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Message from the Editor-in-Chief

Dear Colleagues,

TOJDEL welcomes you. TOJDEL would like to thank you for your online journal interest. We are delighted that almost 600,000 educators, teachers, parents, and students from around the world have visited for ten years. It means that TOJDEL has continued to diffuse new trends in distance education to all over the world since January, 2013. We hope that the volume 10, issue 2 will also successfully accomplish our global distance education goal.

TOJDEL is confident that readers will learn and get different aspects on distance education. Any views expressed in this publication are the views of the authors and are not the views of the Editor and TOJDEL.

TOJDEL thanks and appreciate the editorial board who have acted as reviewers for one or more submissions of this issue for their valuable contributions.

TOJDEL will organize IDEC-2022 International Distance Education Conference (www.id-ec.net) between July 26-27, 2022 in North Cyprus. This conference is now a well-known distance education event. It promotes the development and dissemination of theoretical knowledge, conceptual research, and professional knowledge through conference activities. Its focus is to create and disseminate knowledge about distance education. IDEC-2022 conference book has been published at **http://www.id-ec.net/idecpubs**

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April 01, 2022
Prof. Dr. Aytekin ISMAN
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A COMPARATIVE STUDY OF MOTIVATION AMONG THE LEARNERS OF INDIRA GANDHI NATIONAL OPEN UNIVERSITY AND ODISHA STATE OPEN UNIVERSITY

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ABSTRACT

The motivation of learners deals with the commitment of their goals, where the motivated students develop their willingness for accomplishing their desired goals in terms of assignment submission, courses completion, preparation for end term examinations etc., as a whole. Realising the crucial need of studying and increasing the motivation level among the learners an attempt has been taken by the researchers for investigating motivation of the distance learners towards ODL by developing a motivation scale. The study was conducted in two parts, in the first part efforts has been taken to develop, validate and standardise a motivation scale towards open and distance learning, and in the second part, efforts have been taken to compare the motivation level of distance learners of Indira Gandhi National Open University (IGNOU) and Odisha State Open University (OSOU). The findings of the study revealed that the final version of motivation scale towards open and distance learning was consisted of three dimensions i.e., academic motivation, non-academic motivation, and demotivation. The academic motivation dimension of the scale consisted of 17 items, non-academic motivation consisted of 12 items, and demotivation consisted of 07 items. So, in total 36 items were there in the MSODL. The Cronbach's alpha reliability of the motivation scale was found to be 0.88 and split-half reliability was found to be 0.87, which revealed that the motivation scale was highly reliable having high internal consistency. Further, the findings also revealed that the motivation scores of students studying in OSOU were found to be significantly more than their counter part IGNOU students. The academic motivation scores of students studying in OSOU were found to be significantly more than their counter part of IGNOU students. The non-academic motivation scores of students studying in OSOU were found to be significantly more than their counter part of IGNOU students. The demotivation scores of students studying in IGNOU were found to be significantly more than their counter part of OSOU students.

Keywords: Development & Standardisation; Validation; Motivation Scale towards ODL; Reliability & Validity; Comparative Analysis of Motivation.

INTRODUCTION

Education is a process of bringing about desirable changes in the behaviour of the students in a systematic way. It helps individuals to gain understanding about their potentialities and bring changes in life styles for all round balanced development. In Indian context, education is imparted in different levels with different forms. So far as the forms of education is concerned, distance education plays a vital role all over the country. The distance education is offered by National Institute of Open Schooling for matriculation and for higher education open universities plays vital role. The analysis of distance education in India makes it clear that it does not exist in vacuum, as it allows every individual to undertake learning activities without any discrimination of caste, creed, colour, sex, tribe, and locality. A comparative analysis of distance education and conventional system of education reveals that both of these are having wider scope, which provides much wider learning situations to the students. The distance education is also known as Open and Distance Learning (ODL). ODL is a term based on two important words i.e., 'Open' and 'Distance', where the term 'open' refers to meant for all without any restrictions, and 'distance' refers to the opposite of face-to-face mode of learning. So, in this context, ODL refers to a learning platform where equal opportunity is provided to each and every learner without any discrimination of caste, creed, colour, age, locality, socio-economic status etc., and provisions are made to learn anywhere. It refers to the use of telecommunication for enhancing learning by providing access, quality and equity, where are considered as the base of education system in India. In the present context, academic community is discovering and exploring through internet globally for promoting learning experiences. In ODL, the students acquire varied knowledge and skills with the help of mediated information and instruction through the massive use information and communication technologies. But it is a fact that in distance learning individual faces many issues and challenges

concerning to academic and non-academic activities, where they do not find much more physical supports of the counsellors, still the distance learners do well in their future course of actions. The concept of distance education mainly includes learner autonomy, indirect education and education in real life situation. Unlike formal education, in ODL the students are given utmost emphasis than the institution, where the needs and convenience of the learners are taken into account to a great extent. Here, definite time frame for any courses of study, so it is considered as flexible in nature. In ODL, indirect education is preferred, which is opposite to direct education. Here, adequate inputs are provided to the students and minimal face-to-face learning is undertaken to promote self-learning among students. In ODL, the recent developments in telecommunications and computer technology are used to a great extent. The impact of counselling services in ODL mode solely depends on the motivation, dedication, concentration, and efforts of the learners. The motivation of learners deals with the commitment of their goals, where the motivated students develop their willingness for accomplishing their desired goals in terms of assignment submission, courses completion, preparation foe end term examinations etc., as a whole. As the learning outcomes of the students are strongly related to their motivation (Jung, 2006), therefore there is a crucial need of studying and increasing the motivation level among the learners. Considering this, an attempt has been taken by the researchers for investigating motivation of the distance learners by developing a motivation scale.

The table-1 below shows stage wise classification of academic and non-academic counselling offered in distance learning.

Table-1 Stage wise classification of Academic Counseling and Non-academic Counseling

Stage	Academic Counseling	Non-Academic Counseling
Pre-entry	a) Information on courses + entry requirements + registration+ procedures etc. b) Preparatory course advice. c) Course choice counseling.	a) Information on alternative instructions. b) Advice to special cases e.g., disabled candidates. c) Return-to-study counselling.
Entry	a) Information on course use+ tutorial times+ assignment dates etc. b) Advice on studying the course. c) Course change counseling.	a) Information on regulations and procedures. b) Advice on general distance. c) Withdrawal counseling.
During the course	a) Information about delivery problems. b) Advice on dealing with late delivery or incorrect material. c) Counseling on assignment difficulties.	a) Information about other i.e., outside the course aspects, e.g., summer schools. b) Advice about payment difficulties, counseling on personal difficulties problems Between tutors and learners.
Examination	a) Information about time/ place for conduct of exam. b) Advice on exam techniques and revision.	a) Information about special support available—extra time for disabled learners etc., exam anxiety, Counselling.
Post-study	a) Information about further related course. b) Advice on further course choice. c) Counseling for results.	a) Information on possible career options. b) Career advice and counseling. c) Counseling failed learners.

In the present study, efforts have been taken to develop and validate a motivation scale for distance learner towards open and distance learning. While developing the motivation scale both academic motivation and non-academic motivation dimensions have been taken along with one additional dimension i.e., demotivation. In these dimensions, statements are covered from both pre-entry and entry stage. Apart from this, in this present study an attempt has been taken to compare the motivation level of distance learners studying in Indira Gandhi National Open University (IGNOU) and Odisha State Open University (OSOU).

RELATED LITERATURES

The related literature helps in getting in-depth information about the use of methodology and research gaps on the basis of earlier studies. In this study, the researchers tried to collect some related literatures based on the development and validation of motivation scale towards distance learners and the study of motivation level of distance learners. Sali (2008) analysed motivational learning systems in distance mode of education by rationalising the motivational design theory, where emphasis is on instructional processes for configuring strategies to increase students' attention, confidence and satisfaction. The researchers analysed empirical studies and depicted effective utilisation of motivational instructional designs. Hartnett, George and Dron (2011) used self-determination theory as a framework and examined motivation among open and distance learners. The study revealed that the distance learners were not primarily found as intrinsically motivate. The motivation among them was multifaceted, complex and sensitive as per the situational factors. The key areas in studying motivation in this study covered quality of behaviour, amotivation, external regulation, identified regulation, intrinsic motivation, and self-determination. Radovan (2011) studied motivation and learning strategies of distance learners in terms of their academic achievement by taking 319 samples. The MSLQ was used and compared in terms of number and frequency of exam written. The study revealed some sorts of motivational factors for promoting students' academic performances i.e., intrinsic orientation, task value, and self-efficacy. Singh et al., (2012) explored the role of motivation in students' learning and compared the motivation level of distance learners and regular learners. The academic motivation scale was developed and used by the researchers. The academic motivation scale was a five-point scale which included personal aspiration, study habits, social-family-economic (environment) factors, and attitude towards study centre. The findings of the study revealed that the motivation level of traditional education system was higher as compared to the students of open education system. In each dimension of the academic motivation scale, significant differences were found by the researchers. The study also revealed no significant differences in the motivation level of male and female of traditional education system and open education system. Bonito (2013) conducted a study to investigate motivation and academic performance among distance learners in postgraduate level. The researcher used Pintrich's Motivation Strategies for Learning Questionnaire (MSLQ) to gain understanding about students' motivation in distance education. The MLSQ included major dimensions like task value, intrinsic goal, extrinsic goal, control beliefs, self-efficacy for learning. The study revealed that the motivation among students was found to be highest in task value dimension followed by intrinsic goal orientation and extrinsic goal orientation. The findings also revealed positive correlation of task and intrinsic orientation with academic performance of distance learners. Haller (2014) descriptively examined motivation level of students in online and distance education. The study was conducted realizing the importance of motivation in educational setting. In this study, descriptive survey method was used and Situational Intrinsic Motivation Scale (SIMS) was used along with an attitude scale for studying students' motivational level. In the motivation scale, both extrinsic and intrinsic dimensions were there. The motivation level among students and their characteristics were examined by the researcher. Goulimaris (2015) studied motivation and satisfaction among distance learners by taking self-determination theory as theoretical frameworks. The main purpose was to examine structural motivation scale for distance learners. The findings revealed positive dimensions in terms of adjustment and motivation among distance earners. The situational motivation scale consisted of both intrinsic motivation and extrinsic motivation, along with amotivation, personal outcomes, and leadership. The study revealed that intrinsic motivation and amotivation are the most influential sub scales for predicting personal outcomes. Reka et al., (2015) compared the motivational factors of full-time and distance learners in terms of their academic achievements. The self-determination theory was the theoretical framework of the study. The academic motivation scale of Vallerand et al., (1992) was used which included seven 7 basic dimensions i.e., "intrinsic motivation towards knowledge, accomplishment, and simulation, introjected and identified regulations, and amotivation". The study found that the intrinsic motivation scores of distance learners were found higher and extrinsic motivation of full-time learners were found to be higher. Junior et al., (2016) examined distance education in the context of students' motivation. The researchers attempted to identify motivational profile of students towards distance mode of learning by studying their perceptions. The results revealed negative perceptions of students towards distance learning programmes to add their performances with regard to the acquisition of skills and competence. Hewson (2018) studied students' motivation, engagement and behaviour for online courses by analysing previous researches. In the study, one qualitative and one quantitative study was analysed regarding motivation and satisfaction in online and distance learning. The findings revealed that students' motivation and satisfaction are interrelated. Stark (2019) compared the role of motivation and learning strategies of students pursuing distance education and face-to-face education by using MSLQ of Pintrich. The rationale behind the study was the findings of previous researches which revealed motivation as a key factor of favouring students for online and distance education. The results of the study revealed strong corelation of motivation variable with performances for online courses. The study also revealed that the students pursuing face-to-face education were found be higher motivation level than the students of online and distance education. The analysis of these literature gave directions to develop a motivation scale for the distance learners towards ODL.

The analysis of above literature made it clear that numerous comparative studies have been conducted in India and abroad to compare the motivation level among distance learners and full-time learners (Singh et al., 2012; Reka et al., 2015; Stark, 2019). Apart from this, studies have been conducted by taking both intrinsic ad extrinsic motivation among the distance and full-time learners (Hartnett et al., 2011; Radovan, 2011; Haller, 2014; Goulimaris, 2015; Junior et al., 2016; Hewson, 2018). Several studies have been also conducted for gaining understanding about motivation, satisfaction and academic performances of distance learners (Bonito, 2013; Goulimaris, 2015). The findings of most of the study revealed that the learners having higher motivational level were found to have higher academic performance and satisfaction in learning (Bonito, 2013; Goulimaris, 2015). The literature also revealed that in most of the studies Academic Motivation Scale has been used (Singh et al., 2012; Reka et al., 2015), and Motivational Strategies Learning Questionnaires has also been used (Bonito, 2013; Stark, 2019). The analysis of these literatures revealed that in few studies the motivation scale has been developed and used both for distance and full-time learners. So, this particular gap in the literature showed directions to develop and standardise a Motivation Scale towards Open and Distance Learning (MSODL). So far as the dimensions of the motivation scale used in the related literatures are concerned, intrinsic motivation, extrinsic motivation and amotivation have been taken into considerations while studying motivation level among the distance learners. More related literatures were also gathered for reference purpose to find out the dimensions of the MSODL, and the analysis of the literatures showed the research gaps, therefore, in the MSODL three basic dimensions were taken into considerations i.e., academic motivation, non-academic motivation, and demotivation. The research gaps related to the availability of motivation scale towards open and distance learning developed keen interest in the mind of the researchers to developing and standardised a MSODL. The present study has been undertaken in two parts, where the first part deals with the development, validation and standardisation of the MSODL and the second part deals with the comparative analysis of motivation among the students studying in IGNOU and OSOU.

OBJECTIVES OF THE STUDY

- To develop motivation scale for distance learners towards open and distance learning
- To compare mean scores of motivation between the distance learners studying in IGNOU and OSOU
- To compare mean scores of academic motivation between the distance learners studying in IGNOU and OSOU
- To compare mean scores of non-academic motivation between the distance learners studying in IGNOU and OSOU
- To compare mean scores of demotivation between the distance learners studying in IGNOU and OSOU

HYPOTHESES OF THE STUDY

- There exists no significant difference between mean scores of motivation between the distance learners studying in IGNOU and OSOU.
- There exists no significant difference between mean scores of academic motivation between the distance learners studying in IGNOU and OSOU.
- There exists no significant difference between mean scores of non-academic motivation between the distance learners studying in IGNOU and OSOU.
- There exists no significant difference between mean scores of demotivation between the distance learners studying in IGNOU and OSOU.

LIMITATION OF THE STUDY

- The present study was limited to the development and validation of motivation scale towards open and distance learning.
- It was also limited to the study of motivation of distance learners belonging from IGNOU and OSOU.

DEVELOPMENT AND VALIDATION OF THE SCALE

Different kinds of research studies have been done on the development, validation and standardisation of an instrument for research purposes. But, the rapid change of socio-cultural characteristics of different diverse areas force researchers to develop such instruments appropriate for their locality and culture. Similarly, in this present study, an effort has been taken for the development of motivation scale towards open and distance learning particularly for the distance learners. The MSODL scale was developed by following standard procedures as mentioned below.

Collection of items

The researchers collected some sorts of items for motivation scale from articles and books related to motivation factor in open and distance learning. The review of related literature showed path to the researcher to gain an insight of the research gaps for developing a motivation scale towards ODL. Basically, the related literatures revealed that most of the studies were conducted for comparing the motivation level of distance learner with regular learners, and it also revealed a smaller number of studies related to the comparison of motivation between distance learners. Therefore, the motivation scale towards ODL was intended to be developed considering motivation scores of distance learners studying in IGNOU and OSOU. For this purpose, the prospectus of admission in both IGNOU and OSOU were examined thoroughly, and different motivation scales developed for regular students were also examined. The analysis of the scales developed insights of the researcher for developing statements of motivation scale. A total number of 50 items were collected by analysing the related literatures.

Dimensions and Operational Definitions

The analysis of prospectus of IGNOU and OSOU helped for gaining understanding about the basic dimensions of the motivation scale towards ODL. In this scale three basic dimensions were taken into account i.e., academic motivation, non-academic motivation and demotivation. In the initial academic and non-academic motivation dimensions, both pre-entry and entry stage were taken into account and accordingly statements were mentioned.

- **Academic Motivation**: The academic motivation dimension of the scale included the statements concerned to academic areas with regard to motivation. In this dimension of academic motivation both pre-entry and entry stage were taken into account. It included statements concerned to the information on courses, entry requirements, registration procedure, preparatory course advice, course choice counselling, tutorial times, assignments dates, course change counselling.
- **Non-Academic Motivation:** The non-academic motivation dimension of the scale included the statements concerned to non-academic areas with regard to motivation. In this dimension both pre-entry and entry stage were taken into considerations. In included statements concerned to information on alternatives, advice to special cases, return-to-study counselling, information and regulations, advice on general distance and withdrawal counselling.
- **Demotivation:** The demotivation dimension of the scale included statements related to frustration, unwillingness and demotivation towards open and distance learning. In this dimension also both pre-entry and entry stages were taken into account.

Editing the items and Construction of preliminary form of MSODL

The preliminary form of MSODL was prepared based on the items collected as per the specific dimensions. Initially the preliminary form of MSODL was edited by the researchers, then the same was given to 02 independent language experts for editing. The language experts edited some of the items of the MSODL in terms of grammatical correctness, understandability and spelling. After the initial editing of the items, pre-piloting of the tool was made.

Pre-piloting

The pre-piloting of the tool was done earlier to piloting for gaining insight about the dimension wise items of the developed tools. For this pre-piloting purpose, the developed tool was given to 10 distance learners of OSOU and 10 learners of IGNOU belonging from Sambalpur study centre. The selected learners were asked to review each item of the tool and share their thinking about the degree of understandability about the items. From the comments of the learners, essential modifications were made for the items which were difficult to understand on the part of the learners. However, it may be noted that the learners selected for pre-piloting were not taken during piloting and survey too.

Expert's opinion

The pre-piloting of the tool helped for getting idea about the understandability of each item. Then after, the tool was provided to three experts in the field of Open and Distance Learning and they were requested to give their comments on the tool. They were requested to provide their valuable suggestions about the dimension wise items in terms of understandability, objectivity and validity. As this work was done during pandemic period, so telephonic conversation was done for seeking their suggestions. The experts suggested to modify some of the items of the tool in terms of grammar correctness and sense of understanding. According to the suggestions of the experts, essential modifications were made.

Construction of secondary form of MSODL

The comments of the learners during pre-piloting and the expert's opinion on the developed tool were taken into account and the secondary form of the motivation scale was constructed.

Piloting

The piloting of the study was done by taking a sample of 100 distance learners who were not involved in the further survey. Initially proper instruction was given to the selected learners and the objectives of the research were presented before them. They were informed about the confidentiality of their responses. Then the secondary form of MSODL was given to them for their response.

Item analysis

The Cronbach's alpha reliability index for each item was calculated with the help of SPSS and accordingly item analysis was done. Out of 50 items of the preliminary MSODL, 14 items were rejected based on the results of the Cronbach's alpha reliability. As a result, a total number of 36 items were remained for the final form of MSODL covering the three specified dimensions.

Item selection for the final form of MSODL

The final form of MSODL consisted of 36 items covering three dimensions i.e., 17 items in academic motivation, 12 items for non-academic motivation, and 07 items for demotivation. The details of the dimensions and number of items are given below.

Table-2
Dimension-wise number of items of MSODL

Sl. No.	Dimensions	Item No.	Total No. of Items
1	Academic motivation (Pre-Entry & Entry Stage)	1-17	17
2	Non-Academic motivation (Pre-Entry & Entry Stage)	18-29	12
3	Demotivation towards ODL	30-36	07

Validity of the scale

The content validity and face validity of the motivation scale was established by taking the opinions of subject experts and research scholars. After item analysis the final form of MSODL was made and the same was sent to 10 research scholars of Gangadhar Meher University and Sambalpur University for their feedbacks. The selected scholars provided positive feedbacks on the final version of MSODL. Then, the MSODL was sent to 05 independent subject experts having knowledge and experience about distance education and they were asked to study each item to fulfil the objectives of the tools. Most of the experts showed green signal for the final version of tool and stated that the items are prepared based on the dimensions of the tool. In this way content validity of the tool was established.

Reliability of the Scale

The reliability of the scale was measured by using Cronbach's alpha and split-half reliability index with the help of SPSS-23. The results of the reliability tests are below.

Table-3
Cronbach's alpha and split-half reliability of motivation scale

Sl. No.	Dimensions	Cronbach's Alpha reliability	Split-Half reliability
01	Academic Motivation	.757	.932
02	Non-Academic Motivation	.780	.707
03	Demotivation	.978	.955
	Whole Scale	**.883**	**.866**

The results revealed that the three basic dimensions of the motivation scale were having high internal consistency. The first dimension i.e., academic motivation was having 0.76 Cronbach alpha reliability in total and 0.93 split-half reliability, and the second dimension i.e., non-academic motivation was having 0.78 Cronbach's alpha reliability and 0.71 split half-reliability, and the third dimension of the scale i.e., demotivation was having 0.98 Cronbach's alpha reliability and 0.87 split-half reliability. As a whole, the Cronbach's alpha reliability of the motivation scale was found to be 0.88 and split-half reliability was found to be 0.87, which revealed that the translated version of the MSODL was highly reliable having high internal consistency.

Scoring of the Scale

The scoring of motivation scale was based on Likert's scale having four alternatives which was ranging from strongly agree to strongly disagree. For positive items of the scale the scoring procedure was 4=strongly agree, 3=agree, 2=disagree and 1=strongly disagree. For negative items of the scale the scoring was reversed. There were 27 positive items in the scale, and 09 negative items as mentioned below.

Table-4
Positive and negative items of motivation scale

Types of items	Item numbers	No. of items
Positive Items	1,2,4,5,7,8,9,11,12,15,16,17,18,19,21,22,24,25,28,29,30,31,3233,34,35,36	27
Negative Items	3,6,10,12,14,20,23,26,27	09

MOTIVATION LEVEL AMONG DISTANCE LEARNERS: COMPARISON OF IGNOU & OSOU

The motivation level among distance learners was studied by using the MSODL, which was developed and standardised by the researchers. The details procedures with results of the comparison of motivation level among the students of IGNOU and OSOU is presented below.

Methodology

a) Method: The descriptive survey method of research was used by the researcher to study and compare the motivation level between the students studying in IGNOU and OSOU. The researcher did the scoring of the MSODL separately for the students of IGNOU and OSOU and found out the net raw scores, after that comparative analysis was made. In this study, the nature of distribution of the motivation scores was tested and the assumption of normal distribution was fulfilled as the histogram showed normality.

b) Participants: The sample of the study consisted of a total number of 932 distance learners, where 57 were from IGNOU and 358 were from OSOU. The samples of the study were selected by employing random sampling procedure.

c) Instrument: The four-point MSODL was used to gather data for the present study. The data of the study was collected by giving field visit to the study centres of IGNOU and OSOU.

ANALYSIS AND INTERPRETATION

The descriptive statistics of the obtained data i.e., mean, media, mode and N are given below.

