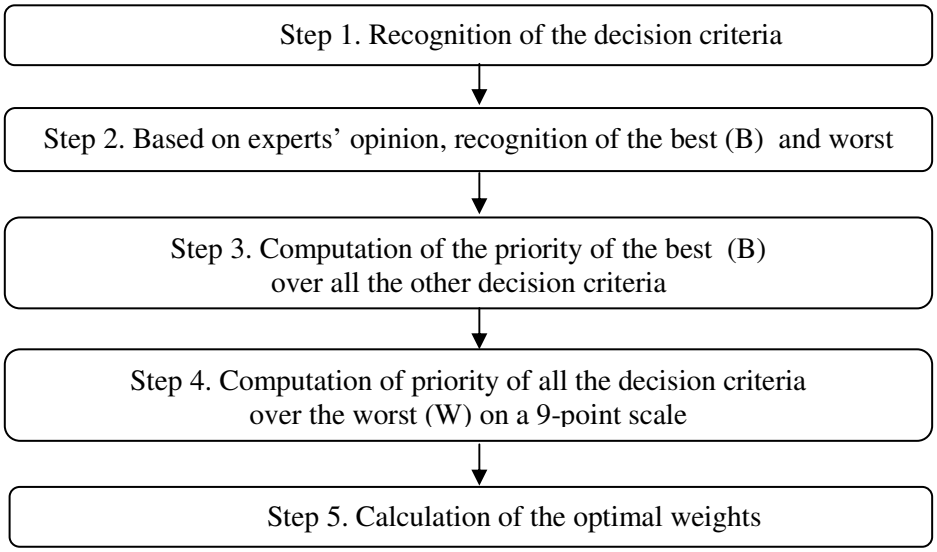

Figure 1 - Steps in Best Worst Method

5. Data Analysis & Results

For validation of our proposed model, a group discussion with online classes academicians and online classes students was performed. Following is the formation of the priority of the best criteria over the others on a 9-point scale as shown in table 3

Table 3- Priority of the best criterion (B) over all the other criteria

THE BEST	LLC	LMSC	TC	INC	LCI	LD
TC	9	3	1	5	2	7

Following is the formation of the priority of all the decision criteria over the worst criterion (W) on a 9-point scale as shown in table 4

Table 4- priority of all the decision criteria over the worst criterion (W)

THE WORST	LLC
LLC	1
LMSC	4
TC	9
INC	3
LCI	6
LD	2

Final values of the optimal weights have been calculated and tabulated in Table 5.

Table 5- Weights of all the barriers barriers in social distancing

Ξ	0.036
Relative Weight of 'Lack of learning climate'	0.043
Relative Weight of 'LMS Complexities'	0.152
Relative Weight of 'Technical complication of online teaching tools'	0.420
Relative Weight of 'Intermittent network connection'	0.091
Relative Weight of 'Lack of candid interaction'	0.228
Relative Weight of 'Laboratory demonstration'	0.066

Table 5 depicts the priorities calculated using the Best Worst Method and the ranking of the various issues. It has been found that 'Technical complication of online teaching tools' is the most important Issue of Online Teaching, followed by 'Lack of candid interaction' and 'LMS Complexities'.

5. Conclusion

This research work has developed Best Worst Method based multi-criteria decision making model for analysis of Issue of Online Teaching. Total six Issues of Online Teaching as 'Technical complication of online teaching tools', 'LMS Complexities', 'Lack of candid interaction', 'Intermittent network connection', 'Lack of learning climate' and 'Laboratory demonstration', have been compared and ranked.

Future scope of work can be the development of the similar model by applying other multi-criteria decision making techniques like TOPSIS, ANP, DEAMATEL methodology with some appropriate statistical tool like Structural equation modeling technique and their results may be further compared.

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