

RESEARCH ARTICLE

MOVING CLASSES ONLINE: OPPORTUNITIES AND CHALLENGES FOR EDUCATORS

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ABSTRACT

The current pandemic situation impacted severely many spectrum (spheres of life) including the education sector. Nevertheless, there was the use of online technology and methods, but spur in the impetus has been in the recent times. It is paradigm shift from face-to-face class to moving classes online: with lot of opportunities and challenges countered by educator and manifested its effectiveness in learning objectives. This research paper attempted to evaluate the new tools & techniques adopted by the educator. Further the opportunities and challenges faced by educator were recognized. This paper attempted to find the teaching effectiveness using the new pedagogy. An 'Effective Teaching Methods (ETM) Model' has been developed to measure the teaching effectiveness towards meeting the learning objectives. Methodology: Quantitative method of data collection was followed; 13 variables were identified for analysis of the opportunities and challenges by the educator. Multivariate Regression (SEM) was used to develop the 'ETM Model' along with construction of hypothesis. The results showed that there is a high value in the use of tools and methods by educator, while moving classes online. The 'ETM Model' revealed that there exists a convergence between opportunities and challenges for teaching effectiveness.

KEYWORDS

Online classes, Educator, teaching methods & tools

1. INTRODUCTION

"Learning is an experience, everything else is information" – Unknown

The places of learning are shifting rapidly, from collated (face to face interactions) to distributed (virtual and virtual interactions) to blended (physical and virtual interactions). With the onset of the pandemic, universities have changed the way educators teach. When educators are moving classes online, they need to rethink their course delivery. It is important to establish a strong relationship with students. Also, the educators should make their presence felt to motivate students and ensure they feel cared for.

Students do not see online learning different, but it is the connect or relationship that they are missing. The personal efficacy and sustained curiosity help to establish this relationship. The question that arises is: "are the educators ready to move classes online?" Currently both educators and students are readjusting and recalibrating their teaching learning methods. Quality education has undergone a metamorphosis in the online mode. Educators are equipping themselves with new pedagogical tools to ensure improvement in students' learning outcomes. The spectrum of teaching begins with a chain of decision making based on three key elements, Insight (range of vision), Far-sight (anticipate and plan) and Foresight (prudence). Every decision taken sets a path for next course of

action. Educators have the power and duty to create the best conditions for students to learn, create conditions for learning even on the online mode.

By 2040, all higher education institutions (HEIs) are aiming to become multidisciplinary institutions, each of whom are aiming to have 3,000 or more students. Higher Education Institutions are progressively keen on utilizing versatile learning platforms as imaginative information driven way to deal with learning process. The potential of e-learning technology allows higher education learning institutions to reach new learners remotely, increase convenience and expand educational opportunities (Mahmood, 2021; Yeravdekar and Tiwari, 2016). Teachers and students no longer need to rely solely on printed books, other physical media materials provided by libraries, and a limited number of materials to meet their educational needs (Robinson and Hullinger, 2008).

2. REVIEW OF LITERATURE

In online Education as Perceived by University Faculties and Instructional Technology Professionals, major objective of the study reported in identifying and ranking in terms of relative importance selected principles and their means for achieving an effective online education (Keengwe and Kidd, 2010). The study finds strong academic support in matters of efficacy and student empowerment for online teaching and identifies some

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concerns or challenges respondents perceive for achieving and maintaining an adequate integrity of online courses. Geoghegan described the profound difference between people, viewpoints, feelings, in the context of the adoption of instructional technology in higher education (Geoghegan, 1994). The study visualizes that there is so significant that it so far obstructed almost all efforts to bridge teaching pedagogy and instructional technology. It can be observed from the current pandemic situation in which the academic world evolves and have approached saturation in its use of instructional technology (Kim and Bonk, 2006). Instructional strategies for online teaching in COVID-19 pandemic.

There were scholars exhibited apprehension on the method of online teaching and academia, which was equally countered by studies and various methods viz., Gamification of online teaching methods (McQuiggan, 2007; Anderson et al., 1998; Hiltz and Turoff, 2005).

2.1 Research Questions and Purpose of the study

Most of the studies conducted so far are focused on changing role, teaching tasks and pedagogy emphasised on skill set and transformation from offline to online teaching (Martin, 2020; McQuiggan, 2007). Less significance has been given to the factors in specific to the perceived viz., challenges and opportunities. The studies were confined to macro level of efficiency of educator from offline to online mode of teaching (Paudel, 2021). This paper attempted to cover the gaps and explore the efficiency of online teaching methods. The following research questions were framed (Mishra et al., 2020).