Table-5 Descriptive Statistics

	Motivation scores whole	Academic motivation scores	Non-academic. Motivation scores	Demotivation scores
N	932	932	932	932
Mean	60.6309	39.0944	33.1695	11.5783
Median	61.0000	38.0000	34.0000	11.0000
Mode	60.00	44.00	36.00	10.00

In order to analyse the obtained data, parametric-inferential statistics t-test was employed, and the results obtained are given below.

a) Comparison of Motivation Scores between IGNOU & OSOU

One of the objectives of the study was to compare mean scores of motivation of students studying in IGNOU and OSOU. There were two groups of students in the study, which were taken from IGNOU and OSOU. The data were analysed with the help of t-test and the results are given below.

Table-6 Mean, Sd, N, & t-value of motivation scores of students of IGNOU & OSOU

Students of	Mean	SD	N	t-test	df	Remarks
IGNOU	54.3188	10.94622	574	23.26**	930	p<0.01
OSOU	70.7514	9.72001	358			

**Significant at 0.01 level

The table shows mean, SD, N, t-test value and df value of motivation scores of students belonging from IGNOU and OSOU. From the table it is evident that the t-value is 23.255 with df=930, which is significant. It shows that the mean scores of motivation of students studying in IGNOU and OSOU differed significantly. Thus, the null hypothesis that there is no significant difference between mean scores of motivation of students of IGNOU and OSOU is rejected. Further, the mean score of motivation of students studying in OSOU is 70.75 which is significantly higher than that of IGNOU students whose mean is 54.32. It may, therefore, be said that the motivation scores of students studying in OSOU were found to be significantly more than their counter part IGNOU students.

b) Comparison of Academic Motivation Scores between IGNOU & OSOU

One of the objectives of the study was to compare mean scores of academic motivation of students studying in IGNOU and OSOU. There were two groups of students in the study, which were taken from IGNOU and OSOU. The data were analysed with the help of t-test and the results are given below.

Table-7 Mean, Sd, N, & t-value of academic motivation scores of students of IGNOU & OSOU

Students of	Mean	SD	N	t-test	df	Remarks
IGNOU	36.2979	8.93588	574	12.05**	930	p<0.01
OSOU	43.5782	9.03143	358			

**Significant at 0.01 level

The table shows mean, SD, N, t-test value and df value of academic motivation scores of students belonging from IGNOU and OSOU. From the table it is evident that the t-value is 12.05 with df=930, which is significant. It shows that the mean scores of academic motivation of students studying in IGNOU and OSOU differed significantly. Thus, the null hypothesis that there is no significant difference between mean scores of academic motivation of students of IGNOU and OSOU is rejected. Further, the mean score of academic motivation of students studying in OSOU is 43.58 which is significantly higher than that of IGNOU students whose mean is 36.30. It may, therefore, be said that the academic motivation scores of students studying in OSOU were found to be significantly more than their counter part of IGNOU students.

c) Comparison of Non-Academic Motivation Scores between IGNOU & OSOU

One of the objectives of the study was to compare mean scores of non-academic motivation of students studying in IGNOU and OSOU. There were two types of students from IGNOU and OSOU. The data were analysed with the help of t-test and the results are given below.

Table-8 Mean, Sd, N, & t-value of non-academic motivation scores of students of IGNOU & OSOU

Students of	Mean	SD	N	t-test	Df	Remarks
IGNOU	30.5941	6.79678	574	16.44**	930	p<0.01
OSOU	37.2989	4.61972	358			

**Significant at 0.01 level

The table   shows mean, SD, N, t-test value and df value of non-academic motivation scores of students belonging from IGNOU and OSOU. From the table   it is evident that the t-value is 16.44 with df=930, which is significant. It shows that the mean scores of non-academic motivation of students studying in IGNOU and OSOU differed significantly. Thus, the null hypothesis that there is no significant difference between mean scores of non-academic motivation of students of IGNOU and OSOU is rejected. Further, the mean score of non-academic motivation of students studying in OSOU is 37.30 which is significantly higher than that of IGNOU students whose mean is 30.60. It may, therefore, be said that the non-academic motivation scores of students studying in OSOU were found to be significantly more than their counter part of IGNOU students.

d) Comparison of Demotivation Scores between IGNOU & OSOU

One of the objectives of the study was to compare mean scores of demotivation of students studying in IGNOU and OSOU. There were two types of students from IGNOU and OSOU. The data were analysed with the help of t-test and the results are given below.

Table-9
Mean, Sd, N, & t-value of demotivation scores of students of IGNOU & OSOU

Students of	Mean	SD	N	t-test	df	Remarks
IGNOU	12.5157	2.51535	574	16.55**	930	p<0.01
OSOU	10.0754	1.52932	358			

**Significant at 0.01 level

The table   shows mean, SD, N, t-test value and df value of demotivation scores of students belonging from IGNOU and OSOU. From the table   it is evident that the t-value is 16.55 with df=930, which is significant. It shows that the mean scores of demotivation of students studying in IGNOU and OSOU differed significantly. Thus, the null hypothesis that there is no significant difference between mean scores of demotivation of students of IGNOU and OSOU is rejected. Further, the mean score of demotivation of students studying in IGNOU is 12.52 which is significantly higher than that of OSOU students whose mean is 10.08. It may, therefore, be said that the demotivation scores of students studying in IGNOU were found to be significantly more than their counter part of OSOU students.

RESULTS & DISCUSSION

The final version of motivation scale towards open and distance learning was consisted of three dimensions i.e., academic motivation, non-academic motivation, and demotivation. The academic motivation dimension of the scale consisted of 17 items, non-academic motivation consisted of 12 items, and demotivation consisted of 07 items. So, in total 36 items were there in the MSODL. The Cronbach's alpha reliability of the motivation scale was found to be 0.88 and split-half reliability was found to be 0.87, which revealed that the MSODL was highly reliable having high internal consistency. The motivation scores of students studying in OSOU were found to be significantly more than their counter part IGNOU students. The academic motivation scores of students studying in OSOU were found to be significantly more than their counter part of IGNOU students. The non-academic motivation scores of students studying in OSOU were found to be significantly more than their counter part of IGNOU students. The demotivation scores of students studying in IGNOU were found to be significantly more than their counter part of OSOU students. The present study is a comparative analysis of the motivation level among the learners of IGNOU and OSOU. So far as present study is concerned, it is to be noted that Odisha State Open University is one of the youngest open universities in India, where he UG and PG programmes received UGC's recognition from the academic session 2018-19. As OSOU is one of the youngest universities, so very a smaller number of studies were found on OSOU. So far as the results of the present study are concerned, it was found that motivation scale towards open and distance learning was consisted of three dimensions i.e., academic motivation, non-academic motivation, and demotivation. The comparative analysis of motivation between the learners of IGNOU and OSOU revealed that the learners of OSOU were having significantly higher motivation in terms of academic and non-academic motivation; on the other hand, learners of IGNOU were having significantly higher demotivation scores as compared to the learners of IGNOU. From this results of the study, it can be said hypothetically that as OSOU was the newly opened open university in Odisha, it may be the possible reasons behind the higher motivation level among the learners of OSOU. As the headquarter of OSOU is in Sambalpur district of Odisha, so it caters the educational needs of students belonging from tribal category, non-tribal category, scheduled caste, scheduled tribe, minorities, rural and urban locality. As the OSOU is recently growing in the locality, the courses offered are flexible for the learners of the locality, and they are satisfied, therefore the motivation level among them is higher as compared to the learners of IGNOU.

IMPLICATIONS OF THE STUDY

The present study has been designed for the development and validation of MSODL in one hand, and on the other hand it has also been designed to make a comparative analysis of the motivation level of students of IGNOU and OSOU. Based on the main findings of the present research it is vivid that the present has implications for teachers and stakeholders of distance education. The present study reveals a standardised motivation scale towards open and distance learning, which can be used for examining motivation level of distance learners in terms of three basic dimensions i.e., academic motivation, non-academic motivation and demotivation. This MSDOL is having high internal consistency reliability, so it can be highly appropriate for the both teacher and students favouring ODL to measure motivation level towards distance learning. Further, this study is also helpful for gaining understanding about the motivation level of students studying in IGNOU and OSOU as per the findings of this study.

CONCLUSION

From the analysis of the above discussion, finally it can be concluded that this research work is primarily helpful for the stakeholders of open and distance education for using the standardised MSODL to assess the level of motivation among distance learners. The primary objectives of the study were to develop and validate motivation scale towards ODL and to make a comparative analysis of motivation between the learners of IGNOU and OSOU. The results of the study revealed high internal consistency of the MSODL and also revealed high motivation level of IGNOU and OSOU. From this study, it was also found that the students of OSOU were having significantly higher academic and non-academic motivation as compared to the students of IGNOU, on the other hand, the students of IGNOU were having higher demotivation as compared to the students of OSOU. From this it can be said that motivation plays vital role for the academic progress of the students both in distance mode of learning and face-to-face of learning for accomplishing educational goals. It also helps students for gaining understanding about subject matter faster. So, adequate steps must be taken to develop the motivation level among the students of both distance and regular mode.

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BENEFITS AND BARRIERS TO OPEN EDUCATIONAL RESOURCES (OERS): PRESERVICE TEACHERS' PERCEPTION

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ABSTRACT
The present study intended to investigate preservice teachers' perception towards the benefits and barriers to OERs in their teaching-learning experiences and in general, as well as to compile their suggestions for maximising the benefits and minimising the barriers to OERs. Data was collected by administering structured questionnaire on preservice teachers at Jamia Millia Islamia. The findings indicated that majority of the participants agreed about the benefits of OERs, indicating a favourable attitude toward the adoption and usage of OERs. But there were few participants who reported barriers to OERs in their teaching-learning experiences. The study also highlighted various suggestions gathered to improve the benefits and reduce the barriers to OERs through various initiatives and provisions to encourage preservice teachers to develop and share their teaching materials, as well as to promote the use of OERs during teaching deliberations.
Keywords: Open Educational Resources (OERs), Preservice teachers, Perception, Benefits, Barriers

INTRODUCTION
In higher education, OER has become an essential component (Mulder, 2015). It has emerged as one of the most innovative techniques, as well as the most cost-effective strategies, for improving the quality of educational offerings by developing optimal use of accessible resources (CEMCA, 2017). OERs are considered to have the potential of transforming teaching and learning methods in all educational contexts, as well as to shorten the time it takes to develop courses and services. It also promotes the exchange of knowledge, conserve and disseminate indigenous knowledge and improve the quality of education at all levels (Kanwar et al., 2010). According to Butcher (2011), preservice teacher can take benefit from OERs because they can, (i) have access to global content that can be un-restrictedly localized, (ii) have more learning resource options, and (iii) make inclusive learning communities.

Because of its potentials and possibilities, open educational resources have become one of the primary research areas for academicians and a major challenge for governments. Kimmons (2015) discovered that OER aids in the resolution of pedagogical, economic, and professional difficulties throughout teacher education while also recognising barriers at the macro, local, and personal levels. According to Misra (2014), future educators' interest, comprehension, and likelihood of using OER in their careers may be enhanced if these principles are taught to them throughout teacher training. According to SPARC (n.d.), OER has limitless potential to improve teaching and learning since it provides access to additional high-quality options. Lane (2010) reported that OERs help to increase learning design and innovation as they can be adapted and adopted easily. Furthermore, Rolfe (2017) stated that OERs provide teachers with access to a wider range of pedagogical techniques, which can lead to improved teaching practises. According to Atenas and Havemann (2014), teachers' creativity is enhanced by reusing and remixing OER since they are pushed to reconsider their teaching and collaborate for resource review.

Even though the OER movement is gaining traction throughout the world, with more and more institutions and academics showing an interest, there are still many barriers that need to be addressed. Some of the barriers that

must be overcome if educational institutions use Open Educational Resources (OERs) are inadequate institutional support, scarcity of technical instruments, users' lack of skills and time etc. (Kumar, 2019). Some of the hurdles and problems that preservice teachers may experience while accessing open educational resources (OERs) includes, insufficient digital proficiency and technology knowledge, a lack of hardware and technological infrastructure to access OERs in teacher education institutes, lack of expertise or training for creating and deploying high-quality content, lack of faith in quality. Also, the time restrictions frequently make it hard to locate adequate resources (Sawyer & Myers, 2018). Luo et al. (2020) stated OER as instructional tools might be difficult to adopt, but when properly planned, they can be beneficial in fostering positive learning outcomes.

CONTEXT OF THE STUDY

The research was carried out at central university of India, i.e., Jamia Millia Islamia. It is located in the national capital region of Delhi and accredited by NAAC under category 'A'. This prestigious university offers various teacher training programmes in the Department of Teacher Training & Non-Formal Education (Institute of Advanced Studies in Education) that includes D.El.Ed., B.Ed. in General, B.Ed. in Special Education, B.Ed. in Nursery Education) etc. Out of these courses, students from D.El.Ed. programme were chosen for this study. The Diploma in Elementary Education (D.El.Ed.) is a two-year professional teacher education programme that aims to prepare preservice teachers to teach from classes I to VIII, i.e., elementary level of education.

NEED FOR THE STUDY

Ever increasing use of information and communication technology changes the educational system (Zaidi & Bhatia, 2020). As the global usage of open educational resources (OER) grows, barriers and advantages are the major concerns among students, teachers, and institutions (Henderson & Ostashewski, 2018). The researchers reviewed various similar papers because the goal of this study was to look into the benefits and barriers of using open educational resources. Bliss et al. (2013) found that the cost of textbooks paid by college students in a semester drops by approximately 80% after the adoption of open textbooks. According to Butcher and Moore (2015), open education educational resources help in lesson planning. Weller (2014) stated that OER fosters more equal access to education by serving a larger base of learners than traditional resources. Hodgkinson-Williams (2010) stated how OER can be reused in teaching-learning. According to Ozdemir and Bonk (2017), open educational resources are supportive in boosting student performance. Pounds and Bostock (2019) reported that open educational resources (OERs) have the potential to improve teaching efficiency, quality, and lower costs while also removing regional barriers to education. Tur et al. (2016) found that preservice teachers have positive attitude towards OER and want to use in their futures classrooms. So, there are several benefits of OERs, but their adoption is slow due to several issues such as assuring the accuracy and general quality of material disseminated through OER (Mishra & Kanwar, 2015). Pounds and Bostock (2019) found that lack of awareness of OERs and copyright rules, scepticism about OER quality, and technological limits in terms of adaptation and sharing are the main challenges to OERs. According to Rolfe (2012), confusion over copyright and a lack of information technology support were among the obstacles to OER adoption. Other barriers to OER adoption among college and university faculty members and across institutions is a lack of understanding of open content licencing procedures (Gurrell, 2008). Similarly, Kimmons (2015) stated that copyright is a concern among teachers, causing confusion and misunderstanding about OER licencing mechanisms. Therefore, on the basis of above studies, the researchers felt to conduct the study in Indian scenario keeping in mind the following objectives.

1. To study the benefits of OERs as perceived by preservice teachers in their teaching-learning experiences and in general
2. To study the barriers of OERs as perceived by preservice teachers in their teaching-learning experiences and in general
3. To collate the suggestions of preservice teachers' towards maximising the benefits of OERs
4. To collate the suggestions of preservice teachers' towards minimising the barriers of OERs

RESEARCH METHODOLOGY

Sample

A total of 102 preservice teachers were chosen from the D.El.Ed. programme using the convenience sampling technique. The sample was taken from all sections, namely I-Year and II-Year students of D.El.Ed (under both Hindi and Urdu mediums) from Jamia Millia Islamia.

Questionnaire

The researchers prepared a questionnaire after reviewing relevant research studies that includes Ozdemir and Bonk (2017), Okonkwo and Ikpe (2013), Bansal and Joshi (2016). They also sought permission from authors for using their items in the development of questionnaire for present study. The questionnaire had two parts as;

Part I: This part of the questionnaire was based on 5-point Likert Scale from 'Strongly agree' to 'Strongly disagree'.

    a) Total 25 questions on the perceived benefits of OERs were asked. This part was further divided into two sections as (i) 16 questions related to the benefits of OER in teaching-learning experience and (ii) 9 questions related to the benefits of OER in general.

    b) Total 22 questions on the perceived barriers of OERs were asked. This part was also further divided into two sections as (i) 12 questions related to the barriers of OER in teaching-learning experience and (ii) 10 questions related to the barriers of OER in general.

Part II: This part consisted of two open ended questions to gather suggestions of preservice teachers' towards maximizing the benefits and minimizing the barriers of OERs.

Analysis and Interpretation of Data

Collected data via google forms was then processed and analysed by calculating percentage with the help of the online spreadsheet, i.e., google sheet. Whereas the data collected under the suggestions regarding OERs was analysed through coding. All the processed data was presented in tables and graphs.

FINDINGS

The findings under each objective of the study are presented here.

Objective 1: To study the benefits of OERs as perceived by preservice teachers in their teaching-learning experiences and in general

Table 1: *Responses of preservice teachers about the benefits of OERs in their teaching-learning experiences*

S. No.	Statements	SD	D	U	A	SA
1	Use of OER improves lesson planning and preparation	6.9%	2.9%	15.7%	57.8%	16.7%
2	OER helps in effective content delivery	5.9%	4.9%	17.6%	52.0%	19.6%
3	Use of OER is an effective method for improving students' retention	2.9%	10.8%	29.4%	47.1%	9.8%
4	Adoption of OER at the institutional level results in financial benefits for both instructors and schools	4.9%	10.8%	21.6%	53.9%	8.8%
5	OER provides more equitable access to education by reaching a larger number of learners than traditional resources	2.9%	7.8%	22.5%	57.8%	8.8%
6	Open aspect of OER creates varied usage and adoption patterns than other online resources	5.9%	7.8%	28.4%	52.0%	5.9%
7	OER can assist teachers in improving their classroom teaching	7.8%	4.9%	13.7%	61.8%	11.8%
8	OERs accommodate students' various learning styles	3.9%	8.8%	16.7%	53.9%	16.7%
9	Use of OERs can improved the efficiency and quality of learning resources	3.9%	4.9%	18.6%	57.8%	14.7%
10	OER improve a user's understanding of a course	3.9%	6.9%	19.6%	52.9%	16.7%
11	Collaborative and participative aspect of OERs leads to materials' improvement	3.9%	7.8%	26.5%	52.9%	8.8%
12	OER makes it easier to remain up to date on technology and information	4.9%	1.0%	13.7%	60.8%	19.6%
13	OER assists in learning through the integration of formal and non-formal education	4.9%	6.9%	21.6%	57.8%	8.8%
14	Re-modification of materials in OER can improve the quality of teaching-learning	4.9%	2.0%	21.6%	58.8%	12.7%
15	OER allows expanded access to learning materials by anyone, anywhere and at any time	5.9%	3.9%	19.6%	53.9%	16.7%
16	OER promotes inclusive and equitable access to quality materials irrespective of age, physical ability or socio-economic status	8.8%	7.8%	15.7%	53.9%	13.7%
	Overall	**5.1%**	**6.3%**	**20.2%**	**55.3%**	**13.1%**

Note: SD= Strongly Disagree; D= Disagree; U= Uncertain; A= Agree; S= Strongly Agree; OER=Open Education Resources

It has been found from table 1 that the highest majority of the participants, 61.8%, agreed that OER can assist teachers in improving their classroom teaching. Whereas the analysis revealed that 8.8% of the respondents strongly disagreed that OER promotes inclusive and equitable access to quality materials irrespective of age, physical ability, or socio-economic status. Meanwhile, 19.6% of respondents are uncertain whether OER allows expanded access to learning materials by anyone, anywhere and at any time or not. 58.8% of preservice teachers agreed that re-modification of materials in OER can improve the quality of teaching-learning. From the above table, it has also been disclosed that some of the participants (28.4%) registered their uncertainty about the statement that open aspect of OER generates varied patterns of usage and adoption than other online resources. Whereas 19.6% of the preservice teachers strongly agreed that the use of OER helps in effective content delivery and that OER makes it easier to remain up to date on technology and information, 60.8% also agreed to the same.

The overall findings of the collected data revealed that the majority of preservice teachers (55.3%) agreed and 13.1% of them strongly agreed on all the 16 statements established as perceptions about the benefits of OER in teaching-learning experiences. Whereas 20.2% of the participants showed their ambiguity and obliviousness about the benefits of the OERs. Meanwhile, 6.3% of the respondents disagreed over the benefits of OER as implied through the statements, where 5.1% preservice teachers showed strong disagreement over the stated benefit of OERs in teaching-learning experiences.

Table 2: *Responses of preservice teachers about the benefits of OERs in general*

S. No.	Statements	SD	D	U	A	SA
1	OER allows flexible and quality education	6.9%	6.9%	18.6%	56.9%	10.8%
2	OER content can be examined online as well as downloaded if needed	5.9%	4.9%	13.7%	56.9%	18.6%
3	OER allows open access to knowledge that may be utilised to make life-changing decisions, eventually leading to societal improvement	3.9%	9.8%	16.7%	56.9%	12.7%
4	OER enables users to examine their understanding of a particular topic through self-assessment tests	5.9%	6.9%	16.7%	57.8%	12.7%
5	OER assists in meeting the increased demand for secondary and higher education	6.9%	6.9%	23.5%	52.9%	9.8%
6	OER facilitates online interaction among other members of the institution	4.9%	9.8%	20.6%	52.0%	12.7%
7	OER promotes easy access to low cost and quality educational materials	6.9%	6.9%	18.6%	55.9%	11.8%
8	OER has provisions for uploading educational materials by teachers or experts	5.9%	6.9%	23.5%	52.0%	11.8%
9	OER enable active and independent learning	3.9%	10.8%	26.5%	48.0%	10.8%
	Overall	**5.66%**	**7.73%**	**19.83%**	**54.36%**	**12.42%**

Note: SD= Strongly Disagree; D= Disagree; U= Uncertain; A= Agree; S= Strongly Agree; OER=Open Education Resources

As presented in above table 2, the analysis of the data exhibited that 10.8% of the respondents disagreed that OER enables active and independent learning through online discussion forums. Whereas 6.9% participants disagreed that OER allows flexible and quality education, including easy access to low cost and quality educational materials. Moreover, majority of the participants (56.9%) agreed on the statement that the OERs enables free access to information that can be used to make decision affecting ones lives that ultimately leads to progress of the societies. Whereas 57.8% preservice teachers also registered their agreement on online self-assessment tests, which allow students to test themselves on a certain topic as the perceived benefits of OERs. On the other hand, 23.5% of the respondents were uncertain about scope of OERs in assisting in meeting the increased demand for secondary and higher education and the provisions for uploading special writings by teachers/experts. The overall findings of the collected data indicated that the majority of the preservice teachers (54.36%) agreed and 12.42% strongly agreed with all statements as the perceived benefits of OER in general. While 19.83% of the participants showed their uncertainty and 7.73% admitted their disagreement with the cited statements.

Objective 2: To study barriers of OERs as perceived by preservice teachers in their teaching-learning experiences and in general

Table 3: *Responses of preservice teachers about the barriers of OERs in their teaching-learning experience*

S. No.	Statements	SD	D	U	A	SA
1	OER is ineffective in improving educational outcomes	9.8%	45.1%	14.7%	23.5%	6.9%
2	Integration of OER into the technology you use is very difficult	5.9%	43.1%	25.5%	20.6%	4.9%
3	Quality of OER is low and inadequate	7.8%	43.1%	27.5%	17.6%	3.9%
4	OERs are difficult to edit or modify	7.8%	33.3%	34.3%	19.6%	4.9%
5	OER is irrelevant to your subject area	7.8%	49.0%	20.6%	18.6%	3.9%
6	Content of OERs are outdated	7.8%	34.3%	29.4%	25.5%	2.9%
7	Nobody around you uses OERs	3.9%	48.0%	26.5%	18.6%	2.9%
8	Not sure whether you are allowed to use or modify OER	6.9%	22.5%	42.2%	20.6%	7.8%
9	OER does not offer sufficient resources in your subject	5.9%	44.1%	15.7%	28.4%	5.9%
10	It's too difficult for you to find what you're looking for in OERs	6.9%	26.5%	28.4%	24.5%	13.7%
11	It is unclear which resources considered as OERs	4.9%	25.5%	33.3%	24.5%	11.8%
12	It takes a lot of time to find, select, edit and apply OER	5.9%	22.5%	26.5%	29.4%	15.7%
	Overall	**6.8%**	**36.4%**	**27.0%**	**22.6%**	**7.1%**

Note: SD= Strongly Disagree; D= Disagree; U= Uncertain; A= Agree; S= Strongly Agree; OER=Open Education Resources

The above table 3 indicates that the majority of respondents (49.0%) disagreed that the OER is irrelevant to their subject areas and 48.0% disagreed that the OER is not used by anyone around them, including their peers or classmates. Also, in the analysis of the data, 25.5% agreed that the content of the OER is not current or up to date. Whereas 42.2% of preservice teachers reported that they are uncertain whether they have permission to use or modify OERs, followed by 34.3% unsure about the OER being too difficult to edit or modify. The table also shows that 9.8% of the respondents strongly disagreed that the OER is not effective at improving educational performance, where 15.7% strongly agreed that it takes too much time to find, select, edit and apply OERs. The overall findings showed that the majority of respondents (36.4%) disagreed, while 27.0% unsure and 22.6% of the respondents agreed over all 12 illustrated statements including some contrary elements, representing the barriers of OER in teaching-learning.

Table 4: *Responses of preservice teachers about the barriers of OERs in general*

S. No.	Statements	SD	D	U	A	SA
1	It is difficult to use OER	2.9%	30.4%	19.6%	35.3%	11.8%
2	Slow internet speed makes it hard to utilize OERs	2.0%	8.8%	22.5%	49.0%	17.6%
3	Unavailability of internet connection is an issue	3.9%	22.5%	31.4%	36.3%	5.9%
4	It is difficult to access OERs with limited or no access to a computer	2.9%	15.7%	20.6%	41.2%	19.6%
5	Inadequate knowledge on how to use OER	2.9%	21.6%	21.6%	40.2%	13.7%
6	Does not have sufficient computers related skills	2.9%	17.6%	21.6%	42.2%	15.7%
7	Insufficient knowledge on where to find the OER	4.9%	15.7%	21.6%	40.2%	17.6%
8	Do not have enough time to look for suitable resources	3.9%	12.7%	25.5%	49.0%	8.8%
9	There is a lack of technical infrastructure	2.9%	17.6%	23.5%	39.2%	16.7%
10	There is a scarcity of OERs in native languages	2.9%	10.8%	25.5%	43.1%	17.6%
	Overall	**3.2%**	**17.4%**	**23.3%**	**41.6%**	**14.5%**

Note: SD= Strongly Disagree; D= Disagree; U= Uncertain; A= Agree; S= Strongly Agree; OER=Open Education Resources

As per the above table 4, the most commonly agreed statements to study the preservice teachers' perception about the barriers of OERs, in general, are slow internet speeds and having not enough time to look for suitable resources (49%), inadequate knowledge on how to use OER and insufficient knowledge on where to find the OER (40.2%), scarcity of resources in the native languages (43.1%), difficulty in accessing OERs with limited or no access to a computer (41.2%). Whereas 23.5% of respondents showed their uncertainty about the lack of technical infrastructure, while (17.6%) disagreed over this. The overall findings from table 4 indicated that around (41.6%) of the preservice teachers agreed on all 10 statements, while 23.3% of the respondents uncertain about their perception of the barriers to OERs. Whereas 17.4% disagreed and 3.2% strongly disagreed with the statements representing the perceived barriers of open education resources (OERs) in general.

Objective 3: To collate the suggestions of preservice teachers' towards maximising the benefits of OERs

The data collected for the above-mentioned objective was analysed through coding of the responses. Following that, the percentage was calculated and displayed in a graph. The responses registered through the open-ended questions gave participants the freedom to share their personal and genuine suggestions on OERs.
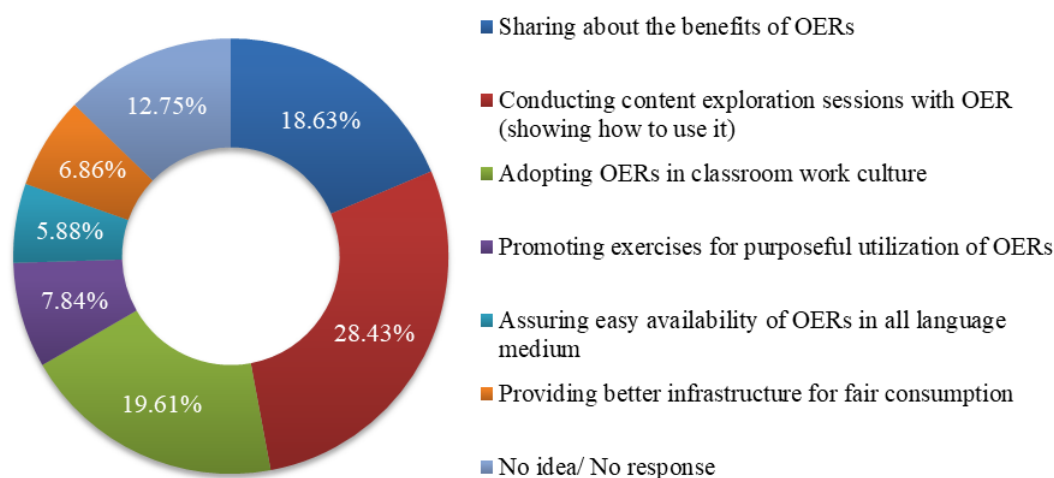
Figure 1: Suggestions given by respondents to maximise the benefits of OERs

Figure 1 indicates that 28.9% of the responses suggested conducting content exploration sessions with OERs to show preservice teachers how to use OERs, about the various types of OERs, their applications and platforms. Analysis of responses also revealed that 19.61% of the participants recommended adopting OERs in classroom work culture. So, the researchers concluded that providing initial exposure to the use and features of OERs will further motivate them to avail the benefits of OERs. One of the documented responses was that *"I can maximise benefits of OER by giving awareness to all learners through social media"*. Hence, 18.63% of the responses proposed that sharing about the benefits of OERs can help students become aware of all the attributes of OERs. 5.88% of the responses are attributing towards assuring easy access and availability of OERs in all language mediums, as one of the respondents stated that, *"To maximise the benefits of OER, OERs have to increase languages, subjects, etc."* Meanwhile, 6.86% suggested providing better infrastructure for fair consumption of resources.

Objective 4: To collate the suggestions of preservice teachers' towards minimising the barriers to OERs
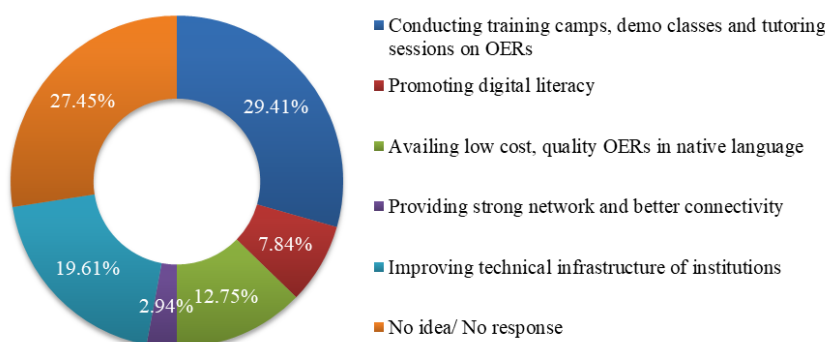
Figure 2: Suggestions given by respondents to minimise the barriers to OERs

The Figure 2 shows that 29.41% of the responses indicated that in order to minimise the barriers, it is crucial to have awareness about OERs and for that conducting training camps, demo classes and tutoring sessions on OERs can be helpful. As one of the preservice teachers registered that, *"Available content should be divided according to the need. If I search for socio-cultural theory, we get thousands of results, and it takes hours to get appropriate content according to my need. Searching difficulties should be removed. Students should be skilled at finding appropriate content".* Above figure also indicates that 19.61% suggested improving the technical structure of institutions. Meanwhile, one of the respondents registered that, *"By availing material in Hindi language. Most students don't use OER because of language".* Similarly, 12.75% of responses have recommended availing low cost and high quality OERs to be available in native languages. Further, analysis of the data revealed that 7.84% of the registered responses reflected upon recommending promoting digital literacy as one of the participants stated that "*computer skills must improve*". Out of all registered responses, 27.45% respondents gave no suggestions, indicated that they have no idea or have nothing to say about it.

DISCUSSION

As this study investigated the perceptions of preservice teachers about the benefits and barriers of OERs, the results showed that majority of preservice teachers (57.8%) agreed that use of OER leads to improvement in lesson designing and planning. This finding shows coherence with Butcher and Moore's (2015) study in which they stated that the use of open educational resources (OER) helps in improving lesson preparation. So, results of this study can be helpful for effective adoption of open educational resources in teaching-learning of preservice teachers. Furthermore, 45.1% participants disagreed that OER does not improve educational outcomes and 29.4% agreed that it takes too much time to find, choose, and edit OERs. This show similarity with Ozdemir and Bonk (2017) which revealed that although time required for searching, selecting, editing, and applying OER is the greatest hurdle in OER adoption, the use of OER is believed to enhance student performance. Preservice teachers in the present study were also unsure of which resources to be considered as OERs and agreed to various barriers including facing problem in finding relevant materials and concerns about outdated content. These results are consistent with Mishra and Kanwar (2015) who stated the issues of assuring the accuracy and general quality of material disseminated through OER. As 17.2% respondents disagreed that a paucity of technical infrastructure exists and 21.6% agreed that they have insufficient understanding on how to use OER. The findings confirm dissimilarity with Bansal and Joshi (2015) who found that the main stumbling block for their participants was a lack of knowledge on how to identify and use OERs and inadequate technological infrastructure.

CONCLUSION

This study concluded that a large majority of respondents agreed that OER assists teachers in improving their classroom teaching and makes it easier to remain up to date on technology. Most of the respondents also agreed that OER enables users to examine their understanding of a particular topic through self-assessment tests. So, it is concluded that they have recognized the benefits of OERs in the given contexts, i.e., in their teaching-learning experiences and in general. The results also showed that the majority of respondents disagreed with the stated barriers to OERs in their teaching-learning experiences, which signified the positive perception toward the adoption and use of OERs among preservice teachers. Meanwhile, most preservice teachers perceived slow internet, a lack of time to search for relevant materials, and a lack of resources in local languages as some of the major barriers to OER in general settings. Finally, it is worthwhile to state that suggestions given by preservice teachers can help the institutions and government in planning the remedial steps to remove the barriers of OER in teaching and learning.

SUGGESTIONS FOR FUTURE STUDIES

Further studies can be carried out to expand research with different populations such as with B.Ed./ M.Ed. students, in-service teachers, etc. As a part of such expansion, researchers can also explore how OER is used by preservice teachers in the other developed countries that could better engage those in the developing countries.

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CAPTURING THE PERCEPTION OF RESEARCH SCHOLARS TOWARDS ONLINE PH.D. COURSE WORK DURING COVID-19: A DIPSTICK STUDY IN SELECTED REGIONS OF WEST BENGAL

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ABSTRACT
After the emergence of COVID-19 pandemic, research scholars have largely been active through the online mode of interaction, further demonstrating the need for such a whirlwind way of learning. In this light, it has been observed that a large number of research scholars all across India have been resorting to online PhD course work to fulfil their academic agenda. In this context, it becomes quite pivotal to throw light upon the perception of research scholars towards online PhD course work. The current research study is attempted at probing into the attitudes and behaviour of research scholars dwelling in the state of West Bengal towards online PhD course work by the application of "Technology Acceptance Model" (TAM). The findings reveal positive perception among the surveyed research scholars towards online PhD course work.
Keywords: Online PhD course work; Technology Acceptance Model; Attitudes and Behaviour; West Bengal; Research scholars

INTRODUCTION

The rapid pace at which globalization is occurring along with fine tuning in the milieu of technology has fuelled the emergence of head turning electronic devices, especially, smartphones and tablets, further propelling a spectacular proliferation of mobile internet. Online PhD course work classes is a tech-based platform enabled via various online platforms like Google Meet, Zoom, MS Teams which enables information sharing between research scholars and research guides. Online PhD course work are a great avenue for research scholars who have no access or limited access to physical classroom environment for the time being. It is extremely useful for research scholars who are "working professionals" and is in the continuous quest for improvisation. The online way of undertaking course work classes has reduced the hassles of scholars who otherwise were subjected to travails of physical travelling, expenses involved in travelling, various other miscellaneous expenses, etc. Research scholars have been benefitted widely by staying away from the real physical classroom while still being engaged in an impeccable learning environment, albeit, being virtual. The present research study is primarily based in selected districts of the state of West Bengal during the time of a menacing global pandemic, when education has been kept afloat mainly by online education. One such revelation has been high proclivity of research scholars towards online PhD course work. With the eye-twitching amelioration in the ambit of technology, the baptism of such an astounding way of learning has been a turning point in the domain of education sector. A whopping proportion of research scholars across India have been observed to highly value online PhD course work classes. In fact, the essence of the current research endeavour exists in this rudimentary idea.

LITERATURE REVIEW

The domain of online learning and student behaviour is not new, but measuring the perception of research scholars towards online PhD Course Work classes has limited researches, especially in the light of pandemic. In the present research study, an attempt has been made to study the attitudes and behaviour of research scholars towards online PhD course work and hence it is almost imperative to discuss about TAM. "TAM is an extension of TRA (Theory of Reasoned Action)", which was brought into existence by Ajzen & Fishbein (1975).

Fred David first coined the term "Perceived Usefulness" which refers to the "extent of a belief held by an individual that the usage of a particular system results in the enhancement of his/her job performance". Davis (1989), also defined the term "Perceived Ease of Use" as the "extent of a belief held by a person regarding the usage of a system which would be effortless". In further addition to the existing theory, David (1993), opined that the usage of the actual information system was a determination of a concept called "Behavioural Intention" which was a result of the combined force of "attitude towards usage" and "perceived usefulness". He defined it as "the subjective probability that an individual will perform a specified behaviour." Attitude towards Usage (ATU) is a crux dependent variable in the TAM and in the words of Ajzen & Fishbein (2000), ATU is the "evaluative effect of positive and negative emotions among individuals towards the usage of a particular system".

Over the course of years, TAM got metamorphosed from the archetypal dynamics of retrospective information technology, culminating novel dimensions like e-commerce and m-commerce. TAM also offers a real flexibility to include independent constructs most notably "Subjective Norm", as first introduced by Taylor & Todd (1995), who defined it as "the influence gained from social circle on whether or not to use a particular system." Roy (2017), conducted a very interesting study embedding the construct of "Subjective Norm" in a conventional TAM in the context of "Taxi Hailing Apps". The study explored that "Subjective Norm" was significantly knitted with behaviour of consumers towards "Taxi Hailing Apps". TAM 2 by Venkatesh & Davis (2000) and "Unified Theory of Acceptance and Use of Technology" by Venkatesh et al. (2003), are two major upgrades. One of the major find is a TAM 3, which includes concepts of "Trust Effects" and "Perceived Risk" (Venkatesh & Bala, 2003).

However, there has been quite a few researches discussing about the perception of students towards online mode of learning by applying TAM. Tracing back to almost a decade in 2012, a very interesting study done by Farahat delved into student perceptions towards online learning in the context of Egyptian universities. The study revealed that "perceived ease of use", "perceived usefulness", "attitude towards usage" and "social influences" as important determinants of online learning. Similarly, one of the latest researches by Han & Sa (2021), after surveying 313 university students of Korea found that all TAM constructs were related to each other, with "perceived ease of use" and "perceived usefulness" had a positive impact on educational satisfaction. Aguilera-Hermida (2020), found that "attitude", "motivation", "self-efficacy" and "use of technology" played key roles in cognitive engagement and academic performance of students.

Any exigencies or unforeseen emergencies triggers abnormal behaviour among individuals. The attitude and behaviour of students have also changed during the COVID-19 pandemic. The perceptions of research scholars witnessed during the time of this ongoing pandemic is quite different, wherein they are more alert towards health and safety and undertaking course work classes through online mode. This phenomenon is also having a prodigious impact on the attitudes and behaviour of the research scholars.

Research Gap

Erstwhile literatures have more or less focused at unravelling the perception of students towards online learning even in the context of COVID-19 pandemic via the TAM framework. However, a noticeable research gap lies in unfurling the acceptance of online PhD course work classes by research scholars during the times of a global pandemic. The current research study would address the present issues at hand. Furthermore, there is a clear lack of proper empirical researches conducted in the geographical territory of the state of West Bengal. This also provides an additional vista for research as respondents have been surveyed across selected regions of West Bengal.

Research Objectives

1. To develop a novel research framework of TAM emphasizing on the acceptance of online PhD course work by research scholars during COVID-19.

2. To examine and analyze the attitudes and behaviour of research scholars towards online PhD course work amidst COVID-19 pandemic.

Conceptual Framework

The content of literature in the domain of consumer behaviour and TAM is a huge one. In this respect, a major contribution to the existing literatures would be to blend the keywords of "Subjective Norm" and "Exigency (COVID-19)".

The present research study is attempted in developing a conceptual framework which emphasizes on the research scholars' adoption and usage of online PhD course work classes, pillared on marginally modified Technology Acceptance Model (TAM). The proposed research model is composed of the traditional TAM constructs along with the domains of "Subjective Norm" and "Exigencies (Covid-19)" for catering to the influence of peer groups and urgent unforeseen needs respectively. Therefore, the research model would actually consist of six ingredients, which has been developed and presented below. Also, the following hypotheses have been developed.
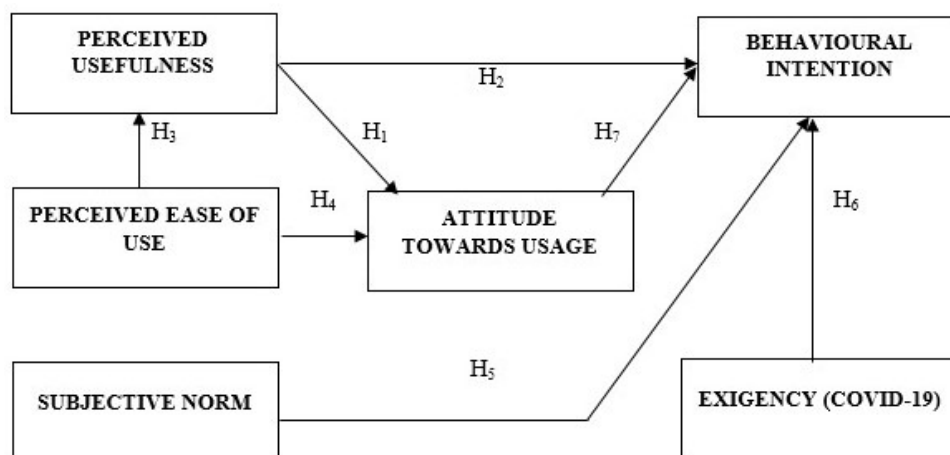
Figure 3: Research Model (Author's own conceptualization)

H_1: *"Perceived Usefulness has a positive influence on Attitude towards Usage"*

H_2: *"Perceived Usefulness has a positive influence on Behavioural Intention"*

H_3: *"Perceived Ease of Use has a positive influence on Perceived Usefulness"*

H_4: *"Perceived Ease of Use has a positive influence on Attitude towards Usage"*

H_5: *"Subjective Norm has a positive influence on Behavioural Intention"*

H_6: *"Exigency (Covid-19) has a positive influence on Behavioural Intention"*

H_7: *"Attitude towards Usage has a positive influence on Behavioural Intention"*

Data and Methodology

The data methodology consist of the use of both primary and secondary data. Secondary data has been used to lay the base of a strong conceptual framework. This has been possible through accessing various research paper from authentic and reliable databases like BASE, EBSCO and Google Scholar. The process of primary data collection has been done through a structured questionnaire, wherein a survey has been conducted among 462 research scholars who are all residents living in different regions of West Bengal. The data collection took place in two phases. The first phase included the respondents of West Bengal surveyed during the months of September and October' 2021 while the second phase of data collection were conducted in the months of December and January' 2021. The regions of survey from West Bengal include areas of Kolkata, Burdwan and Hooghly. The questions in the questionnaire were mostly self-developed albeit few questions have been adopted from previous researches (Roy, 2017). The questionnaire contained 23 questions under 6 segments, namely, "Perceived Usefulness" (PU), "Perceived Ease of Use" (PEU), "Subjective Norm" (SN), "Exigencies" (Covid-19), "Attitude towards Usage" (ATU) and "Behavioural Intention" (BI). A "Five-point Likert scale", where "(5= Strongly Agree; 4=Somewhat Agree; 3=Neutral; 2=Somewhat Disagree and 1=Strongly Disagree)" has been used to measure the concepts. Few responses were rejected due to minor errors and incomplete responses. After the rejection of such responses, the final valid responses stood at 462.

Data Analysis and Presentation

- *Demographic Profiling*

Table 1: Representation of Descriptive Statistics (Source: Author's Own Calculations)

Demographic Construct	Classification	Population Statistics	Percentage
Gender	Male	244	0.53
	Female	218	0.47
	TOTAL	462	1.00

As observed in the above the number of male respondents (n=244) exceeds the female respondents (n=218).

- *Reliability Analysis*

For the purpose of testing the internal consistency of the variables, "Cronbach's Alpha Test" has been conducted. This will serve the purpose of measuring the scale reliability of the various constructs which has been taken into consideration in the current research endeavour. The table below displays robust reliable results as the "Cronbach's Alpha" values for all items exceed the standard value of 0.7.

Table 2: Reliability Statistics (Source: Author's Own Calculations)

Construct	Cronbach's Alpha	Items	Total Correlation Value of Corrected Item	Cronbach's Alpha When Item Removed
Total	0.994	23	—	—
Perceived Ease of Use	0.988	PEU1	0.987	0.982
		PEU2	0.985	0.980
		PEU3	0.985	0.978
Perceived Usefulness	0.989	PU1	0.975	0.986
		PU2	0.974	0.985
		PU3	0.978	0.985
		PU4	0.979	0.985
		PU5	0.977	0.985
		PU6	0.917	0.983
Attitude Towards Usage	0.990	ATU1	0.980	0.985
		ATU2	0.978	0.986
		ATU3	0.971	0.988
		ATU4	0.969	0.988
Subjective Norm	0.962	SN1	0.872	0.957
		SN2	0.935	0.943
		SN3	0.950	0.940
		SN4	0.938	0.945
Behavioural Intention	0.981	BI1	0.977	0.961
		BI2	0.941	0.984
		BI3	0.974	0.962
Exigency (Covid-19)	0.975	EXC1	0.972	0.989
		EXC2	0.930	0.912
		EXC3	0.974	0.962

- *Convergent and Divergent Validity Test*

As observed by Table 3, the subcategories of construct validity are the "convergent and divergent validity". The "convergent validity" has been estimated by their respective "factor loadings" (CFA), "average variance extracted" (AVE) and "composite reliability" (CR). It is observed from the table depicted below that the CFA for all items are above the ideal level of 0.7, while AVE and CR fall above their respective threshold criterion of 0.5 and 0.7.