Are the educator efficient and equipped to engage online classes?

What are the various tools and platforms adopted by educator in online classes?

How could the effectiveness of online teaching be measured?

2.2 Objectives of the study

1. To understand efficiency of the class engagement in online classes.
2. To critically evaluate the tools used by educator while moving classes online.
3. To develop suitable model that measure the rate of conflux exhibited in the dynamics for effective teaching in online classes.

2.3 Research Design

At the outset, the study begins with descriptive & explorative of the concepts on tools and methods for effective online teaching methods

2.4 Scope of the Study

Respondent's scope – which comprises data from the randomly selected respondents who are part of the teaching and academic personnel in higher education. Content scope – it consists of the behavior and observation found in the respondents, using SEM to identify and visualize the qualitative perspective of the population. Regional scope –the sample study is conducted virtually and collected data with varied educators in higher education. Research scope – this study carried within the ambit of the said objectives viz., 'Moving Classes Online: Opportunities and Challenges' with special reference to higher education.

2.5 Limitation of the study

This study is conducted within the ambit of randomly selected the academic professionals, their opinions and certainly consists of time limitation, space limitation and comprehension of content which could be a constraint. There is limitation of type of sample and size of sample.

2.6 Sources of Data

The primary data is collected from structured questionnaire using rating & 5-point Likert scale were used to collect responses. The Secondary data is collected from sources such as journals, online portals and other relevant published data.

2.7 Sampling Design

Using simple random sampling adopted and scientifically designed

questionnaire administered to more than 500 educators, requesting for response, out of which 73 have replied, and 72 with properly filled responses for questionnaire.

3. TOOLS AND METHODS USED

The sample data so collected is validated with co-efficient of variation, Cronbach Alpha with scoring of 0.71, which is at reasonably good (Nunnally, 1994). On the basis of reviews, the study conceptualises the theoretical facets in building 'Effectiveness of Teaching Methods Model' in moving classes online. This study adopted quantification approach towards latent variables which were manifested among numerous measured element and variables. There were nested as facets for delivery of objectives in academia broadly learning, attention, class engagement and assessment. Five-point Likert & ranking scales were used.

To identify the existence of correlation between the 'skill enrichment dynamics' which are manifested in 'exhibition of effectiveness online classes' Pearson correlation was calculated. Secondly there is checking of statistical significance on the ranking given to 'class engagement methods' using Friedman Rank Test, and finally this study makes attempted to understand the converge relationship among the challenges and opportunities which is indicated as 'dynamics of effectiveness of teaching'. The software packages used for analysis were SPSS 24, PAST & PSPP, structural equation modelling LISREL (S' version).

3.1 Hypothesis of the study

In order to understand comprehensively and statistically hypothesis are designed to understand the challenges, opportunities and effectiveness are conflux each other with different measured variables.

H1₀: there is no correlation amongst skill enrichment dynamics

H1_a: there is correlation amongst between skill enrichment dynamics

H2₀: There is exists no significant difference between class engagement methods adopted by educator to meet the learning objectives

H2_a: There is exists no significant difference between class engagement methods adopted by educator to meet the learning objectives

H3₀: There is no relation among challenges and opportunities converging into effectiveness depicted as dynamics in online teaching practices

H3_a: There is relation among challenges and opportunities converging into effectiveness depicted as dynamics in online teaching practices

Below figure 1 depict the conceptual relationship among the teching methods and techiques as opportuinities and challanees for effective learning.

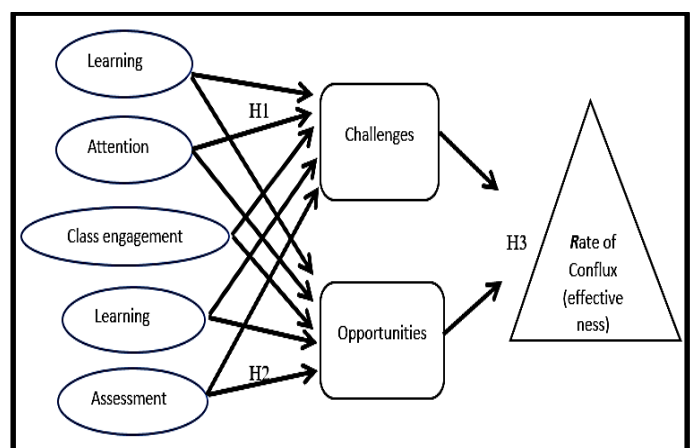


Figure 1: Research Model (Source: created by authors)

4. RESULTS AND DISCUSSION

In order to check the reliability of the identified 13 variables viz., 'challenges and opportunities in using MS excel; PPT; video; word, digital resources availability, using technology in class, interaction with peer group, attending workshop and seminars and in-house training. For this Cronbach alpha was adopted & below are the result.