Table 3: Convergent Validity Results (Source: Author's Own Calculations)

Construct	Items	Factor Loading	AVE	C.R.
Perceived Ease of Use	PEU1	0.972	0.977	0.968
	PEU2	0.972		
	PEU3	0.977		
Perceived Usefulness	PU1	0.978	0.947	0.992
	PU2	0.977		
	PU3	0.980		
	PU4	0.981		
	PU5	0.980		
	PU6	0.942		
Attitude Towards Usage	ATU1	0.978	0.961	0.991
	ATU2	0.977		
	ATU3	0.979		
	ATU4	0.977		
Subjective Norm	SN1	0.925	0.885	0.990
	SN2	0.846		
	SN3	0.889		
	SN4	0.857		
Behavioural Intention	BI1	0.979	0.960	0.986
	BI2	0.977		
	BI3	0.976		
Exigency (Covid-19)	EXC1	0.980	0.947	0.992
	EXC2	0.942		
	EXC3	0.978		

The usage of "square root of ACE" and the "correlation coefficient matrix" is imperative for testing the "divergent validity" of constructs. As per Fornell & Larcker (1981), "discriminant validity was obtained by comparing the shared variance between factors with the AVE from the individual factors." The above matrix clearly reflects that the variables and their in-betwixt MSV and ASV fall short when juxtaposed to AVE and also the "square root of AVE" is higher compared to the "correlations of inter-constructs", hence, satisfying the "discriminant validity" test.

Table 4: Divergent Validity Results (Source: Author's Own Calculations)

Construct	Inter-construct Correlations					
	PEU	PU	ATU	SN	BI	EXC
PEU	0.989					
PU	0.985	0.973				
ATU	0.982	0.954	0.980			
SN	0.805	0.827	0.817	0.941		
BI	0.963	0.969	0.974	0.934	0.942	
EXC	0.975	0.982	0.989	0.958	0.966	0.980

- *Test for Structural Equation Modelling*

SEM has been performed to delve into the relationships existing between 6 variables, namely, PEU, PU, ATU, SN, BI and EXC. The rationality exist in testing the fit between the model and the obtained data. The first stage of making inference about the results of SEM encompasses a review of "fit indices." All the fit indices when juxtaposed with their corresponded values which has been suggested will give a good model fit "Ratio of Chi-square to its Degrees of Freedom" ($\chi2/df$) = 1.977, "Goodness of fit index" (GFI) = 0.958, "Adjusted Goodness of fit index" (AGFI) = 0.936, "Relative Fit Index" (RFI) = 0.967, "Comparative Fit Index" (CFI) = 0.983 and "Root Mean Squared Error of Approximation" (RMSEA) = 0.042.

Table 5: Indices for measure of "Goodness-of-Fit" (Source: Author's Own Calculations)

Goodness of Fit Measure	Recommended Value	Actual Value of Measures	Result of Model Fit
CMIN/DF	≤ 3.00	1.977	Good
GFI	≥ 0.90	0.958	Good
AGFI	≥ 0.90	0.936	Good
RFI	≥ 0.90	0.967	Good
CFI	≥ 0.90	0.983	Good
RMSEA	≤ 0.05	0.042	Good

To this end, the results of hypothesis testing have been obtained. The below table clearly represents the validation of all the hypotheses through the path analysis. It can be concluded that "perceived usefulness" and "perceived ease of use" favourably impact attitudes towards usage with each reporting figures of (β= 0.192, P<0.05) and (β= 0.402, P<0.05) respectively, thereby supporting H_1 and H_4. The same could be safely asserted for the relationship between "perceived usefulness", "subjective norm", "attitude towards usage" and "Exigency (COVID-19)", which are all significantly associated with "behaviour intention" of research scholars towards online PhD course work, with each reporting figures of (β= 0.198, P<0.05), (β= 0.405, P<0.05), (β= 0.443, P<0.05) and (β= 0.402, P<0.05) respectively substantiating H_2, H_5, H_6 and H_7. The relationship between "perceived ease of use" and "perceived usefulness" is also linked with figure reporting ((β= 0.609, P<0.05), thus, substantiating H_2.

Table 6: Results of Path Validation (Source: Author's Own Calculations)

Hypotheses	Path	Coefficient	Direction	Results
H1	PU→ATU	0.192	Positive	Supported
H2	PU→BI	0.198	Positive	Supported
H3	PEU→PU	0.609	Positive	Supported
H4	PEU→ATU	0.408	Positive	Supported
H5	SN→BI	0.405	Positive	Supported
H6	ATU→BI	0.443	Positive	Supported
H7	EXC→BI	0.402	Positive	Supported

RESULTS AND DISCUSSIONS

The present research study delved into the attitude and behaviour of research scholars towards online PhD course work by applying "Technology Acceptance Model" (TAM). The inter-relationships between traditional TAM components and the other two contemporaneous components like "Subjective Norm" and "Exigency (Covid-19)" has been explored. According to the first hypothesis, "Perceived Usefulness" (PU) had a positive relationship with "Attitude towards Usage" (ATU) as the extent to which the importance of usefulness will be psychologically casted would have a bearing on the attitude of the research scholars. As per the second hypothesis, it was also observed that "Perceived Usefulness" (PU) was related to "Behavioural Intention" (BI). An explanation for this would be that the research scholars are always in the quest for using a beneficial application. We evidence, in the third hypothesis testing that "Perceived Usefulness" (PU) was strongly influenced by "Perceived Ease of Use" (PEU). This hints that providing appropriate user training is essential for bolstering the research scholars' perception of the usefulness of online model of undertaking course work classes. Besides, "Perceived Ease of Use" (PEU) was also positively related to "Attitude towards Usage" (ATU), validating our fourth hypothesis. The fifth hypothesis was attempted at examining the relationship between "Subjective Norm" (SN) and "Behavioural Intentions" (BI). The impact cast by social circle had a significant impact on the "Behavioural Intentions" of research scholars towards online PhD course work. As observed by the sixth hypothesis, it is fathomed that the attitude of research scholars towards online PhD course work has been instrumental in shaping their "behavioural intention", as both mental as well as physical faculties are a nifty driving force in developing their perceived likelihood. Finally, the seventh hypothesis analyzed the relationship between "Exigency (Covid-19)" (EXC) and "Behavioural Intentions" (BI). Any unforeseen exigencies would trigger an abnormal behaviour among people and the current pandemic of COVID-19 is no exception. In addition to this, resorting to the online model of undertaking PhD course work classes is easy and convenient and reduces a lot of hassles. Such prolonged attitudes observed among the research scholars during this "new normal" has brought a bewildering change in their behaviour as well.

CONCLUSION

The current research study is highly relevant in the context of recent advancements in technology and the strong proclivity of research scholars towards online course work classes. The current research study highlighted certain crux elements under TAM constructs which shall be highly relevant in guiding future researches. Research scholars of West Bengal are highly valuing online PhD course work classes during the current ongoing pandemic. This has been empirically proved through in the present study.

Ever since the beginning of the pandemic, the education sector has been severely jolted, resulting in hiccups experienced in the flow of education. Truth to be told, the integration of information and communication technology (ICT) in the ambit of education has been a major boost. The online mode of education has been the "new normal". In this light, online activities related to even a gargantuan academic pursuance like PhD has been lauded over. The online course work classes undertaken has received widespread acceptance from the PhD scholars. The current study has probed into the perceptions of scholars through robust empirical analysis by using the popular "Technology Acceptance Model" (TAM). There has been certain criticism pointed at TAM, but it still proves to be amongst the most popular theoretical model used in academia. The current research study is strong enough to provide valuable conclusions concerning behaviour of research scholars towards online PhD course work classes.

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DEVELOPMENT AND STANDARDIZATION OF ONLINE CLASS ENVIRONMENT SCALE (OCES)

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ABSTRACT
This article explores the development and standardization process of the Online Class Environment Scale. The Online Class Environment scale is developed with six dimensions such as Interest, Family Environment, Technology in Teaching-Learning, Evaluation, Psychological Aspects, and Health Aspects. The preliminary draft of the Online Class Environment scale was prepared with 50 statements and it was subjected to test the discrimination ability of its statements' by using a t-test to the random sample of 393 higher secondary school students. The 42 statements were retained which possessed equal and greater than the critical value of 1.75 and all others were not retained. The face and content validity were found and the reliability of the tool is found to be 0.79 by using Chronbach's alpha formula. The norm of the Online Class Environment scale was established and the tool is said to be standardized.
Keywords: Online Class Environment, Preliminary Survey, Validity, Reliability and Norms

INTRODUCTION

Internet technologies, which have become one of the most common ways to access information, have an impact on educational systems and teaching-learning activities. Many studies are currently being conducted to ensure the effectiveness and efficiency of online learning, which fills a critical educational gap. Presentation of multimedia-enhanced lesson content in online learning environments, synchronous and asynchronous use of online communication tools, and time- and space-independent service to students are all important characteristics of online learning. Moreover, e-learning environments have the quality of enabling various communication technologies that can be used on independent platforms to be used together (Onal and Ibili, 2017). If individuals who utilize these environments have access to online learning lesson content and possess the skills of time management and use of the relevant technologies, this will have a positive effect on their academic success (Taipjutorus, Hansen, & Brown). Only psychological variables can reveal or explain beliefs about one's ability to perform these tasks.

A preliminary survey helps a researcher to test the measuring ability and qualities of a research tool(s) that has/have been constructed by the researcher. It is also called a pilot study, pilot experiment, small-scale preliminary study, and pilot project. It assists to find out the feasibility of a tool. A preliminary survey is a survey that is a miniature form of a final survey. A study conducted by adopting a non-piloted tool is merely a loss of time, money, and energy of the researcher. A preliminary survey is essential in this regard and assists to produce a good quality tool.

Development and Standardization of Online Class Environment Scale (OCES):
A tool is a device that collects data or information about a person's or a group's attributes or characteristics, as well as issues relating to society, systems, and so on. It is an essential duty of the researcher that developing a good quality tool and it is a more difficult task for the researcher. The Online Class Environment Scale has been developed and standardized by the investigator and the research supervisor. The development and standardization process of OCES includes different stages and its steps are sub- divided into steps. The stages and steps involving in the development and standardization process of OCES are discussed below.

The four stages of the development and standardization process of OCES are:
- ✓ Stage of Developing Statements,
- ✓ Stage of Try Out,
- ✓ Stage of Analyzing the Statements/Items
- ✓ Stage of Standardization

Each stage includes different steps and they are discussed in the succeeding passages.

STAGE OF DEVELOPING STATEMENTS:

Developing a statement is a focused work of a researcher who has formulated each item that should be reflected the dimensions and converge the focus point of the topic of a tool. This stage is more important than the foundation of a building, in which, planning the building, make a blueprint, and build according to it. Alike, the same processes have to be executed in tool development. The steps involved in this stage are briefly explained below.

Planning the Tool

Planning is the base layer of developing a tool and it is more powerful to successfulness outcome of a good research tool. Planning makes proper arrangements of dimensions as well as the statements/items. Planning includes the following:

➢ *Planning the Tool Type*: In planning a tool type is most important in which what type of tool is helpful to measure the variable and it has to be decided by a researcher. There are different forms of tools are available like questionnaires, scale, opinionnaire, checklist, battery, inventory, etc. Here, the investigator confirmed that the scale is appropriate for measuring the online class environment.

➢ *Planning the Number of Statements/ Items*: Planning in all aspects makes ensures quality. The number of items fixed in the tool is very important because it saves time to measure variables. A variable can be measured in one statement/item (e.g.: demographic variable like gender, locality, etc) and some variables cannot be measured in a single statement/item (e.g.: intelligence, emotional intelligence, etc,). Here the researcher is going to measure Online Class Environment and it cannot be measured through a single statement and so the researcher has fixed it certainly to 50.

➢ *Planning the Dimensions*: Generally, a variable in social sciences can be measured through one and more dimensions. The researcher is ready to measure the Online Class Environment of the student and so the different styles become dimensions. The researcher has fixed six dimensions and they are:

- Interest
- Family Environment
- Technology in teaching -learning
- Evaluation
- Health aspects
- Psychological aspects

Table 1 indicates the number of statements developed in each dimension and its sub-dimensions of OCES.

Table 1: Dimension Wise Number of Statements

Sl. No.	Dimension	Number of Statement		
		Positive	Negative	Total
1.	Interest	6	2	8
2.	Family Environment	6	2	8
3.	Technology in teaching –learning	6	2	8
4.	Evaluation	7	2	9
5.	Health Aspects	6	2	8
6.	Psychological Aspects	6	3	9
	Total	**37**	**13**	**50**

Based on the number of statements concerning each dimension, the preliminary form was developed and it is described below.

DEVELOPMENT OF PRELIMINARY DRAFT:

During the development of the preliminary form, the researcher should focus like the bridle of the horse in writing statements that reflect the dimension, and also ensures the fitness of the dimensions and focused on the

title of the scale. The preliminary draft was prepared with 50 statements having five ratings with Strongly Agree, Agree, Undecided, Disagree, and Strongly Disagree. Suresh and Srinivasan (2020) emphasize that the investigator keeps attention with the following while preparing the preliminary form and it was followed by the investigator while preparing the preliminary draft.

- The direct meaning of the question,
- Removing the irrelevant questions,
- Checking the unambiguous questions,
- Repetition of the questions,
- Indirect questions,
- Double-barreled questions, and
- Blind questions.

The scores for Strongly Agree is 5, Agree is 4, Undecided is 3, Disagree is 2, and Strongly Disagree is 1 for Positive Statements. The Scores for Strongly Agree is 1, Agree is 2, Undecided is 3, Disagree is 4, and Strongly Disagree is 5 for the negative statements.

STAGE OF TRYOUT

This stage assists the researcher to find out the organization, structure, fitness, length, and meaning of the statements in a preliminary draft. The preliminary draft and its dimensions details are sent to two associate professors, one headmaster, and three school teachers for finding the organization, structure, fitness, length, and meaning of the statements. The OCES was further refined regarding the subject experts' feedback.

STAGE OF ANALYZING THE STATEMENT/ITEM

After refining the preliminary draft is over, the statements are ready to check the discrimination ability. A good statement has the quality to discriminate the higher performer from the lower performer and for this purpose, the item analysis is executed by the investigator. The stage of analyzing the statement is performed with the following steps.

PRELIMINARY SURVEY

A random sample of 393 higher secondary school students from Thanjavur District, Tamil Nadu, India were given the refined OCES. The students are permitted to respond to the OCES for 45 minutes. Before beginning the administration process, the researcher describes the tool and its research purpose, as well as assuring that the data will be used solely for research purposes. The response OCES were checked that all the statements are responded to before collecting it. The researcher prepared a master table for each statement after the scoring scale is over.

ITEM ANALYSIS

A table was prepared with the responder's names and their responses towards each item. The responses were recorded in an MS Excel sheet according to the scoring procedure mentioned in head. The responders were sorted from higher marks to lower marks. The statements for the final analysis were chosen based on an item analysis of each statement, as suggested by Edward (1957), the 27% of top scorers from the top of the table is considered as 'Upper Group or High Group' and the 27% of low achiever from the least of the table is considered as 'Low Group' and between them is considered as 'Middle Group' (as cited in Garrett, 2014). The 27% of sample 393 is 106 and so the 106 students from the top are considered as high achievers and the 106 students from the bottom are considered as low achievers. According to Edward (1957), the statement that possesses equal or higher than the critical t-value of 1.75 is only be retained all others are not retained (as cited in Garrett, 2014). The details of the selection and rejection of items are given in table 1.

Table 1 Item Status of OCES

Item No.	t - Value	Item Status (Selected/Rejected)
1	2.93	Selected
2	2.69	Selected
3	**1.14**	**Rejected**
4	2.19	Selected
5	2.25	Selected

6	2.50	Selected
7	2.51	Selected
8	1.75	Selected
9	1.97	Selected
10	1.88	Selected
11	1.79	Selected
12	**1.13**	**Rejected**
13	2.33	Selected
14	3.01	Selected
15	1.86	Selected
16	2.77	Selected
17	2.19	Selected
18	2.13	Selected
19	2.92	Selected
20	1.82	Selected
21	2.53	Selected
22	3.03	Selected
23	**1.39**	**Rejected**
24	1.90	Selected
25	1.76	Selected
26	4.38	Selected
27	2.16	Selected
28	2.08	Selected
29	**1.42**	**Rejected**
30	1.86	Selected
31	2.36	Selected
32	2.94	Selected
33	**1.28**	**Rejected**
34	4.37	Selected
35	2.48	Selected
36	1.93	Selected
37	1.85	Selected
38	1.92	Selected
39	3.78	Selected
40	2.21	Selected
41	**1.32**	**Rejected**
42	2.23	Selected
43	3.14	Selected
44	**0.95**	**Rejected**
45	2.09	Selected
46	2.82	Selected
47	2.69	Selected
48	2.64	Selected
49	**1.24**	**Rejected**
50	1.96	Selected

STAGE OF STANDARDIZATION

The standardization process proceeded with different steps such as the development of the final draft, qualities of OCES, scoring procedure, and norms creation. Each step of standardization of OCES is explained below.

DEVELOPMENT OF FINAL DRAFT:

Based on the item analysis, the final draft was comprised of 42 items and the other 8 are rejected due to not reach the minimum of critical t-value (1.75). In the selection of items in each dimension are Interest is 07, Family Environment is 07, Technology in Teaching-Learning is 07, Evaluation is 07, Health Aspect is 07 and Psychological aspects is 07. Table 2 indicates the items selected for the final draft.

Table 2 Skelton of Final Draft of OCES

Sl. No.	Dimension	Number of Statement		
		Positive	Negative	Total
1.	Interest	5	2	7
2.	Family Environment	5	2	7
3.	Technology in teaching –learning	5	2	7
4.	Evaluation	5	2	7
5.	Health Aspects	5	2	7
6.	Psychological Aspects	5	2	7
	Total	**30**	**12**	**42**

QUALITIES OF OCES

Quality is essentially important for any type of research tool because it is evident that how the tool measures the variable is valid and reliable. So, the investigator has the responsibility to describe the quality of the OCES by briefing the validity and reliability in this session. The OCES has the following qualities and they are briefed below.

RELIABILITY

The degree to which an assessment tool produces stable and consistent results is known as reliability. The degree of consistency among test scores is referred to as reliability, according to Mehraj A. Bhat in 2014. The Alpha Cronbach Coefficient was used to assess the test's reliability. Using the Chronbach's Alpha formula, the OCES's reliability is found to be 0.79.

VALIDITY

A data collection tool must provide data that is not only relevant but also free of systematic errors. To put it another way, it must only produce reliable data and measure what it claims to measure. For OCES, the following validity was established.

Face Validity

Face validity considers how appropriate a test's content appears on the surface. Face validity is similar to content validity, but it is a more informal and subjective evaluation. Face validity is often regarded as the weakest form of validity because it is a subjective measure. It can, however, be useful in the early stages of developing a method. With the help of subject experts, this validity is established. The OCES was sent to a panel of experts for review, with the goal of determining the measurability of each statement and its dimensions on the Online Class Environment. The experts' suggestions were incorporated into the scale, giving the OCES face validity.

Content Validity

The term "content validity" refers to the tool's coverage of the topic of Online Class Environment and its dimensions as items. The degree to which items in an instrument reflect the content universe to which the instrument will be generalized is referred to as content validity (Straub, Boudreau et al. 2004). The scale includes six online class environments such as Interest, Family Environment, Technology in Teaching-Learning, Evaluation, Health Aspect and Psychological aspects. The subject experts requested to check the items of each dimension to cover all its sub-dimensions. The subject experts suggested that all the items in the dimensions are covered the content of the dimensions and hence the OCES has content validity.

SCORING PROCEDURE OF OCES

Wrong scoring leads to wrong results and giving scoring procedure is the duty of the tool constructor. The investigator has given the scoring procedure of OCES in table 3

Table 3 Scoring Procedure of OCES

Response Type	Scoring	
	Positive Item	Negative Item
Strongly Agree	5	1
Agree	4	2
Undecided	3	3
Disagree	2	4
Strongly Disagree	1	5

NORMS FOR OCES

Norms are used to compare the scores to normal scores (Suresh & Srinivasan, 2017). Establishing norms is a complex process for the tool developer because the data has to be assumed in fitting with the Normal Probability Curve (NPC). The range of the score is 7 to 35 in each dimension. Based on the dimensions, the norms have been established as follows

Table 2 Norms of OCES

Scores in Dimension		Description
Interest	Below 12	Low Preference to Interest
	13 - 24	Average Preference to Interest
	Above 24	High Preference to Interest
Family Environment	Below 12	Low Preference to Family Environment
	13 - 24	Average Preference to Family Environment
	Above 24	High Preference to Family Environment
Technology in teaching -learning	Below 12	Low Preference to Technology in teaching -learning
	13 - 24	Average Preference to Technology in teaching -learning
	Above 24	High Preference to Technology in teaching -learning
Evaluation	Below 12	Low Preference to Evaluation
	13 - 24	Average Preference to Evaluation
	Above 24	High Preference to Evaluation
Health Aspects	Below 12	Low Preference to Psychological aspects
	13 - 24	Average Preference to Psychological aspects
	Above 24	High Preference to Psychological aspects
	Below 12	Low Preference to Health Aspects

| Psychological Aspects | 13 - 24 | Average Preference to Health Aspects |
| | Above 24 | High Preference to Health Aspects |

CONCLUSION

The term "online class environment" refers to a learning environment that takes place online or virtually rather than in person. It takes a lot of discipline and commitment to succeed in an online class learning environment. Students in online classes must adhere to a course schedule and complete weekly tasks and assignments. As a result, effective time management and study skills are required for online learning.

ICT alone does not improve teaching and learning; it improves when it is grounded in practical learning theory. As we use more e-learning, it's critical that we have opportunities to reflect on models of best practice based on practical learning theory. It is difficult for teachers to provide the best learning outcomes for their students without such opportunities. The current study is noteworthy because it involved the validation and implementation of an online learning environment instrument that provides feedback on students' perceptions of the online learning environment and can be used to guide reflective practice.

Because the OLES has the ability to provide users with data that depicts the actual and preferred learning environments of students and teachers in real time, providing instructors working in these environments with immediate and potentially valuable feedback. Such information can then be used to facilitate an open dialogue between the teacher and students to determine how they can collaborate to improve their online learning environment by guiding educational decision-making. The current study is also significant because it shows how learning environment research tools like the OLES can aid in evaluating the effectiveness of online learning environments. Students' perceptions of the psychosocial characteristics of their learning environments and their learning outcomes have been linked in previous studies (Fraser, 1998). The current study is significant because it used the OLES to investigate how educators can improve their online learning environments based on their students' perceptions, thereby improving student outcomes.

The investigator has developed the Online Class Environment scale with 50 statements in the preliminary draft. After the item analysis, the final draft was constituted with 42 items. The face and content validity were found and the reliability of the tool is found to be 0.79 by using Chronbach's alpha formula. The norms of the Online Class Environment scale were established and hence the tool is said to be standardized.

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EDUCATIONAL PANACEA TOWARDS LEARNING BEHAVIOUR AMONG STUDENTS DURING PANDEMIC

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ABSTRACT

"Online Education" is one of the most prominent words during the pandemic period among all education communities. Many online courses are already offered by several organizations and Institutions which related to value-added, skill development and upgrading for the active learners. However, the Online mode of education is so popular and necessary for the learner's community, particularly during the pandemic period. Due to the inevitable situation, the learner's communities are pressed up for adopting another mode of learning platform to continue their learning journey. In this study, the researcher has attempted to analyze the relationship between time and the Behaviour of the learner in an online class and has also analyzed the impact of adequate ICT facilities and tools on the Behaviour of the learners. To prove the objectives and hypothesis designed correlation and ANOVA was used as a tool and the result was drawn through SPSS. The results found that there is a direct relationship between time and the Behaviour of learners and the ICT facility plays a major role in learner's attitudes.

Keywords: Attitude, Learners, Online education, Pandemic, Teaching.

INTRODUCTION

"EDUCATION" is the first association for the learners to understand the outer world and groundwork for their future. Regular institutional learning (face to face) is one of the best ways to mold, shape and carve the students into knowledgeable and professional individuals in society. Online education is another platform and ideal opportunity for the learner's community to join and continue their learning journey. When compared to the regular and online learning platforms, there is a chance for differences concerning the way the learner's perspective and behavior. In the systematic class mode of education, the students can directly meet the teachers, co-learners and other teaching community people. With that, the learner's behavior, attitude and learning interest are entirely different when compared to the online platform. But in an online platform, the learners get a convenient time, place and flexibility in learning. Of any kind, educationalists create a way to endure the learning contribution without any interruption.

Education is an unstoppable contribution to society, any situation may affect the business and service sector. During the pandemic started and scattered all over, all educationalists and learner's communities were feared initially. All education institutions are not getting clear direction to overcome the situation due to health and safety concern. On the other hand, the academic community felt that the online platform is the finest choice to continue the teaching and learning journey.

Online teaching and learning is an upright alternative to fill the gap between learners and educators in this pandemic situation. The only disquiet is how this change is accepted by the learners, because they are in a situation to continue their education without loosening their years and we can say how this new platform is suitable for their learning drive.

This research study attempted to understand the voice of the learner's perspective towards online pedagogy and try to look at, if any changes in their learner's behavior, attitudes and skills. It will benefit the evaluation of online education and the adoption mindset of the learners.

REVIEW OF RELATED LITERATURE

Ullah, Khan; et al (2017) in the paper titled "Students' Attitude towards Online Learning at Tertiary Level" has analyzed the attitude of undergraduate students towards online learning. The study conducted is limited to the district of Peshawar and it is understood ICT tools are not much difficult for students to handle at the bachelor's degree level.

Paul G. Paris (2004) has analyzed "E-Learning: A study on Secondary Students' Attitudes towards Online Web Assisted Learning". In that paper, the researcher has examined the affective, behavioral and cognitive attitudes of students towards Online Web-Assisted Learning. From the study, it was observed that OWAL activities have worked positively when compared to other activities conducted.

Anna Sun, Xiufang Chen (2016) has examined "Online Education and Its Effective Practice: It is observed from the research, that modifying and improving the content with more attractive, will turn the learners to pay more attention and make the class more interactive.

Dr. Ishmirekha Handique Konwar (2017), the paper titled on A Study on Attitude of College Students towards E-learning with Special Reference to North Lakhimpur of Lakhimpur District, Assam. It is found that there is no difference with respect to an attitude among gender categories i.e. male and female.

Yassine Ismaili (2021), the paper represents three major focusing areas in e-learning i.e., most of the students are preferred university platforms, students are showing a more encouraging attitude and the learning environment is much more difficult to adapt, accommodate and manage due to distraction a disturbance.

Norziani Dahalan @ Omar et al (2012), it is observed out of the research is the result of learner's attitude and value of participation. The student's environment is more important to become more participative in learning.

Roumiana Peytcheva-Forsyth, Blagovesna Yovkova,Lyubka Aleksieva (2018), in that research it is observed that demographic factors like age gender employment mostly affect the attitudes of the online and distance learners.

Esther Smidt et.al (2014), Student Attitudes about Distance Education: Focusing on Context and Effective Practices, said that time flexibility makes it convenient to learn and there is a chance to reserved or non-participate students can change into active participants. And also it is observed that more distractions and technical problems are the common issues they have to face.

It is evident from Unger, S., & Meiran, W. R. (2020), indicate that the students feel difficulty in their home environment and circumstances. And also they worried about personal interaction with their academic supporters when compared to a face-to-face class.

Amita (2020), this research evidence that lack of ICT facilities and resources is one of the major downsides, learning resources, and technical skills is a more difficult part of the learners. Apart from that electricity issues, cost of net connectivity and poor internet connectivity is much-considering fragment.

OBJECTIVES OF THE STUDY –
1. To understand the learning facilities to support online class.
2. To analyze the learner's opinion on their online learning skills.
3. To analyze the impact of ICT facility on the Behaviour of learners

HYPOTHESIS OF THE STUDY:
H_{01} = There is a direct relationship between time and Behaviour of the learners

H_{02} = Use and availability of ICT facilities has an impact on the Behaviour of the learner during online class

METHODOLOGY & DESIGN
Type of research: Descriptive in nature

Type of data: Primary data was collected with the help of Questionnaire and the sample size was 182 respondents and the researchers have used convenience sampling.

In order to achieve the above-mentioned objectives, a survey questionnaire was designed by the authors and circulated to the learner's community and primary data was collected using Google Form. This form was kept very simple and precise consisting of only basic questions to cover each objective. To make the survey results reliable and representative the students from all the major streams of higher education were included. For making the study more useful three broad groups of respondents were created. These include Commerce and Management, Arts and Social Sciences and Science and Technology. The scope of the survey was restricted to Bangalore city which is one of the multicultural cities for Higher Education. In total, the questionnaire was filled by 182students, which is a very encouraging response.

STATISTICAL ANALYSIS:

In order to understand and meet the objectives of the survey, a basic marginal analysis was carried out by the researcher which helped to analyze the convenient time, facility and Behaviour of the learners in online classes during the pandemic.

TABLE-1- TABLE SHOWING THE CONSOLIDATED OF EACH STATEMENT WITH PERCENTAGE

Sl.no	Statements	Responses	Number	Marginal %
1	Time schedule is suitable to attend all the classes	SA	52	28.58%
		A	57	31.3%
		N	51	28.02%
		DA	12	6.6%
		SDA	10	5.5%
2	Time for each class is adequate	SA	45	24.72%
		A	66	36.26%
		N	52	28.58 %
		DA	12	6.6%
		SDA	07	3.8%
3	Adequate ICT facilities is available (Computer, laptop, headphones etc)	SA	41	22.52%
		A	55	30.22%
		N	53	29.12%
		DA	18	9.8%
		SDA	15	8.2%
4	Network package is not affordable	SA	33	18.13%
		A	47	25.8%
		N	65	35.71%
		DA	24	13.18%
		SDA	13	7.14%
5	Adequate network facilities is available	SA	22	12.08%
		A	44	24.17%
		N	77	42.30%
		DA	22	12.08%
		SDA	17	9.3%
6	More attentiveness during on online class	SA	23	12.63%
		A	47	25.82%
		N	61	33.51%
		DA	22	12.08%
		SDA	29	15.9%
7	Students interaction is reduced during online class	SA	57	3.13%
		A	51	28.02%
		N	37	20.32%
		DA	19	10.43%
		SDA	18	9.89%
8	Listening skills is improved than physical class	SA	17	9.34%
		A	38	20.875
		N	56	30.76%
		DA	27	14.83%
		SDA	44	24.17%
9	Understanding of the subject is difficult during online class	SA	64	35.16%
		A	48	26.37%
		N	39	21.42%
		DA	20	10.98%
		SDA	11	6.04%
10	More distraction while listening class (Ambient noise, Cell phone use, Mind wandering, Physiological discomfort due to temperature, body positioning)	SA	71	39.01%
		A	52	28.57%
		N	39	21.42%
		DA	07	3.84%
		SDA	13	7.14%

11	More disturbances while listening class (Technical issues, family environment, Adapting to unfamiliar technology)	SA	73	40.11%
		A	52	28.57%
		N	27	14.83%
		DA	15	8.24%
		SDA	15	8.24%

From the discussions of the study, it is evident that the time schedule allotted for each class is satisfactory in the case of the majority of the respondent and it is observed that very few respondents are not satisfied with time scheduled and allotted for each class through online mode.

When analyzed about the adequate facilities and network package the researchers have got a neutral response where some of the respondents have given positive feedback and about 30 -35% of respondents have told that the facilities are average wherein the remaining respondents (10 – 13%) have disagreed with the facilities.

Few questions were designed by the researchers in order to analyze the Behaviour of the students with respect to online classes during the pandemic out of which it is analyzed that majority (25- 33%) of the respondents have agreed that more attentiveness is required during an online class. When asked about interaction during the online class it is observed that the majority of the student interaction has reduced during the online class.

When analyzed about their listening skills students responded that their listening skills have improved than in physical classes. Where more than 50% of the students have agreed that there is a lot of difficulty in understanding a particular subject during the online classes which is a bring disadvantage.

The researchers have also made an effort to understand the reason behind the difficulty in understanding and observed that about 60 – 70% of the respondents face a lot of distractions and disturbances during online classes due to ambiance, noise, discomfort, technical issues, family environment etc.

HYPOTHESIS TESTING:

H_{01} = There is a direct relationship between time and Behaviour of the learners

In order to test the first hypothesis of the study, correlation analysis is been used by the researcher in order to understand the relationship between time and Behaviour of the learners during online class and the results of the analyses is found as follows:

TABLE-2- PERSON CORRELATION ANALYSIS FROM SPSS FOR H_{01}

CORRELATIONS

		Time	Behaviour of learners
Time	Pearson Correlation	1	0.985**
	Sig. (2-tailed)		0.002
	N	182	182
Behaviour of learners	Pearson Correlation	0.985**	1
	Sig. (2-tailed)	0.002	
	N	182	182

The above analysis shows the relationship between time and Behaviour of the respondents towards online classes. The value obtained from Pearson correlations is r = 0.985 which shows that both the variable selected for the study are highly correlated and the p-value is 0.002 which is less than 0.05. Thus the value at the given level of significance indicates that there is a positive direct relationship between time and Behaviour of the learners during online classes.

H_{02} = Use and availability of ICT facilities has an impact on the Behaviour of the learner during online class

TABLE-3-MULTIPLE REGRESSION ANALYSIS USING ANOVA RESULT FOR H$_{02}$ ANOVA

	Sum of Squares	df	Mean square	F	Sig.
Between groups Within groups Total	1.541 43.582 45.123	1 181 182	1.541 .223	9.543	.005

From the results above it indicates the impact of ICT and the Behaviour of learners in an online class. The value obtained out of ANOVA is that the F statistic test is 9.543 and the p-value is 0.005 which is less than 0.05. Thus the value indicates that there is a significant impact on the Use and availability of ICT facilities and the Behaviour of the learner online. Hence it can be concluded that inadequate facility of ICT tools and internet facilities will have a negative impact on the learner's behavior impacting their listening skills and learning level.

RESULTS AND DISCUSSIONS

With the advantage of analyzing tools, the researchers are found relatively appropriate results with respect to ground reality issues that are presently faced by the learners during online classes. Educators designed the academic schedule well and it also engages and encourages the learners for active participation, around 60% of the respondents are agreed that the schedule is more convenient to attend the classes and also more than 50% agreed upon their ICT facilities to attend the online learning. Even though it is initial to impart the knowledge to the mass community, really it is a good start and success among the educational institution and teaching community to hold and keep the learners online with these available resources.

Nevertheless, Timing and ICT tools are good, sufficient and comfortable; on the other hand, learners are felt difficult rationally to understand the course content and need more attentiveness when compare to face to face. Moreover, 50% of the learner's communities have fingered the disadvantage with respect to subject discussion among teachers as well as other peers group. They also touched; interaction with the academic community is missing, which causes more lacking in updating the ground reality situation, learning from altered perspectives. Very importantly 70% of the respondents are experienced with more distractions and disturbances during the online learning, i.e., due to ambiance, noise, discomfort, technical issues, family environment etc. There is a positive relationship between time and behavior in the learner's community. It is observed that from the ANOVA, inadequate facility of ICT tools and internet facilities will have a negative impact on the learner's behavior impacting their listening skills and learning level.

CONCLUSION:

It is a great understanding from this research study, about the learner's opinion and attitude during online learning. It is more significant learning to the Government, Educational Institutions and other teaching group, to understand from learner's perspective the new learning platform. It will also cater to developing, adapting and improvising the present learning system to the next level. Motivate and inculcate the technology-based learning method among the student community to enrich their knowledge, skills and talent without any stoppage. It is clearly implicit, step by step progress will definitely change the teaching techniques, approaches, methods, and adoption among the both teaching and learning community in the future.

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EXPLORING ONLINE TEACHING SATISFACTION WITHIN THE CONTEXT OF COVID-19: IMPLICATIONS FOR PRACTICE AND FUTURE DIRECTIONS

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ABSTRACT
The purpose of this study is to explore faculty online teaching satisfaction, using both quantitative and qualitative methods for examination. Data collection was completed using an online survey tool. Participants completed a survey that began with Wasilik and Bollinger's (2009) 28-item instrument measuring online teaching satisfaction, and then participants were asked to provide answers to open-ended questions about satisfaction and overall online learning teaching quality. Findings from this study support the notion that online faculty satisfaction is multifactorial, and faculty satisfaction needs to be a key component in determining and/or improving overall quality of online programming. Factors noted in both qualitative and quantitative data sets that impact overall faculty satisfaction are reviewed, along with implications for practice, and future directions. As we move into the future of online learning and higher education, we are at a pivotal moment in determining gaps and future directions for online education. The significance of this study is to highlight current issues related to online teaching satisfaction and to provide areas of focus to minimize the barriers to successful online teaching and learning practices.

INTRODUCTION
Across higher education, online teaching and online delivery of classroom content has taken center stage, and with this growth comes an opportunity to revisit the many factors that contribute to online teaching satisfaction. As demands for online teaching and faculty requirements expand, it is vital to provide balance by revisiting key components of online instruction, such as, instructor workload requirements, compensation, and online student enrollment/ class size, to determine their effects on faculty satisfaction. For example, according to Taft et al. (2011), "when enrollment numbers swell in courses, students experience less individual contact with faculty, and faculty perceive that the quality of education declines" (p. 182). Furthermore, it has been established that "online courses encompass more instructor time in and out of the classroom, and that online faculty spend more hours than traditional faculty in preparing and administering online courses" (Mandernach et al., 2013, p. 2). With this perspective, the benefits of this study include promoting best practices for online teaching and assisting those in leadership to be more knowledgeable and mindful of the myriad of factors that impact faculty satisfaction when making policy decisions. As more students and faculty enter the online environment, it is time to reexamine potential issues that affect faculty satisfaction (e.g., course size for courses that are writing intensive). Finally, establishing a shared vision not only promotes student/faculty success/retention, but it can ensure sustainable program growth.

THE STUDY
The purpose of this study is to examine factors associated with online faculty satisfaction at two educational institutions in East Tennessee. This study uses Wasilik & Bollinger's (2009) faculty satisfaction survey instrument and following four original research questions:

(1) What is the overall level of faculty satisfaction in the online environment?
(2) What are the major frustrations of faculty with online teaching?
(3) What do instructors like the most about teaching online?
(4) How do instructors who are satisfied with online teaching differ from instructors who are   unsatisfied with online teaching based on student-related, instructor-related, and institution-related variables?

The second aim of this study is to add a qualitative lens to online faculty satisfaction by asking the following new qualitative research questions:

1.   How do you define quality in an online teaching environment?
2.   What impact does an effective teaching practice have on overall faculty satisfaction?
3.   What indicators of quality have you observed and utilized in an online environment?
4.   Describe the impact of class size on faculty satisfaction in an online environment?

Overall, the intent of this study is to identify key elements of online teaching satisfaction and use these findings to inform decision-making and practice.

STUDY DESIGN

Multiple research modalities were used to conduct this non-experimental survey design study. Both quantitative and qualitative techniques were used to address the research questions mentioned above. After email approval, a survey was created using the measurement tool developed by Bollinger & Wasilik (2009), reliability of the selected instrument was reported at .85 (Cronbach's alpha coefficient). This instrument is a 28-item survey tool that focuses on measuring the following constructs: structure to student interaction, affordances, institutional support, student-to-student interaction, and course design, development, and teaching. An open-source survey platform, Lime Survey, accessible at https://www.limesurvey.org/, provided a medium for collecting data. Data analysis was also provided by Lime Survey, in the form of descriptive statistics.

Participants were sought from two higher education institutions in East Tennessee (Institution 1 n=64; Institution 2 n = 17). Institution 1 is a 2-year state affiliated community college that offers a variety of online and adult programming. Institution 2 is a 4-year private liberal arts university with a religious affiliation that offers online courses and online programming. Overall, the participant demographic data (see table 1) shows that participants were mostly female, had at least a master's degree or higher, rated their level of confidence in teaching online as high, had greater than 5 years of teaching experience, completed online teaching training, and their average class size online was consistently greater than 15 students per a class.

Table 1: Study Demographics

Study Demographics		
Demographic Questions	**N = 64**	**N=17**
Age Group	36-50 (42%)	51-65 (41%)
Gender	Female (69%)	Female (65%)
Highest Level of Education	Master's Degree (54%)	PhD (35%)
Current Learning Management System (LMS)	Brightspace (87%)	Sakai powered by LAMP (94%)
Confidence in Teaching Online	8 (57%)	8 (35%)
Academic Department	English (19%), Liberal Arts (19%), 15 departments were represented	Nursing (25%), Psychology (12%), Health and Human Performance (12%), 10 departments were represented
Years of Online Teaching Experience	>5 (36%)	> 5 years (53%)
Completed training related to online teaching	Yes (86%)	Yes (65%)
Number of Online Classes per Semester	1 class (41%), 2 to 3 classes (36%)	1 class (41%), 2 to 3 classes (29%), 4 to 5 at (23%)
Average Class Size	19.64 students	>20 (47%) students, 11 to 15 students (29%), 16 to 20 students (23%)
Ideal Class Size	25 students (22%), 15 students (17%)	10 students (24%), 20 students (18%)

FINDINGS

To provide structure to this section, the results are presented separately as either quantitative or qualitative. After review of individual analysis of data, the emergence of data will then be presented using both quantitative and qualitative results to inform final discussions, and for making suggestions for improving practice.

QUANTIATIVE

Quantitative data collection for this study was done using a previously developed and tested instrument by Wasilik and Bolliger (2009). Their online faculty satisfaction survey [OFSS] explores online faculty teaching satisfaction and can be divided into three main factors: Student-related factors, Instructor-related factors, and Institution-related factors (Wasilik & Bolliger, 2009). The validity and reliability of this instrument was established by Wasilik and Bollinger (2009) with a Cronbach's Alpha of .87. In this section we will present an overview of the individual subscales and then proceed with results. Table 2 presents the OFSS survey (3 subscales) results obtained from the two institutions surveyed for this study and the original results presented by Bolliger and Wasilik (2009) during the initial construction of the measurement tool.

Student-Related Factors (15-items in subscale), Items developed from the following student-related factors, or perceived value, as reported by Bolliger and Martindale (2004) are the "the instructor, technology, and interactivity" (p.61). Also, Bollinger and Wasilik (2009) list the following as key factors for student satisfaction: "communication, course management issues, course websites, course management systems, and students' perception of task value, and overall self-efficacy" (p. 105). Findings for student-related factors for this online teaching satisfaction study found three main results: (1) faculty felt a lack in their ability to provide effective feedback, (2) they missed the enthusiasm and interactions that occur with face-to-face instruction, (3) They disagreed that their level of interaction with student online were higher than in a traditional face-to-face class.

Instructor-Related Factors (7-items in subscale) Was defined by Bolliger and Wasilik (2009) as "the perception that teaching in the online environment is effective and professionally beneficial" (p. 105), in other words, faculty believe they can promote positive student outcomes. Other internal factors include the challenge of online teaching, interest in developing online teaching skills, professional development opportunities, and interest in using and/or learning new technology (Bolliger & Wasilik, 2009). Results show three main factors influencing online teaching satisfaction related to the subscale measuring instructor-related factors (7-items). These include (1) higher workload, (2) longer time to prepare for online classes versus face-to-face, (3) concerns about lower student evaluations than in traditional class settings.

Institution-Related Factors (4-items in subscale), Institutional factors related to faculty satisfaction are related to perceived workload, adequate compensation, equal reward system for promotion and tenure, and quality of course, because course evaluations are generally lower in online courses versus traditional classes (Bolliger & Wasilik, 2009). Institutional factors affecting online teaching satisfaction include (1) increased workload and fair compensation for teaching online. Both institutions strongly agreed that instructor weekly hours for prep was greater in the online environment versus face-to-face. Participants also scored comparable in the following two areas, (2) frustration because of technical problems, and finally, (3) the need to find more creative resources in the online environment.

Bolliger and Wasilik's (2009) survey also includes 2 general satisfaction questions. The results of this study are presented below. Before noting a sharp decline in online teaching satisfaction, it is important to be mindful of context and time. Data collection occurred fall 2020, which was during the middle of the COVID-19 pandemic. Many participants had just experienced a dramatic alteration in their teaching practices and were teaching online for the first time. One insight to gain from this dramatic drop is the importance of utilizing one's learning management system to its fullest potential, so that future pivots between learning modalities are more organized and seamless. Furthermore, this speaks to the importance of available resources to faculty and students and creating a sense of information technology (IT) support.

Two General Satisfaction Questions*:*

> I look forward to teaching my next online course (48% Agree, 18% Agree, original study was at 93% agreement with this statement).
> I am more satisfied with teaching online as compared to other delivery methods (11% Agree, 18% Agree, 38.2% Agree with this statement from original study by Bollinger & Wasilik, 2009)

QUALITATIVE

A thematic analysis was used to analyze four open-ended questions asked of each participant at the end of the survey. Analysis of the data was done to identify recurring patterns. Overall, the researchers used the following

process to identify appropriate themes. The process began with asking four open-ended questions to all participants. Next, researchers completed a thematic analysis of the data to identify recurrent patterns in participant comments. Themes/ patterns were identified through reading transcripts verbatim aloud and having discussions about content, key words, and phrases.

This study employed the following strategies presented by Merriam (2009) to support the credibility and transferability of qualitative data. For example, the use of an audit trail was used to detail the process of data analysis and thematic development. Also, important conversations and memos of the process were documented. Transferability was achieved using descriptive descriptions of the data. This was done to ensure that findings can be transferred to a variety of settings. Overall, these measures were used to ensure the authenticity and trustworthiness of results.

Four major themes emerged from the open-ended questions aimed at defining quality within the online learning environment. The findings presented in the following paragraphs are organized thematically, and the interrelated themes illustrate how faculty define quality in online teaching and how those experiences affect overall teaching satisfaction within the context of COVID-19. Each theme is explained through examples from the collected data. Finally, the connections between the themes and the potential research question are explored.

Emerging Theme 1: Balance. The first theme that emerged was Balance. Findings show that there was a need for balance between online course design and the rapid shift in modalities, with the importance of academic rigor, integrity, and access to campus resources.