Table 1: Cronbach Alpha result

Item-Total Statistics							
Variables	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted			
Challenges in MS – Excel	42.38	45.33	0.32	0.69			
Challenges in using PPT	42.38	45.08	0.46	0.68			
Challenges in using Video	41.44	46.59	0.24	0.7			
Challenges in using Word	41.68	42.87	0.45	0.67			
Opportunities in using MS – Excel	42.71	43.39	0.45	0.67			
Opportunities in using PPT	42.38	41.36	0.46	0.67			
Opportunities in using Video	42.42	43.04	0.4	0.68			
Opportunities in using Word	42.36	40.77	0.59	0.65			
Digital Resources viz. Lab, internet connectivity	41.49	48.51	0.14	0.71			
Usage of technique and tools in online class	41.6	48.72	0.13	0.71			
Interaction with Peer members	41.89	45.93	0.28	0.7			
Attending interaction online Sessions viz., FDP webinars, Workshops	41.74	46.42	0.26	0.7			
In-house training provided by organisation	42.11	46.89	0.13	0.72			

Source: primary data

H1 is framed to since this study requires to know 'how variables are correlated' (skill enrichment) to each other.

H1₀: there is no correlation amongst skill enrichment dynamics

H1_a: there is correlation amongst between skill enrichment dynamics
Since the aim is to validate the 'is & how correlation', so one tailed Pearson correlation (not only for direction) used to know how each element correlated.

Table 2: Correlation one tailed (Source: Primary data)

N = 72		Digital Resources viz. Lab, internet connectivity	Usage of technique and tools in online class	Interaction with Peer members	Attending interaction online Sessions viz., FDP webinars, Workshops	In-house training provided by organisation
Digital Resources viz. Lab, internet connectivity	Pearson Correlation	1	0.5	0.13	0.07	0.13
	Sig. (1-tailed)		0	0.139	0.285	0.147
Usage of technique and tools in online class	Pearson Correlation	0.5	1	0.3	0.2	0.13
	Sig. (1-tailed)	0		0.005	0.042	0.132
Interaction with Peer members	Pearson Correlation	0.13	0.3	1	0.65	0.4
	Sig. (1-tailed)	0.139	0.005		0	0
Attending interaction online Sessions viz., FDP webinars, Workshops	Pearson Correlation	0.07	0.2	0.65	1	0.44
	Sig. (1-tailed)	0.285	0.042	0		0
In-house training provided by organisation	Pearson Correlation	0.13	0.13	0.4	0.44	1
	Sig. (1-tailed)	0.147	0.132	0	0	

The above test result i.e., majority of *p-value* is < 0.05, and with all variables are positively correlated. Hence rejecting null hypothesis and accepting the alternative hypothesis i.e., 'there is correlation exists between skill enrichment dynamics among'. The finding is that there exists significant positive correlation among all the variables, of these skill enrichment dynamics, the most effective is 'interaction with peer members' with "Attending interaction online session with FDP webinar workshop" of > 0.65. This implies that educators (respondent) substantially to enrich skill dynamics along with peer member in attending FDPs and webinars.

H1 established the correlation amongst the skill enrichment skills, subsequently H2 was constructed to know the any substantial difference between methods of class engagement adopted by the educators.

H2₀: There is exists no significant difference between class engagement methods adopted by educator to meet the learning objectives

This H2, is in the form of ranked order i.e., from most used method to least used method. As this in non-parametric (rank scale) and repeated in nature, Friedman Rank test was used with help of SPSS statistical tool, arrived at below result.

Table 3: Table showing class engagement methods.

NPAR TESTS											
NPAR TEST / FRIEDMAN = Var0001 Var0002 Var0003 Var0004 Var0005 Var0006 Var0007 Var0008 Var0009 Var0010.											
Variables (n)	Mean Rank										
Issuing pre-reading materials to students	6.35										
Usage of Video and Pic	5.85										
Utilization of Case study method	5.3										
Interactive PPT	5.99										
White Board	3.96										
Projects	5.76										
Virtual Lab	5.24										
Application of 3D modelling	4.4										
Group discussion	5.4										
Online quiz	6.76										

Source: primary data

The result of Asymp. Sig 0.000 (*p* value of <0.05), reject the null hypothesis and accept the alternative hypothesis viz., 'There is exists significant difference between class engagement methods adopted by educator to meet the learning objectives. These statistical proven results conclude that there is a significant difference amongst ranking among the 'class engagement methods'. It infers that, the methods such as 'online quiz' (mean rank of 6.76) holds highly substantial over other least used methods such as 'application of 3D modelling' (mean rank of 4.4) in the 'class engagement methods.