> "One that balances academic integrity and the understanding of the medium of online. The difficulties that students and faculty face with online courses is difficult because there is a direct balancing act that is not necessarily struck between the two sides of this"
> "Online classes can be a "double-edge sword""

Also, faculty expressed a need for balance between faculty roles (e.g., teaching, advising, service to the department) and working from home, amidst a global pandemic.

> "Unexpected quarantine and the lack of access to campus resources, and the nature of the sudden shift, misplaced work-life balance"
> "I wouldn't find my work/home life balance quite so off-kilter and would have a better view of it."
> "Online classes are not ideal for all courses (Synchronous versus Asynchronous)."
> "Teaching online requires more prep and more time during the course (If done right)."
> "Takes a lot of time for each class."
> "Cheating is rampant in online courses."

From these direct quotes, it is apparent that greater instructional design assistance and instructor training/time to prepare would help to alleviate the stressors of transitioning from synchronous to asynchronous learning environment.

Emerging Theme 2: Engagement. The second theme to emerge was Engagement. The main indicators for quality online education identified by faculty were access, course organization, utilizing multiple modes of teaching, and quick/effective feedback.
This theme can be further explained in terms of things that faculty identify as promoting engagement…

> "Engaging, inclusive, accessible, equitable to face to face learning, and technologically sound."
> "Student engagement and maintaining high levels of morale."
> "Quality online teaching is like actual teaching. Learners are able to use different medias to engage in the classroom. The students are engaged in the class with discussions, either real time or discussion boards."
> "I define it as students being involved and hopefully engaged while being able to get subject matter covered in a thorough way. I also feel that quick and constant faculty interaction with student emails is essential for quality. Engagement. Easy to follow course content. Different kinds of content - not just reading. For example, videos, quizzes, and synchronous communication. Providing a rich variety of learning resources to facilitate success for online students."
> "Teacher involvement in discussion groups"
> "Tracking attendance"
> "Using and creating multiple types of learning and providing clear goals"
> "Multiple effective teaching strategies employed in online classes positively impact faculty satisfaction."

"The quality of the class depends on the instructor and the teaching methods they use. They must cater to both types of students, ones who work great with online learning and those who don't. The instructor must be available and very involved with the class and ensure that everyone is understanding the content. You can't just give out assignments and grade them without any type of communication or feedback."

"Accurate feedback, clearly presented information, frequent interactions with students to encourage active engagement."

To those things that faculty identify as factors that diminish student engagement and overall quality/satisfaction…

"More students more difficult it is to engage students"

"Too many students make connecting really difficult OL makes it doubly harder to get to know students."

"Greater than 25 students I can't do the job I need to do."

"Having to teach 26 students virtually and 27 students' lives is difficult. You cannot convey the material the same way for both classrooms."

"Too many students make connecting with students really difficult in an already difficult situation."

Noteworthy findings from these direct quotes include the significance of the instructor to drive quality engagement in the online environment, and that a high-level of engagement is directly related to class size. The greater the number of students, the less the instructor can facilitate meaningful learning, or engagement.

Emerging Theme 3: Equality. The third theme that emerged from the data was Equality, for not only access to online courses for all, but to have equal learning experiences regardless if the course is offered asynchronous versus synchronous.

"Students need to understand how to navigate the course, and get the same educational value at least as they would from an in-person course, including building relationships and support"

"Ensuring that all students are provided the same quality of learning and community building I provide in my ftf classes."

"Materials and methods must be as good or better than in-person sections. The same way that I would define quality in a traditional face-to-face course, by evaluating if students can demonstrate a clear understanding of the course content and can synthesize the information being delivered. Are they meeting the learning objectives? Are the instructional materials being used accessible to all learners? Are learners interacting with the content in a meaningful and transformative way?"

"Quantity and quality of instructor/student interaction, accessibility"

"Instructor preparation and students having consistent access to technology is key"

"The quality of the class depends on the instructor and the teaching methods they use. They must cater to both types of students, ones who work great with online learning and those who don't. The instructor must be available and very involved with the class and ensure that everyone is understanding the content. You can't just give out assignments and grade them without any type of communication or feedback."

"Online courses are not ideal for all courses. Some courses are great online, and some are not. This is something to be aware of when deciding whether courses should be taught online. It is not a bad idea to try a course online, but if it doesn't work, move it back into the classroom...for the students!"

"Online teaching is wholly unsatisfactory for lab-intensive courses. There is no way for a simulation or video to adequately take the place of actually, physically doing the work."

From these quotes, one can conclude that online course design is critical for ensuring quality and promoting a positive experience for both faculty and students. Furthermore, online programs must have a quality improvement mindset. These comments highlight the importance of organization of course content, user-friendly access to course materials, and access other campus resources. Finally, a noteworthy insight, is that not all courses are best suited for online learning, for example, lab-intensive courses, or those courses requiring hands-on experiences may be more difficult to facilitate online.

Emerging Theme 4: Quality (Lack of). The fourth, and final, theme that emerged was Quality (Lack of). Timing of data collection is also an important factor when interpreting the results for this theme. Faculty being asked to switch their teaching methods/strategies to an online format, which may have added to the negative impressions of online teaching, and although frustrations were amplified, it does speak to the importance of providing adequate faculty support for teaching online.

"I don't think quality is possible in online teaching and would never participate in it if I were not forced to do so."

"Quality online teaching for any level above Bloom's lowest two is an oxymoron."

"I can't stand it. I believe it's ineffective. The very best students do ok."

These few remarks demonstrate that online teaching is not for every educator, and these comments may simply reflect the frustrations of a rapid transition from teaching face-to-face to an online environment.

DISCUSSION

The purpose of this study was to explore the level of online teaching satisfaction among faculty at two well-established East Tennessee institutions of higher learning. A total of 81 participants completed an online survey to assess their individual levels of teaching satisfaction within an online learning environment. A second arm of this investigation included collecting qualitative data, open-ended questions, to explore faculty perceptions related to class size, quality, and the impact of effective teaching on overall faculty satisfaction.

For a review of quantitative findings (Institution 1 [INT1] n = 64, Institution 2 [INT2] n = 17), the data in this study shows that participants strongly agreed with the following statements: "I miss face-to-face contact with students when teaching online" 59% (INT1) and 47% (INT2); "It takes me longer to prepare for an online course on a weekly basis than for a face-to-face course" 55% (INT1) and 18% (INT2); "I have a higher workload when teaching an online course as compared to transitional teaching" 50% (INT1) and 23% (INT2). Other statements participants agreed with included the need for more creative distribution of resources online versus face-to-face 47% (INT1) and 59% (INT2), the importance of reliable technology 42% (INT1) and 35% (INT2), and the importance of having the ability to troubleshoot 44% (INT1) and 41% (INT2). Items that participants disagreed with included statements such as "I am able to provide better feedback to my online students on their performance in the course" 61% (INT1) and 41% (INT2). For specific institutional factors related to online faculty satisfaction, perceived workload 55% (INT1) and 18% (INT2) and adequate compensation for online teaching were identified as the biggest contributing factors affecting satisfaction. Finally, two survey questions were directly related to general satisfaction. Findings from our survey show that 48% (INT1) and 18% (INT2) agreed that they looked forward to teaching their next online courses, and 11% (INT1) and 18% (INT2) agreed that they prefer online teaching over other delivery methods.

For qualitative findings, four major themes emerged from the open-ended questions aimed at defining quality within the online learning environment: 1) Balance, 2) Engagement, 3) Equality, and 4) Quality (lack of). The first theme that emerged was "Balance." One of the main issues for the participants was needing more time and resources to help balance the demands of transition from synchronous face-to-face courses to asynchronous online learning. Many participants also mentioned there was a need to find balance between work and homelife obligations, as many of those boundaries were blurred during this time. Engagement was the second theme that emerged from the data. Many participants were concerned about maintaining a high level of engagement for students while keeping high morale levels and retaining students. To maintain student engagement, many participants reported that a variety of methods for online instruction were needed to improve course content and delivery. Early feedback was important for keeping students engaged. Another theme that emerged from the data was "Equality." Participants were concerned that students needed to have equal learning experiences regardless if the course is offered asynchronously or synchronously. Also, many participants felt that educators needed to design and implement online educational materials that could reach a broad audience regardless of the students' online learning literacy or skill set. The fourth, and final, theme that emerged was Quality (Lack of). This theme reflected the frustrations of educators during a rapid transition from teaching face-to-face to an online environment due to Covid-19.

We conclude that online faculty satisfaction is multifactorial, and it needs to be a key component in determining and/or improving overall quality of online programming. This is supported by the original researchers of the online faculty satisfaction survey, stating "online teaching has become an expectation and an element of instructors' regular teaching loads at many colleges and universities, we [therefore] should be concerned about faculty burnout (Bolliger & Wasilik, 2009, p. 114). Furthermore, according to Stickney et al., (2019) "faculty attitudes can have a significant impact on the outcomes of online initiatives and programs" (p. 513).

Factors noted in both qualitative and quantitative data sets that negatively impact overall faculty satisfaction include technology difficulties, lack of access to resources, limited knowledge/ training in instructional design, lack of course organization, limited faculty-student interactions, and limited communication/correspondence with students. These findings are supported by current research, noting the importance of robust faculty resources, more efficient technology/infrastructures, and training (e.g., online instructional design strategies) to support the diverse needs of online education (Shreaves et al., 2020; Perry& Steck, 2019; Stickney et al., 2019). Also, supported by the literature, class size can negatively impact faculty satisfaction, especially during the beginning stages of course development/ implementation and for courses that are writing-intensive (Taft et al., 2019).

Factors that positively impacted faculty satisfaction were flexibility of the online format, ability to reach more students, and increased creativity to find meaningful teaching resources in the online environment. Our findings are comparable to other researchers who found general faculty satisfaction was enhanced "if teaching online allows for flexibility in their schedules, and if they had the appropriate training" (Stickley et al., 2019, p. 509) to teach online. Also, the ability to reach more students was reported as a positive factor in Wasilik and Bolliger (2009) original study. Finally, the literature also supports our findings that faculty satisfaction is positively influenced by student engagement and the development of active learning strategies (Perry & Steck, 2019).

LIMITATIONS

As with most non-experimental research designs, this study had the following limitations for the reader to consider: the use of self-reported survey data, incomplete data sets, low response rates, and responses were restricted to one geographical region. As a result, the ability to generalize the findings of this study will be limited. While the findings of the study contribute to our understanding of faculty satisfaction within the online learning environment, future research should include a broader, more diverse, sample of participants to capture the complexity of online teaching satisfaction across institutional size and different learning management platforms.

CONCLUSIONS

To conclude this study, we will focus on implications for practice as it relates to faculty satisfaction, and the importance of quality in online instruction/design, within the context of significant change (e.g., COVID-19). As we move into the future of online learning and higher education, we are at a pivotal moment in determining gaps and future directions for online education. First, "faculty that are satisfied in online education find the online teaching experience personally rewarding and professionally beneficial, and faculty members represent a critical success factor in university online education" (Stickney et al., 2019, p. 512). This speaks to the importance of finding online faculty that are passionate about this type of delivery method. Also, administrators must keep in mind that a passion for online teaching can be grown and cultivated through a variety of actions that lessen the burdens and stressors associated with online teaching. From our study and literature review, we suggest the following guidelines to foster best practices in online education:

(1) Implement an online institutional best practice manual to ensure standardization of online courses across disciplines.
(2) Identify and strengthen campus virtual resources for faculty and students.
(3) Utilize faculty development resources for active learning strategies for facilitating online learning.
(4) Acknowledge online faculty workload, training, and hiring of FT online faculty.
(5) Develop a quality checklist for online teaching readiness (instructor version).
(6) Develop online learning and online teaching orientation sessions.
(7) Create classroom management ideas for online classes.
(8) Implement new course designs or find creative resources to improve engagement and retention online.

In closing, although our results were influenced by a global pandemic, mixed emotions are common in online learning especially during the development and the early implementation phases of a new course and/or new online program. Administrative support is essential in the success and satisfaction of online faculty. The results presented here should be used to help examine internal institutional factors associated with online teaching satisfaction. Overall, institutions need to follow an evidence-based framework for assessing and evaluating these factors, including those items specific to quality online education.

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EXPLORING THE PERSPECTIVES OF POSTGRADUATE FACULTIES OF TUMKUR UNIVERSITY ON THE USE OF WEB 2.0 TOOLS FOR TEACHING AND RESEARCH

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ABSTRACT
The study explores the perspectives on the employ of Web 2.0 tools for teaching and research by the postgraduate faculties of the Tumkur University, Karnataka. Structured questionnaires were used to collect data from 62 faculties. The findings revealed that Facebook was the most liked SNS among the faculties which they used for sharing information and participating in discussions. Wikipedia was the most used social networking site for teaching and research. The use of web 2.0 has helped the faculties to improve the visibility of their scientific output and fetch citations to their work. Lack of support from the university was the main hurdle cited by the faculties to integrate web 2.0 tools. The findings of the study provide a useful idea to the faculties to make use of web 2.0 tools for educational purposes.
Keywords: Teaching, Research, Web 2.0, social media, Tumkur University, Karnataka.

INTRODUCTION

Web 2.0 is considered the second stage in the growth of the internet which is comprised of different websites and applications that help a user to easily and quickly create and share the content online usually free of cost (Ehlers & Kai, 2013). Create, collaborate, share and communicate are the iconic combo of web 2.0 tools (Rohilla, 2017). Social media is one of the features of Web 2.0 which emerged first as a medium of interaction and later transformed how the information is passed across the world (Zolkepli & Kamarulzaman, 2015). Social platforms have simplified the effort of information gathering and knowledge sharing by making each user a content generator rather than a passive consumer (Vivakaran & Neelamalar, 2018). Social media have penetrated almost all the significant domains including academia which offered collaborative learning and teaching experience to the cohorts (Boateng & Amankwaa, 2016). Owing to the increased usage of social media among the students, especially for educational purposes, faculties have started to integrate social media into their teaching pedagogically (Jacquemin et al., 2014). The previous studies revealed that the use of social media has benefitted both the faculties and students educationally, behaviorally, socially and mentally (Boateng & Amankwaa, 2016; Jacquemin et al., 2014). Many higher educational institutions insist their faculties integrate social media for academic activities (Vivakaran & Neelamalar, 2018) and this study is carried out to know the status of Tumkur University faculties and their perspectives on social media/web 2.0 tools for learning, teaching and research.

OBJECTIVES OF THE STUDY

- To know the preferences of use of web 2.0 tools for teaching and research by the faculties.
- To understand the adoption of Web 2.0 tools by the faculties for teaching and research.
- To find out the purposes of using Web 2.0 applications by the faculties.
- To know the benefits and barriers to using Web 2.0 tools for teaching and research among the faculties.

REVIEW OF LITERATURE

Social media have been penetrated almost all the fields and researchers are keen on exploring the different perspectives like its history (Jose Van, 2013; Leonardi, Huysman, & Steinfield, 2013), awareness & use (Strandberg, 2013; Gupta, Gautam, & Khare, 2014; Yin et al., 2015), adoption (Curtis et al., 2010; Hong, 2012), applications (Ngai, Moon, Lam, Chin, & Tao, 2015; Wu et al., 2014), impact (Bhuiyan, 2011; Al-rahmi, Zeki, Alias, & Saged, 2017), security issues (Gayathri, Thomas, & Jayasudha, 2012; Gritzalis, Kandias, Stavrou, & Mitrou, 2014) and so on. Umpteen studies have been taken with regards to social media use by different categories of users at the national and international levels. Even though, here we have embarked only on the use of social media or web 2.0 tools by the faculties for educational purposes.

Mansour (2015) investigated the use of SNS's by the LIS faculties of the Public Authority for Applied Education and Training, Kuwait and perceived those 21 members of the 33 total faculties were using SNS's of which most

of the tent be male. YouTube, Twitter, and Facebook were the most used SNS's among the respondents which they used mainly for making communication with peers & students, sending& receiving messages and finding information. The study findings of Moran, Seaman, & Tinti-Kane (2011) also reported the same results that U.S faculties of higher education were hooked more on Facebook, YouTube and Twitter. The study reported a notable difference in the use of SNS's by the faculties and their area of teaching.

Jacquemin et al. (2014) carried out a similar kind of study to assess the faculties and students' use & perception of Twitter for higher education. The investigator carried out a case study by adding Twitter to the syllabus for sharing course information, and contents and for discussion. The study found that students used Twitter more frequently compared to faculties which corresponds to the study of Kitsis et al. (2016). Twitter was found as an effective tool for augmenting content in the classroom. Even though, it was perceived as an obtuse tool for formal discussion interaction. Another study conducted by Cain, Scott, Tiemeier, Akers, & Metzger (2013) among the pharmacy faculties at five pharmacy colleges in the United States showed that faculties were not interested to befriend their students during the course time through social media and they accepted friend requests only after the students left out from the institutions. Esteve Del Valle, Gruzd, Haythornthwaite, Paulin, & Gilbert (2017) assessed the faculty's motivation and involvement in social media for educational practices. The study deployed the UTAUT model to analyze the current and upcoming use of social media among the faculties of selected institutions from selected countries. The result from surveying 333 respondents showed that all were early adopters of social media for personal and professional uses. 91% of the participants were hooked onto various SNS's followed by the multimedia repository (85.28%) and document sharing (84.38%). The study also revealed that the future adoption of some social media like microblogging and presentation sharing would be very high as compared to other media like SNS's.Vivakaran & Neelamalar (2018) explored how the faculties of higher education in Tamil Nadu utilized social platforms for academic purposes. The surveys conducted among 60 faculties of selected colleges in 5 districts showed that most of them (78.7%) were active social media users. Corresponding to the later studies, this study also reported that Facebook and WhatsApp were the favorite social media platforms. Forums and discussions boards were found underutilized, and nearly half of the respondents (44.3%) were not aware of the academic blogs. The main target to use social media among the cohort was collecting information, notes, and content for preparing lectures. Lack of infrastructural facilities inside the classroom (47.6%) and restricted access to social media applications within the college campus (44.4%) were cited as the major hurdles faced by the faculties in implementing social media for academic purposes.

 After scanning the literature, it is found that there was an absence of research on the adoption of social media or web 2.0 tools among the faculties, especially in the state of Karnataka. So, we deemed to conduct the present study which would assess the perspectives of faculties on the use of social media for educational purposes.

METHODOLOGY
The study employed a survey method to assess the use of Web 2.0 tools by the faculty members of the PG department of Tumkur University. A structured survey questionnaire was administered to collect data from 80 faculty members of the university including professors, associate professors, assistant professors, and guest faculty. The questionnaire consisted of dichotomous and opinion questions to assess the preference, opinion, and purposes of using Web 2.0 tools, especially for education, teaching and research. The questionnaire was administered both in offline and online mode. The investigator visited each department in person and handed over the questionnaire and got it filled and returned it. The missing faculties were traced on the faculty profile on the university website (http://www.tumkuruniversity.ac.in/index.php?/post_graduate_dept) and collected the email id. They had been sent an online Google Form with a formal request to participate in the survey. Data were collected during the period from August 2021 to December 2021. A total of 62 faculties participated in the survey both offline and online. The responses thus collected were analyzed by using software packages like Excel and IBM-SPSS. The major findings of the study are presented in the following section.

ANALYSIS AND INTERPRETATION
Demographics of the respondents

As of the year 2019-2020, over 80 faculty members were working in fifteen PG departments of Tumkur University. Of the 80 questionnaires administered, 62 filled in questionnaires were returned with a response rate of 77.5% including 40 (64.5%) males and 22(35.5%) females. The study had been covered all the levels of the designation of faculties including Guest faculties (3.22%), Assistant professors (72.60%), Associate professors (22.58%) and Professors (1.61%). Moreover, the educational qualifications of the participants were found different i.e. 59.70% of the participants were PhD holders followed by 32.25 with a master's degree. 2 participants had a post-Doctorate degree to their credit.

Table:-1 Demographic details of the respondents

Response	Male	Female	Total
Gender	40(64.5%)	22(35.5%)	62(100.00%)
Age			
25-34	11 (17.7%)	13 (21.0%)	24 (38.72%)
35-44	20 (32.3%)	6 (9.7%)	26(41.93%)
45+	9 (14.5%)	3 (4.8%)	12(19.35%)
Designation			
Guest Faculty	0 (0.0%)	2 (3.2%)	2(3.22)
Assistant Professor	28 (45.2%)	17 (27.4%)	45(72.60)
Associate Professor	11 (17.7%)	3 (4.8%)	14(22.58)
Professor	1 (1.6%)	0 (0.0%)	1(1.61)
Educational Qualifications			
Master Degree	10 (16.1%)	10 (16.1%)	20(32.25%)
M.Phil.	1 (1.6%)	2 (3.2%)	3(4.83%)
Doctorate	27 (43.5%)	10 (16.1%)	37(59.70%)
Post-Doctorate	2 (3.2%)	0 (0.0%)	2(3.22%)
Total	**40(64.5%)**	**22(35.5%)**	**62(100%)**

Use of Social media/Web 2.0 tools

An attempt was made to investigate the use of web 2.0 tools, especially social media among the faculties. They were asked whether they had accounts on selected social media platforms and found that 59.70% of the total participants had an account on Facebook followed by 12.90% on both Blogs and YouTube (Figure.1). According to the respondents, Wikipedia was the most preferred social networking site (51.60%) to spend time followed by YouTube (27.40%) and Facebook (16.10%) (Figure-2. The former was the most preferred one by the respondents for academic purposes and teaching (Figure-3). The use of SlideShare and YouTube was also found good among the faculties. It is also clear that no respondent preferred to spend time on Blogs on which academic and teaching activities took place meagre (1.60%). The picture is much clear that the faculties' preferences and use of web 2.0 tools were different. Less preferred tools were used effectively like Facebook and Blogs for research and teaching by the faculties.
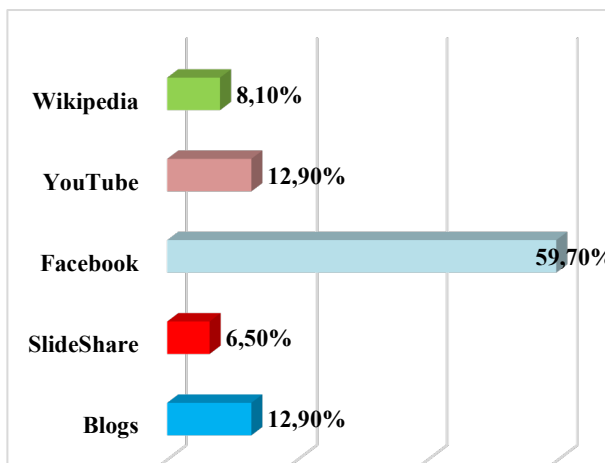
Figure:- 1 Account in social media platforms
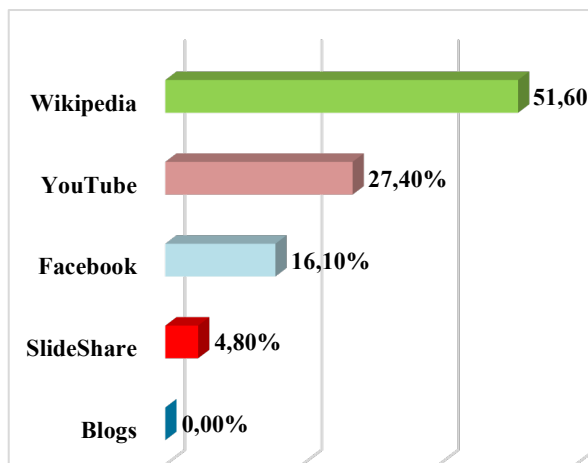
Figure:-2 Preference of spending time on social media for education,teaching and research
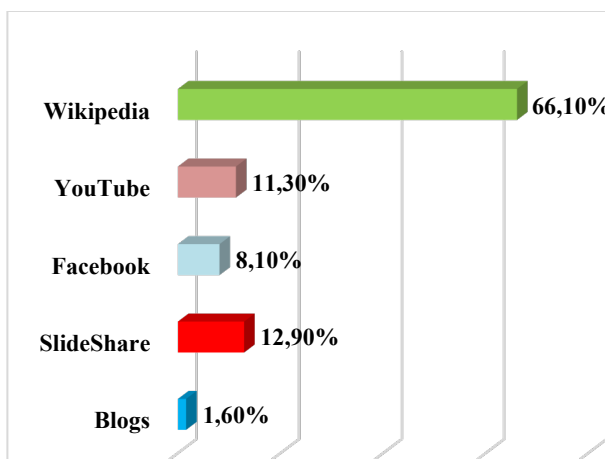
Figure:-3 Prefernce of use of social media for education,teaching and research
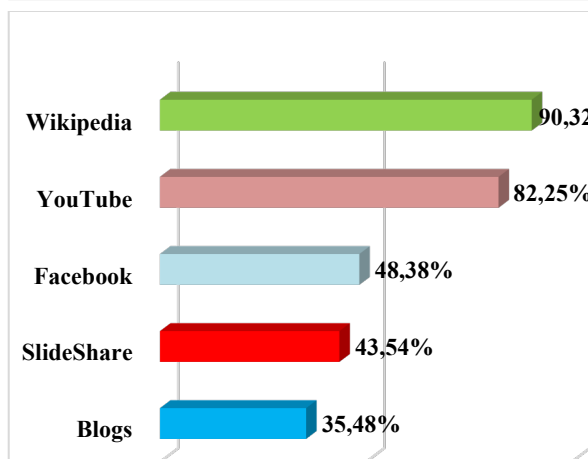
Figure:-4 Use of social media tools for education,teaching and research