H2, has been tested to understand the significance of each methods of class engagement, H3, is constructed to know the underlying relations converging between the facets of challenges, opportunities and teaching effectiveness of online teaching methods.

H3₀: There is no relation among challenges and opportunities converging into effectiveness depicted as dynamics in online teaching practices

H3_a: There is relation among challenges and opportunities converging into effectiveness depicted as dynamics in online teaching practices

To test and analyze the hypothesis, this study adopted the SEM model, since SEM provides measurement and structural model, with which the goal can be achieved.

4.1 ETM model

Based on data collected and analysis, the structural equation modelling has been developed & validated with various model indices., viz., absolute fit indices, incremental fit indices and parsimonious fit indices (Bednar and Welch, 2008; Malhotra 2013). Since, a minimum of 3 indices are required for validating the model 4 indices have been considered, the model is over identified as the no. of estimator are greater than the observed/measured variables (Malhotra 2013).

Table 4: SEM Model Fit indices and assigned variables

Sl.no.	Fit Index Acceptable Threshold Levels	Fit Index Acceptable Threshold Levels	Actual
1	<i>P</i> -value ≤ 0.05 (Hooper, 2008).	≤ 0.05	0.0188
2	RMSEA (Steiger 2007)	≤ 0.08	0.076
3	Relative χ^2/df (Tabachnik & Fidell, 2007)	≤ 3	1.39
4	SRMR (Hu & Bentler's 1999); Hooper, (2008).	≤ 0.09	0.099

Measured variables	Description
MV1	Challenges in MS – Excel
MV2	Challenges in using PPT
MV3	Challenges in using Video
MV4	Challenges in using Word
MV5	Opportunities in using MS – Excel
MV6	Opportunities in using PPT
MV7	Opportunities in using Video
MV8	Opportunities in using Word
MV9	Digital Resources viz. Lab, internet connectivity
MV10	Usage of technique and tools in online class
MV11	Interaction with Peer members
MV12	Attending interaction online Sessions viz., FDP webinars, Workshops
MV13	In-house training provided by organisation

Source: primary data

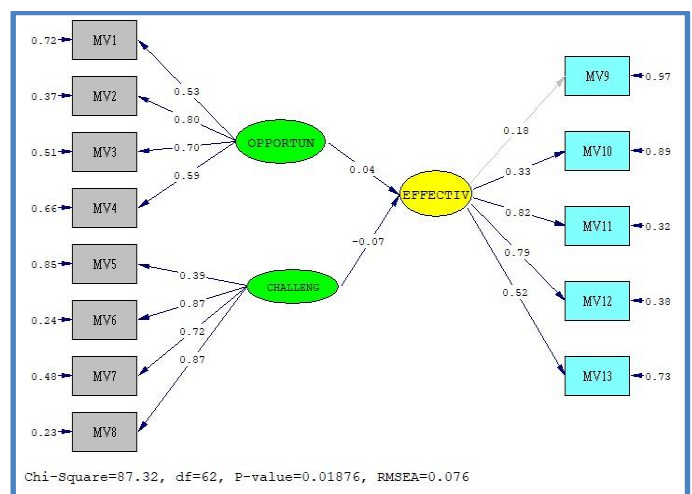


Figure 2: SEM estimated

The converging constructs in the SEM, and estimation, can be summarized with notation as:

Opportunity $(\text{tools used}) = f\{0.53*(\text{Excel}) + 0.80*(\text{PPT}) + 0.70*(\text{video}) + 0.59(\text{word})\} + e$

Challenges $(\text{tools used}) = f\{0.39*(\text{Excel}) + 0.87*(\text{PPT}) + 0.72*(\text{video}) + 0.87*(\text{word})\} + e$

Effectiveness $(\text{dynamics}) = f\{0.18*(\text{digital resources}) + 0.33*(\text{online technique}) + 0.82*(\text{interaction with peers}) + 0.79*(\text{attending online session}) + (\text{group learning}) * 0.52\} + e$

Since, Effectiveness = r (Opportunity + Challenges) + e Effectiveness = r (0.04+(-0.07)) + e , whereas RMSEA \rightarrow 0.076 (standardized e) 0.076

The uniqueness of the study and contradicting variables it is inevitable to use the most appropriate indices to validate the model, therefore, the first model index will be statistical significance (p-value <0.05) stated, secondly RMSEA (Root Mean Square Error Approximation <0.07) by which is mostly widely used for validating in fitness model, and finally the parsimonious fit index namely χ^2/df which should ≤ 3 as devised (Hooper et al., 2008; Tabachnick and Fidell, 2007; Steiger, 2007). Considering the combination of indices endorsed for validating the model, so this study uses combination of fit indices viz., RMSEA (0.07) plus SRMR (≤ 0.09) (Bedner, 2008; Marsh et al., 2004; Hu and Bentler, 1999). Therefore, based on the result and analysis with said indices, hence the model remains validated.

Since this model is fit statistically, H_0 accepted, rejecting the null hypothesis. It can be inferred that that there exists a convergence between challenges and opportunities manifested as effectiveness of teaching methods in the form of dynamics. In the notation, in the opportunity – PPT tool, with as high as 0.80 influence; in challenges tools MS Excel [0.39], is impelling effectiveness on teaching. In the structural model, the 'effectiveness of teaching' is highly impacted by the variable 'interactions with peer 0.82' and 'digital resources viz., lab & internet connectivity 0.18). In summary, the effectiveness of teaching methods is influenced by opportunity (0.04) and challenges (-0.07) with an RMSEA of 0.076.

This study abridging the concept of online challenges with opportunities which are manifested in meeting online learning objectives. The conceptualization of theoretical constructs with practical application is established using SEM tools, which is not only validated notionally but observed into the hybrid system of contemporary educational practices:

1. In the current study academicians from 'Science & Engineering' form more than 43%, followed with 'Commerce and Management' 39%.
2. As per the sample concerned, the widely used online platform is 'Zoom' 53.4% secondly with 'Google Meet' with 31.5%. This sample comprised more of academicians who are 'Assistant Professor' (62.5%); and 'Associate Professor' 23.6%.
3. Teaching experience of the sample of academicians who survey is having <10 years and <15 years are equally 28%. Majority of respondents believe that they gained proficiency in 'PPT, Video & MS-Word' during the online class in COVID period, but moderate in MS-Excel. Substantial academicians felt that challenge in the MS-Excel usage, as compared to PPT and video.
4. It can be noted that high variance traced among academicians while they use tools & methods to keep the attention upon higher online classes. Among class engagement methods, 'white board & online-quiz' ranked highest with another via-a-visa interactive PPT, Video, GD, Virtual lab etc. Finally, significant academicians presume 'Digital Resources & Usage of Tools in online classes' is pivotal in teaching effectiveness of enriching skill.
5. As the hypothesis test reveals, that there is positive correlation between the methods of class engagement, with emphasis on methods 'interaction with peer members highly correlated' with 'Attending interaction online session with FDP webinar workshop'.
6. The second hypothesis testing reveals the statistical significance of each ranking methods of class engagement of which 'online quiz' is highly preferred method among the educators and least preferred method is 'application of 3D modelling'.

The third hypothesis, basically to validate the relationship converging with tools of challenges, opportunities and exhibited in effectiveness in moving classes online. It is found that there exists clear conflux between the constructs, with PPT is being widely used and MS-Excel found to be challenges among the educator (Steiger, 2007). The 'Group learning' is the

most exhibited form of effectiveness with least was 'digital resource' viz., internet facility, data, connectivity and Lab etc.

5. SUGGESTION

The results discussion and analysis revealed that, there exists converge amongst the elements of challenges and opportunities which are manifested in the effectiveness of online teaching and learning. There is great thrust found in the tools such as PPT, Word etc, but MS-excel which needs more attention as majority of the educator felt as a challenging (Magmood, 2021). There are varied class engagement methods, out of which educator sees 'online quiz' significant in online teaching, but other technology oriented, or experimental methods could be inculcated for numerical and lab-oriented programs. This study also suggests for more digital infrastructure which is deem to weak exhibition for the effectiveness, vis-a-visa encourage more 'group reskilling activity', which is more exhibited as effectiveness in the online teaching.

6. CONCLUSION AND FURTHER RESEARCH

Greater understanding of the constructs which are latent in nature which significantly impact on current and contemporary situation of online teaching. In this context, one can explore adding more factors and variables in the academic arena. It can also be understood the impact of each elements in other alike & familiar sectors. Indeed, there is plenty scope for building hybrid form of synthesis using the existing and novel form of education practices.

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