Period of using social media

When we sought information regarding the period since they hooked into each social media site, we found that half of the respondents (50%) hooked into Wikipedia for 5-10 years. 56.50% of the respondents were using YouTube for 3-4 years. Facebook had been used by 11.30% of the participants 6 years ago. Blogs must be new to the faculty as the majority of them were blogging for 1-2 years only.
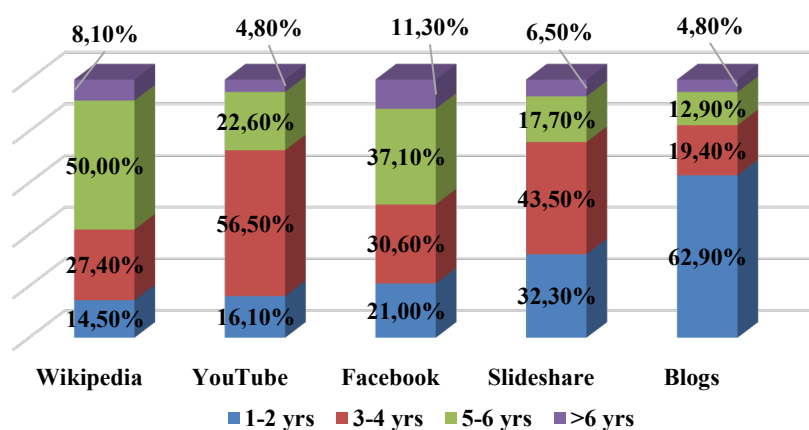
Figure:-5 Period of using social media

Purpose of using Web 2.0 tools

An attempt was made to understand the major purposes of using the Web 2.0 tool among the faculties. As shown in Table 2, it is revealed that Facebook was the favorite tool for instant chatting(79%), sharing information(71%), participating discussion(53.2%), sharing photos(72.6%), sharing seminar/conference information(53.2%) sharing videos and pictures(61.6%). 59.7% of assistant professors and 14.5% of associate professors are hooked on Facebook for chatting with their peers. It was also found that SlideShare was not preferred for chatting. 71% of the faculties had connected with new friends through Facebook. 14.5% of assistants and 9.7% of associate professors used blogs for meeting new people. Blogs also found the use of participating in discussions (41.9%). It is very clear from the table that Wikipedia was the main source of information for the faculty. 69.3% of the total participants depended on Wikipedia for finding new information followed by 21% of respondents on YouTube. The second one stood as the most entertaining platform among the majority (88.7%) of the participants.

Table:-2 Purpose of using Social media/Web 2.0 tools

Purpose	Designation	Wikipedia	You Tube	Facebook	Slide Share	Blogs	Total
Instant Message (Chat)	Professor	-	-	1 (1.6%)	-	-	**1 (1.6%)**
	Associate Professor	-	1 (1.6%)	9 (14.5%)	-	4 (6.5%)	**14 (22.6%)**
	Assistant Professor	2 (3.2%)	1 (1.6%)	37 (59.7%)	-	5 (8.1%)	**45 (72.6%)**
	Guest Faculty	-	-	2 (3.2%)	-	-	**2 (3.2%)**
Total		**2 (3.2%)**	**2 (3.2%)**	**49 (79.0%)**		**9 (14.5%)**	**62 (100%)**
Meet New People	Professor	-	-	1 (1.6%)	-	-	**1 (1.6%)**
	Associate Professor	-	-	7 (11.3%)	1 (1.6%)	6 (9.7%)	**14 (22.6%)**
	Assistant Professor	1 (1.6%)	1 (1.6%)	34 (59.7%)	-	9 (14.5%)	**45 (72.6%)**
	Guest Faculty	-	-	2 (3.2%)	-	-	**2 (3.2%)**
Total		**1 (1.6%)**	**1 (1.6%)**	**44 (71.0%)**	**1 (1.6%)**	**15 (24.2%)**	**62 (100%)**
Find Information	Professor	1 (1.6%)	-	-	-	-	**1 (1.6%)**
	Associate Professor	10 (16.1%)	4 (6.5%)	-	-	-	**14 (22.6%)**
	Assistant Professor	31 (50.0%)	9 (14.5%)	3 (4.8%)	1 (1.6%)	1 (1.6%)	**45 (72.6%)**
	Guest Faculty	1 (1.6%)	-	-	1 (1.6%)	-	**2 (3.2%)**
Total		**43 (69.3%)**	**13 (21.0%)**	**3 (4.8%)**	**2 (3.2%)**	**1 (1.6%)**	**62 (100%)**
Sharing Information	Professor	-	-	1 (1.6%)	-	-	**1 (1.6%)**
	Associate Professor	-	2 (3.2%)	8 (12.9%)	2 (3.2%)	2 (3.2%)	**14 (22.6%)**
	Assistant Professor	1 (1.6%)	-	33 (53.2%)	-	11 (17.7%)	**45 (72.6%)**
	Guest Faculty	-	-	2 (3.2%)	-	-	**2 (3.2%)**
Total		**1 (1.6%)**	**2 (3.2%)**	**44 (71.0%)**	**2 (3.2%)**	**13 (21.0%)**	**62 (100.0%)**
Participating In Discussion	Professor	-	-	1 (1.6%)	-	-	**1 (1.6%)**
	Associate Professor	-	-	4 (6.5%)	1 (1.6%)	9 (14.5%)	**14 (22.6%)**

	Assistant Professor	-	1 (1.6%)	26 (41.9%)	1 (1.6%)	17 (27.4%)	**45 (72.6%)**
	Guest Faculty	-	-	2 (3.2%)	-	-	**2 (3.2%)**
Total		**-**	**1 (1.6%)**	**33 (53.2%)**	**2 (3.2%)**	**26 (41.9%)**	**62 (100.0%)**
Sharing Seminar/ Conferences Information	Professor	-	-	1 (1.6%)	-	-	**1 (1.6%)**
	Associate Professor	-	-	5 (8.1%)	1 (1.6%)	8 (12.9%)	**14 (22.6%)**
	Assistant Professor	-	-	26 (41.9%)	3 (4.8%)	16 (25.8%)	**45 (72.6%)**
	Guest Faculty	1 (1.6%)	-	1 (1.6%)	-	-	**2 (3.2%)**
Total		**1 (1.6%)**	**-**	**33 (53.2%)**	**4 (6.5%)**		**62 (100.0%)**
Sharing Photos and other Resources	Professor	-	-	1 (1.6%)	-	-	**1 (1.6%)**
	Associate Professor	-	-	9 (14.5%)	-	5 (8.1%)	**14 (22.6%)**
	Assistant Professor	-	-	34 (54.8%)	-	11 (17.7%)	**45 (72.6%)**
	Guest Faculty	-	-	1 (1.6%)	-	1 (1.6%)	**2 (3.2%)**
Total		**-**	**-**	**45 (72.6%)**		**17 (27.4%)**	**62 (100.0%)**
Entertainment	Professor	-	1 (1.6%)	-	-	-	**1 (1.6%)**
	Associate Professor	-	13 (21.0%)	1 (1.6%)	-	-	**14 (22.6%)**
	Assistant Professor	-	41 (66.1%)	4 (6.5%)	-	-	**45 (72.6%)**
	Guest Faculty	1 (1.6%)	-	1 (1.6%)	-	-	**2 (3.2%)**
Ttotal		**1 (1.6%)**	**55 (88.7%)**	**6 (9.7%)**	**-**	**-**	**62 (100.0%)**
Sharing Video & Pictures	Professor	-	-	1 (1.6%)	-	-	**1 (1.6%)**
	Associate Professor	-	-	11 (17.7%)	-	3 (4.8%)	**14 (22.6%)**
	Assistant Professor	-	3 (4.8%)	28 (45.2%)	1 (1.6%)	13 (21.0%)	**45 (72.6%)**
	Guest Faculty	-	1 (1.6%)	1 (1.6%)	-	-	**2 (3.2%)**
Total		**-**	**4 (6.5%)**	**41 (66.1%)**	**1 (1.6%)**	**16 (25.8%)**	**62 (100.0%)**

Benefits and barriers to using Web 2.0 tools for teaching and research

Web 2.0 applications can be effectively used in teaching and research. Al-Daihani, Al-Qallaf, & AlSaheeb (2018) in their research identified major benefits and barriers to using the web 2.0 applications for educational purposes which have been refurbished in this study. According to Figure 6, the main benefit according to the participants was making and maintaining the relationship with others (72.58%), followed by getting and sharing relevant information with the peers and students (67.74%). The use of web 2.0 has helped the faculties to improve the visibility of their scientific output and thereby fetching citations to their work. When assessing the major barriers to using Web 2.0 tools for academic purposes, we found that lack of support from the university (79.03%) was the main hurdle cited by the faculties followed by lack of training (77.41%). Lack of time was also a major barrier to 72.58% of the faculties for integrating social media tools for academic purposes. More than half of the participants (56.45%) cited a lack of digital literacy as a barrier.
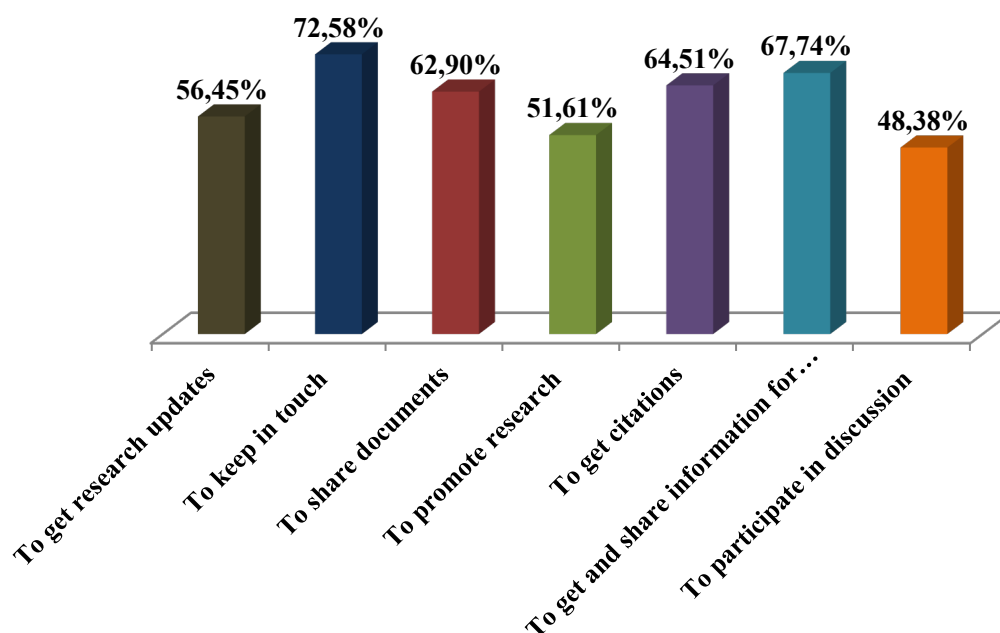
Figure:- 6 Benefits of using Web 2.0 tools for teaching and research
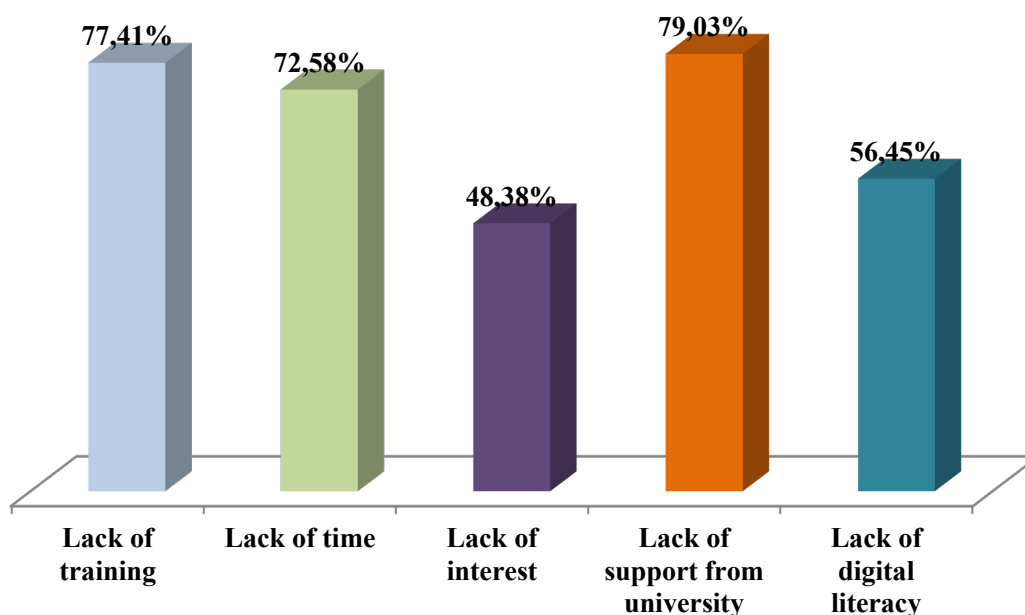
Figure:- 7 Barriers in using Web 2.0 tools for teaching and research

Overall Opinion on Web 2.0 tools

When we sought the overall opinion of respondents about Web 2.0 tools, we found that more than half of the participants (53.2%) preferred Wikipedia for teaching and only a few (1.65) preferred it for faculty work. YouTube would prefer by more than half (56.5%) of the participants for teaching but not for other faculty work. It is also clear that a good number of respondents were not interested to use Facebook (40.3%), SlideShare (27.4%) and Blogs (40.3%) for teaching and other academic & non-academic work even though the activities on these platforms were active (See Table 2).

Table:3 Overall Opinion on Web 2.0 tools for teaching and research

Web 2.0 tools	Use for teaching	Use for faculty work	Use for both	Not use them	Can't answer
Wikipedia	33 (53.2%)	1 (1.6%)	25 (40.3%)	2 (3.2%)	1 (1.6%)
YouTube	35 (56.5%)	5 (8.1%)	18 (29.0%)	3 (4.8%)	1 (1.6%)
Facebook	4 (6.5%)	12 (19.4%)	5 (8.1%)	25 (40.3%)	16 (25.8%)
SlideShare	29 (46.8%)	2 (3.2%)	6 (9.7%)	17 (27.4%)	8 (12.9%)
Blogs	7 (11.3%)	8 (12.9%)	6 (9.7%)	25 (40.3%)	16 (25.8%)

FINDINGS AND DISCUSSION

The current study examined the enactment of web 2.0 tools for academic purposes by the faculties of Tumkur University. The study revealed that the majority of the faculties is preferred to have accounts only on popular social media sites like Facebook and YouTube. A similar kind of study conducted by Ashraf & Mohamed Haneefa (2016) among the research scholars of the University of Calicut brought the same finding that the majority of the scholars were hooked on popular social media sites rather than those which were exclusively meant for academic purposes.

Concerning the preference for spending time for academic purposes, the study found that Wikipedia and YouTube are the most preferred ones. This finding corresponds to the study finding of Vivakaran & Neelamalar (2018). They also noted the wide use of Wikipedia and YouTube as a learning and teaching platform among the higher education faculties of selected colleges in Tamil Nadu. The preference and actual use of web 2.0 tools for academic purposes found a difference or mismatch. Even though the faculties are not preferred some tools like Facebook and Blogs for teaching and learning purposes, the actual deployment of the same is found good.

The period of using the tools revealed that except for blogs, the rests of them are familiar to faculties for more than 2 years. The main purposes of using social media tools also depend upon the nature of the work they wanted to do and the features of the tools. Facebook found a lot of applications among the faculties as it is been a major platform for personal and professional communication and tasks which has been reported in other studies also such as Mansour (2015), Hank, Sugimoto, Tsou, & Pomerantz (2014), Moran, Seaman, & Tinti-Kane (2011). Lack of institutional support is the major bottleneck for the faculties which barred them to use web 2.0 tools effectively for academic purposes. The same has been reported in other studies also (Vivakaran & Neelamalar, 2018 ; Manca & Ranieri, 2016). The overall opinion of the participants showed that many major social media can be effectively used for academic activities. Even though many platforms have their limitations, the attitude toward using the tools is high among the users as reported by Manca & Ranieri (2016).

CONCLUSION

In concluding remarks, it can be said that the use of web 2.0 tools has positively benefitted the faculties in their learning, teaching, and research activities. Furthermore, we would like to suggest the concerned authority address the major obstacles faced by the faculties, especially by offering institutional support and training to the needy faculties to make the best use of tools for their academic activities. It is also noted the underuse of Facebook and blogs for academic activities among the faculties. So, a separate study can be conducted to explore the potential and obstacles of these platforms for teaching in higher education in the university. An extended study can also be conducted among the faculties to explore the awareness and use of academic social networking sites for learning, teaching, and research activities.

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INTENTION OF STUDENTS TOWARDS TECH-ORIENTED TEACHING-LEARNING METHOD: A STUDY OF UNDERGRADUATE AND POSTGRADUATE LEVEL

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ABSTRACT

This study aims to investigate the intention of students of higher education towards the adaptation of tech-oriented teaching-learning method. It also measures the intentional difference between post-graduate and under-graduate students regarding adaptation to the tech-oriented education system.

The investigation is based on 1826 responses collected through online survey. The extended form of Technology Acceptance Model is considered to investigate using Partial Least Square Structural Equation Modelling. The intentional difference is assessed by employing the multi-group analysis using the measurement invariance for composite approach.

The results reveal that perceived usefulness and perceived ease of use positively influence attitude that affects intention of students to the ICT-based education system. Moreover, ease of use and perceived usefulness also holds positive relationship with intention to use online education. Furthermore, results reveal that though social status and self-efficacy positively impact perceived usefulness and ease of use, economic status has an opposite influence. The study finds no significant difference between the post-graduate and under-graduate students towards adaptation of tech-oriented education system.

There is no previous evidence that makes a comparison between the undergraduate and postgraduate regarding their intention towards online education. The findings can help in designing appropriate policies for higher education.

Keywords: Technology Acceptance Model, Intention, Higher Education, Socio-cultural Status, Economic Status, Self-efficacy

INTRODUCTION

The impact of technological advancement is keenly felt in education as evident from expansion of e-learning programmes. Hence, the wide use of computer-based technologies for delivering instructions to the students is in practice for some years now (Ong & Lai, 2006) which is considered to be an effective tool for imparting knowledge, information and encouraging participation (Azlan et al., 2020). This form of learning, known as e-learning (also called online education) depends on technology and internet and is primarily web-based (Moore et al., 2011) and ICT-based (Jenkins & Hanson, 2003) which aims to promote access and enhance the quality of education through collaborative learning.

Though the e-learning market has been surging ahead the growth varies widely across economies. There are economies that are yet to develop sufficient ICT infrastructure which can help education reach all at a low cost. Thus, the readiness for online education is different in countries. However, the occurrence of the pandemic made technology-based education inevitable. Consequently, all levels of education got affected starting from the primary to the tertiary level. When social distancing was necessity, online education was the only solution to

avoid disruption in education about which people opined negatively (Huang et al., 2020). Since, education is vital in the life of students, the main focus was to maintain its continuity. In such circumstance, the only way was to resort to online education to combat the rate of disease spread. The governments across the globe directed the closure of academic institutions and suspension of academic activities which affected more than 1.9 billion learner across 188 countries (UNESCO's support: Educational response to COVID-19). The implementation of remote learning was even more vital for a populous country like India with insufficient health infrastructure. Almost all academic institutions, therefore, transitioned to remote learning which was entirely based on ICT support (Aguilera-Hermida, 2020). In India, due to the lack of highly developed ICT infrastructure and widely heterogeneous population mix, there were key issues that cropped up which included accessibility, cost, suitable environment etc. The issue of digital divide came to the forefront (Eltahir, 2019) which is in addition to the problems of network connectivity and poor technical knowledge (Aung & Khaing, 2015; Mulhanga & Lima, 2017), poor self-efficacy (Kanwal & Rehman, 2017; Tarus et al. 2015), political and cultural factors (Kenan et al., 2013) and technological issues (Al-Araibi et al., 2019). No matter what, the system came as a blessing in disguise as the wheels of education continued to move.

In almost every country, teachers and administrators were motivated to use applications that supported communication with students and parents and helped to conduct live lessons or send recorded materials. Several online meeting apps gained popularity to meet the demand for online education. Thus, countries scaled up their existing distance education modalities (Chan, 2020). The policy-makers did not give heed to whether it would really help as the issues of access, technical knowledge, infrastructure support, cultural and socio-economic background took centre-stage. Though, it is true that a substantial percentage is benefitting from the system, there is also a huge percentage who find this to be a burden. Inequity in access to devices that support ICT is a major concern, as students from economically weak backgrounds often have limited access to such tools. Also, lack of basic infrastructure like electricity and low internet connectivity are additional hindrances. Hence, with mixed experience for the past few years, studies have been done to identify the better mode of education, traditional or online (Yen et al., 2018; Lockman & Schirmer, 2020). The accomplishment of results through an e-learning system is dependent on the level of its acceptance by the students; reluctance to use it fails to generate benefits (Almaiah & Al-Khasawneh, 2020).

This research, therefore, aims to find the key influencers in the technology adoption process and to identify the difference, if any, between the under-graduate and post-graduate students in respect of adoption of online education. The researchers, therefore, capture the motivators that that drive attitude and behavioral intention among these students.

1. REVIEW OF LITERATURE, THEORETICAL FRAMEWORK AND HYPOTHESES FORMULATION

The growing popularity of e-learning does not necessarily mean that all's well with the system. Hence, its acceptance by the stakeholders is very important which will determine its success (Almaiah, 2018). Thus, the present investigation delves into the issues that affect attitude and intention to use online education. There are numerous foreign studies that have looked into the issue. Salloum et al. (2019) in a UAE-based study establish the relevance of innovation, qualitative issue, trust and sharing of knowledge. Al-Gahtani (2016) in the research using TAM find the role of perceived usefulness, self-efficacy, subjective norms and the possibility of external control. Subjective norms and experience are also identified as significant factors (Abdullah & Ward, 2016). The importance of technical knowledge of both teachers and students and ICT infrastructure is highlighted by Alhabeeb and Rowley (2017). Prior exposure to ICT-based education is also recognized to be an important factor (Sukendro et al., 2020).

The researchers in this empirical work consider the extended form of the Technology Acceptance Model which was pioneered by Davis (1989). The model is very popularly used by researchers while investigating the factors that affect technology adoption (Unal & Uzun, 2021; Zhong, et al., 2021). It has two constructs namely perceived usefulness and perceived ease of use (Hsu & Lin 2022). The former pertains to the notion about superior results arising from the application of technology which needs to be strengthened (Yee et al., 2009). On the contrary, the latter is the ease with which technology can be learnt and applied. Therefore, if it can be learnt easily, its acceptance will be more (Alrafi, 2009). The extant of literatures show the significant impact of

perceived usefulness (PU) and perceived ease of use (EoU) on attitude which in turn impacts behavioral intention (BI). BI is the extent to which an individual designs plans about using the new system one faces (Clement & Bush, 2011). As per the original TAM, the actual use of online education is decided by perceived usefulness, perceived ease of use, attitude and behavioral intention (Kartal, et al., 2022). However, with time, researchers have incorporated modifications in the original TAM by including new constructs.

The present research is carried out in two steps. The first step identifies the important factors relating to behavioural intention to use tech-oriented education system. The second step tests the intentional differences between post graduate and under graduate students, if any, towards tech-oriented education system. As per the proposed framework, the two constructs used by Davis (1989) are considered. Three more constructs are introduced in the model which includes socio-cultural state, economic status and self-efficacy. The relationships are detailed hereunder.

1.1 Influence on perceived usefulness

The term PU refers to the perception about the extent of benefits that will arise with the application of new technology. It is expected that socio-cultural status has an effect on technology acceptance. The behavior of society, peers, family members and societal norms has an influence on the notion about benefits from the new system. There are numerous evidences that support the significant role of referent groups (Park, 2009). In similar terms, the importance of culture in learning is also highlighted in social constructivism in education (Kinasevych, 2010). Similarly, the relevance of culture on learning and adoption of technology is observed by Joy and Kolb (2009) relating to success of information systems.

The economic status in similar terms influences perceived usefulness. It can be strongly argued that with a good financial standing, it is possible to have the necessary infrastructure that is required for engaging in online education which will in turn helps to understand the potential benefits of that system which has been supported in the discussion by Nawi et al. (2022). Non-availability of infrastructure at home with lack of support from the members in the surrounding also demotivates students (Farooq et al. 2020). Similarly, there is an idea that self-efficacy affects perceived usefulness.

1.2 Influence on perceived ease of use

The term 'perceived ease of use' is related to the conception of the effort required to learn and use new technology. It is expected that the nature of environment including people and cultural mix will influence easiness of use. It can be argued that an environment with supporting and knowledgeable members helps in easy understanding of new technology. Similarly, with a strong financial back-up, it is expectedly easier to learn about tech-related developments. Moreover, self-efficacy is believed to have positive impact on perceived ease of use not only because of better technical knowledge but also self-motivation to learn new things for gathering knowledge and self-improvement.

1.3 Effect on attitude and behavioral intention

This aspect takes cue from the original model in which it was conceptualized that both perceived usefulness and perceived ease of use affected attitude which in turn was expected to significantly influence behavioral intention. There are research contributions that have tested the validity of the relationship between perceived usefulness and perceived ease of use and attitude or behavioral intention (Kim et al., 2009).

Apart from the above mentioned hypotheses, the investigators decipher whether there is any difference between the students of the post-graduate and under-graduate courses by testing the following hypotheses:

H_1: BI towards tech-oriented education is significantly different.
H_2: Attitude towards tech-oriented education is significantly.
H_3: Perceived usefulness towards tech-oriented education is significantly different.
H_4: Perceived ease of use towards tech-oriented education is significantly different.

The proposed model is given below.
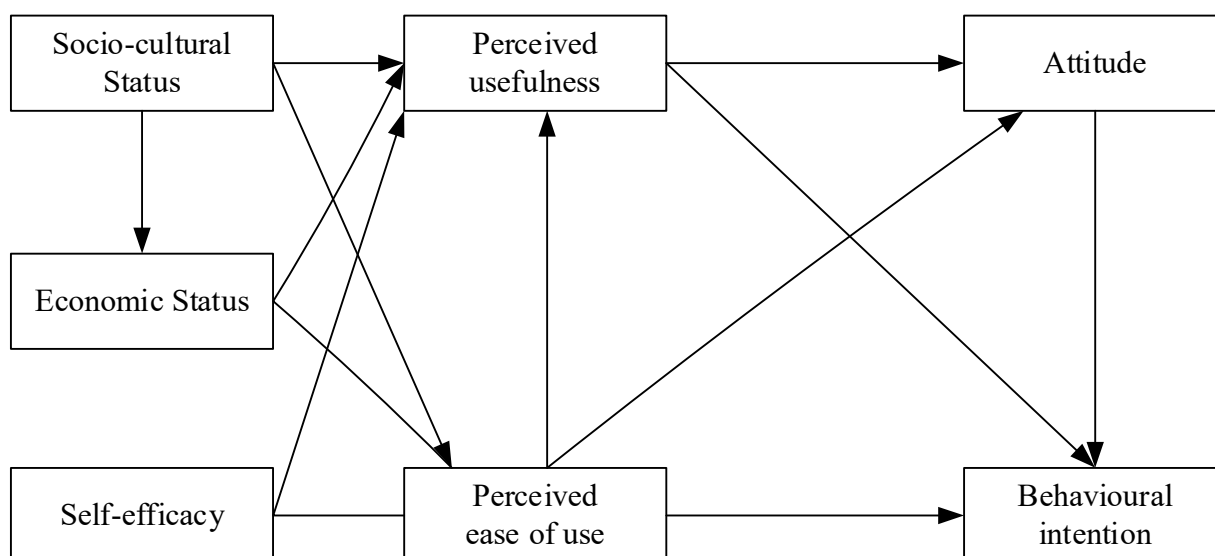
Figure-1 Theoretical Framework

2. METHODOLOGY

The basis of the investigation is a sample of 1826 students of higher education from the state of West Bengal (India). Due to Covid-19 restrictions, online survey method is employed in which questionnaire is distributed using google form link among the undergraduate and postgraduate students with the assistance from their teachers. The data is collected from 22nd April, 2021 to 10th June, 2021. The research instrument for this exploratory study is well-structured questionnaire for investigating students' attitude towards technology and intention towards online education. The extreme values (outliers) have been identified with the help of Z-score values for univariate cases and by employing the Mahalanobis distance method for multivariate cases as recommended by Pallant (2011). By applying the procedure, five outliers are identified and therefore the final sample size stands at 1821. The demographic characteristics of the sample considered for the study is presented in table 1.

Table-1 Sample structure

Gender			Family Monthly Income		
Male	1079	0.59	Less than 15000	1278	0.70
Female	742	0.41	15001-30000	210	0.12
			30001-45000	141	0.08
Streams			45001-60000	125	0.07
Arts	779	0.43	Above 60000	69	0.04
Commerce	597	0.33			
Science	447	0.25	**Location**		
Level of Education			Urban	318	0.17
PU	472	0.26	Semi-Urban	284	0.16
UG	1351	0.74	Rural	1221	0.67

Source: Primary survey

3. MEASUREMENT SCALES

The measurement scales are adapted from extant literature. However, some items are modified by reformulating sentences in order to fit the present research. The latent variables, perceived usefulness and perceived ease of are taken from the priori studies of Davis (1989) and from the recent contribution by Bag et al. (2020) with slight modification. The scales of self-efficacy have been adopted from the prior studies of Lassar et al. (2005) and

Wang et al. (2003). The scale of attitudes toward technology is taken from the research contribution of Ghorai et al. (2021); Zhang et al. (2008). Finally, the scale of 'intention to use' is taken from the recent contribution of Al-Maroof and Al-Emran (2018). For putting the response against each item in the questionnaire, five-point Likert scale is applied.

4. RESULTS AND DISCUSSION

Initially, for determining the internal consistency of the outer model, reliability and validity are required to be tested as cited by Chin (2010). The results for reliability (measured using α) and composite reliability (denoted by CR) of the various latent variables are presented in Table-2. The value for alpha is found to be more than the threshold value of 0.70 which thereby meets the criterion for reliability (Islam & Bag, 2020). In order to check for convergent validity, the minimum value of 0.50 for average variance (AVE) as given by Fornell and Larcker's (1981) is given consideration. As evident from table-2, the AVE for the latent variables in all the cases viz. composite, PG and UG level exceeds 0.50. Moreover, values of Composite Reliability (CR), rho_A and Cronbach alpha exceed threshold levels. Thus, on the basis of the results for different criterion, the questionnaire is found to be reliable and valid.

Table 2: Reliability and convergent validity of measurement model

Constructs	Alpha α			rho_A			CR			AVE		
	Composite	PG	UG	Composite	PG	UG	Composite	PG	UG	Composite	PG	UG
ATT	0.861	0.856	0.863	0.870	0.865	0.872	0.900	0.897	0.901	0.644	0.635	0.647
BI	0.882	0.885	0.881	0.888	0.892	0.887	0.911	0.913	0.910	0.632	0.637	0.630
ES	0.704	0.708	0.713	0.707	0.701	0.715	0.835	0.824	0.840	0.629	0.610	0.636
EoU	0.792	0.779	0.797	0.794	0.784	0.799	0.865	0.858	0.868	0.616	0.602	0.622
PU	0.887	0.890	0.886	0.888	0.892	0.887	0.914	0.916	0.913	0.640	0.647	0.638
SE	0.813	0.823	0.810	0.833	0.857	0.826	0.877	0.881	0.875	0.641	0.651	0.637
SS	0.702	0.700	0.707	0.712	0.702	0.732	0.835	0.834	0.838	0.629	0.627	0.637

Source: Computed by researchers

For establishing discriminant validity, Heterotrait-Monotrait (HTMT) ratio is computed which should be less than 0.9 for each latent variable (Henseler et al., 2015; Bag et al., 2021). Table 3 which presents the results of HTMT ratio indicates that discriminant validity is acceptable not only for both post-graduate and under-graduate level students but also for the composite model.

Table-3 Results of Discriminant Validity

	Post-graduate level								Under-graduate level						
	ATT	BI	ES	EoU	PU	SE	SS		ATT	BI	ES	EoU	PU	SE	SS
ATT															
BI	0.812								0.876						
ES	0.106	0.062							0.068	0.086					
EoU	0.812	0.755	0.129						0.851	0.767	0.087				
PU	0.851	0.774	0.058	0.876					0.857	0.783	0.080	0.881			
SE	0.723	0.679	0.138	0.752	0.795				0.750	0.722	0.110	0.844	0.885		
SS	0.450	0.381	0.675	0.449	0.410	0.399			0.250	0.175	0.789	0.215	0.211	0.196	

Source: Calculation by researchers

Before conducting the multi group analysis to identify the difference in intention between post-graduate and under-graduate students, path analysis is done to determine the structural effects of constructs of the study. Figure-2 represents the result of path analysis where 'β' represents strength of the relationship. It is observed that socio-cultural status has a positive impact on both perceived usefulness ($\beta=0.59$, $p<0.05$) and ease of use ($\beta=0.59$, $p<0.156$). They in turn bring create positive attitude (mind-set) towards the intention to adapt tech-oriented education. Moreover, socio-cultural status also positively influences economic status of the students ($\beta=0.540$, $p<0.05$). It implies that students with sound socio-cultural status are economically better placed which is essential for maintaining qualitative learning in higher studies. On the other hand, the economic status of the students studying in higher educational institutions has a negative influence on ease of use ($\beta=-0.128$, $p<0.05$) and perceived usefulness ($\beta=-0.034$). Thus, when the economic condition is better, there is an encouraging effect on the level of usefulness and the use of this non-traditional form also appears to be simple. On the contrary, ease of use positively impacts perceived usefulness ($\beta=0.425$, $p<0.05$), attitude ($\beta=0.324$, $p<0.05$) and intention ($\beta=0.103$, $p<0.05$) towards the use of tech-oriented education system.

Figure-2: Result of path analysis of the proposed model
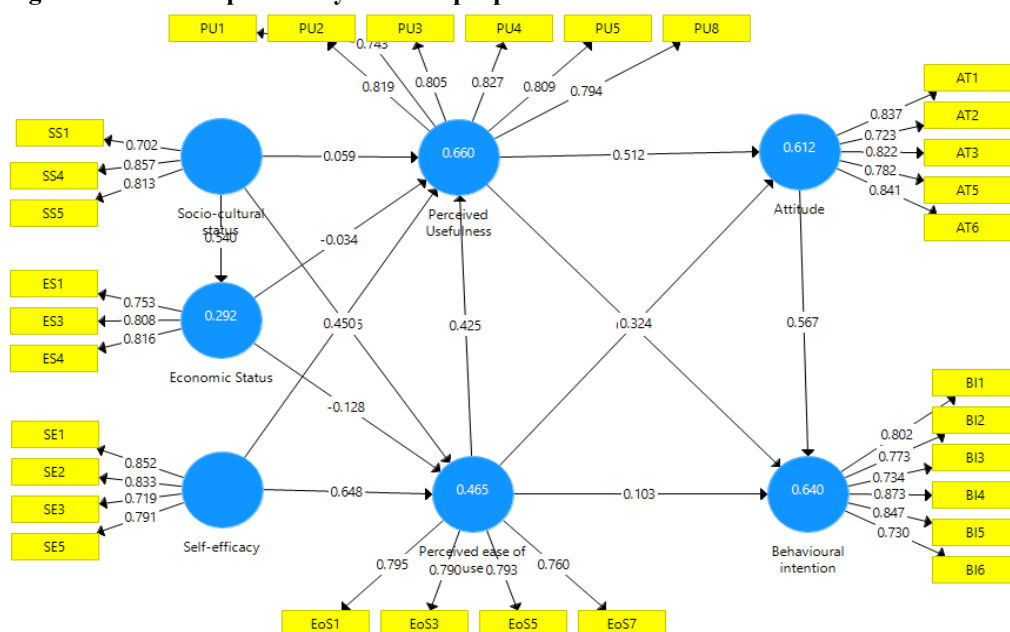
Source: Computation by researchers

The results match that of previous studies (Nasri et al., 2013; Amin, 2007). Similarly, perceived usefulness also positively influences attitude (β=0.512, p<0.05) and behavioural intention (β=0.189, p<0.05) of the students towards tech-oriented education system, which corroborates with the findings in Martinez-Lopez et al. (2020). Finally, the positive impact of attitude on the intention to adapt tech-oriented education (β=0.567, p<0.05) supports the result of Svenningsson, et al., (2021).

As mentioned earlier, the researchers also aim to test the difference between the under-graduate and post-graduate students. For the purpose, the measurement invariance is to be examined for the two groups which is an important criterion to conduct multi group analysis (Rasoolimanesh et al., 2020; Sarstedt et al., 2011). The researchers dealing with primary data analysis opine that measurement invariance for composite (MICOM) approach is ideal for PLS-SEM (Noor et al., 2019). The MICOM procedure has three stages which include measurement of configural and compositional invariances along with the assessment of equal means and variances (Rasoolimanesh et al., 2017). Moreover, partial measurement invariance is calculated to carry out multi-group analysis about which inference is drawn by establishing compositional and configural invariance. Table 4 that gives the findings using MICOM indicates agreement with partial measurement invariance. Hence, on that basis, group analysis can be applied for making a comparison between the path coefficients in the two models (for the two groups separately) and test the hypotheses set before.

Table-4 Results of invariance measurement testing

Constructs	Configural Invariance	Compositional invariance (Correlation = 1)		Partial measurement invariance	Equal mean assessment			Equal variance assessment			Full measurement Invariance established
		C=1	Confidence Interval (CIs)		Differences (PG-UG)	Confidence Interval (CIs)	Equal	Differences (PG – UG)	Confidence Interval (CIs)	Equal	
ATT	Yes	1.000	[0.999, 1.000]	Yes	-0.009	[-0.339, 0.322]	Yes	0.023	[-0.473, 0.429]	Yes	Yes
BI	Yes	1.000	[0.996, 1.000]	Yes	-0.029	[-0.330, 0.343]	No	0.075	[-0.457, 0.401]	Yes	Yes
EoU	Yes	1.000	[0.998, 1.000]	Yes	0.003	[-0.348, 0.338]	Yes	0.024	[-0.559, 0.581]	Yes	Yes
PU	Yes	1.000	[0.995, 1.000]	Yes	0.063	[-0.329, 0.350]	Yes	0.057	[-0.610, 0.572]	Yes	Yes
SE	Yes	0.999	[0.999, 1.000]	Yes	0.006	[-0.229, 0.250]		0.073	[-0.289, 0.354]	Yes	Yes

Source: Computed by researchers

5. ANALYSIS OF STRUCTURAL MODELS AND RESULT OF MULTI-GROUP ANALYSIS

Before performing the multi-group analysis to make a group-wise comparison between the effects of five dimensions of students' intentions towards use of online education system and test the proposed hypotheses, the structural equation model for both the groups is framed. To evaluate the structural model, it is necessary to assess the values of R^2 and test the Stone–Geisser criteria (Q^2) for technology-based education. Moreover, the significance of path coefficients for the different paths in the two cases is also to be studied (Ali et al., 2018). The analysis shows R^2 value of 0.670 for intention in the case of post-graduates and 0.631 for under-graduate students which refer to high scores (Rasoolimanesh et al., 2017). The result of Q^2 for post-graduate and under-graduate students as per the predictive model is 0.621 and 0.534 respectively which is positive and hence fulfils the criterion to be fulfilled for acceptance of a structural model (Ali et al., 2018). Moreover, significance of the path coefficient is determined using the confidence intervals based on bias-corrected measures. Table 4 clearly depicts that all the three constructs that are considered for the study have a positive as well as significant effect

on the students' intention to use tech-oriented education system which is applicable for both under-graduate and post-graduate students.

Table 5 represents the results of multi-group analysis and testing of proposed hypothesis. Two nonparametric approaches viz. Henseler's multi group analysis (MGA) and permutation approach (Chin & Dibbern, 2010) are employed to compare the behavioural intention of the students. With the application of these two methods, it is seen that there is no significant difference between the two categories.

Table-5 Results showing comparison between the two student categories

Hypothesis	Path	Path Coefficient		Diff. in path coefficient	Henseler's MGA	p-value	Remarks
		PG	UG				
H1	ATT -> BI	0.627	0.554	-0.083	0.705	0.133	No/No
H2	PU -> ATT	0.550	0.499	-0.051	0.802	0.391	No/No
H3	EoU ->ATT	0.269	0.344	0.075	0.596	0.232	No/No
H4	EoU -> PU	0.460	0.408	-0.052	0.589	0.369	No/No

Source: Calculation by researchers

6. CONCLUSIONS

The pandemic has created panic across the globe. The technology-driven online form is the need of the hour. In India, due to the sudden transformation from the traditional to this tech-oriented system, several issues cropped up. With such a background, the aim of the study is to find out the intention among the students in higher studies to use technology-driven education. The examination of the primary data shows that perceived usefulness and ease of use are two pertinent factors that influence attitude of the students significantly. Moreover, these two constructs also significantly impact behavioural intention of students positively. Hence, policy-makers, administrators and instructors need to highlight the easiness of using tech-oriented education and also motivate them to use the ICT-based education. The investigation further points that attitude significantly impacts the intention to use tech-oriented education. Hence, it becomes essential to create positive attitude in the mind of the students towards the non-traditional form of education system.

The study further establishes that social state and self-efficacy of students have significant influence on perceived usefulness and ease of using tech-oriented education. Thus, the higher education institutions should create sufficient scope to build students' efficacy for handling technology-related issues in their learning process. Besides, their socio-cultural development will also play a vital role in exploring the tech-oriented education system. However, the economic position of the students' family has negative influence on the perception about the perceived usefulness and ease of use. In addition, the investigation also addresses the intentional differences between post-graduate and under-graduate students which is seen to have no significant difference in respect of using the system. So, tech-oriented education system can be an effective mode of education system in higher education. But, the loopholes need to be plugged for making this education mode more successful and acceptable in the long-term.

7. LIMITATION AND SCOPE FOR FURTHER RESEARCH

Despite the fact that the researchers followed the necessary steps in arriving at the results and conclusions, the study is not free from limitations. Though, the paper considered important constructs in framing the extended technology acceptance model, some other important aspects could not be considered as it would make the model too complicated. The other constraint is that the test for difference is applied on the students of under-graduate and post-graduate levels. Other important bases like gender, location can be considered in the future efforts.

8. ACKNOWLEDGEMENT

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LEARNING INCLINATION, EXECUTIVES, AND ONLINE LEARNING

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ABSTRACT:
Computing technologies are creating new vistas for learners and educators. Online learning appears to be the most advantageous and efficient learning method. Various advantages such as reasonable pricing, the flexibility of course content and timings, the comfort of learning from home or office, and the value of accredited certification make online learning a preferred learning method, especially for executives. However, how the target audience (executives) perceives the urge for learning and learning preference is under question. We conducted this study to capture their learning inclination or an inner urge for learning and how these executives prefer learning through various modes and upskill themselves.
A quantitative approach was adopted to study learning inclination. The study included 103 executives from mid-level to CXO levels in their careers. Non-probabilistic sampling is used to collect the data. The data thus gathered is analyzed to check the validity of the construct and the impact of demographic variables.
We found that 'Online Learning' is the third-most preferred learning channel, superseded by 'On-the-job learning' and 'Mentoring.' Moreover, 'Certification,' 'Monitoring,' and 'Recommendations by friends or peers' are the top three reasons for choosing online learning. The demographic parameters considered; namely, gender, age, qualification, household income, and occupation, did not affect the learning inclination of the target group.
The present study examines the urge to update professional knowledge, refresh existing knowledge, acquire a new skill, and learn a hobby as indicators of learning inclination.
Keywords: Learning inclination, Willingness to learn, Online learning, Executive Education

INTRODUCTION

Online learning is perceived as an easy and successful way to learn because of independence and ownership of working practices (Paterson, 2014). Moreover, factors such as comfort with online technologies and time management (Liyan, Ernise, Hill, & Myung, 2004) adds face value to the game of online learning. The financial cost of online learning can be much lesser than learning in classroom settings. Timing and traveling challenges play an insignificant role, and as it is a modular concept, enrolling for a complete course is not required. A quick certification can be obtained by selecting a precise topic. Therefore, this method seems more acceptable and appealing to learners, especially working executives. Moreover, online learning is considered a panacea when everyone is confined at home during a pandemic looking for value addition options.

Furthermore, this method should become more popular because of the availability of numerous sources, flexible schedules, and a plethora of topics to choose from. The learner should be able to enroll and finish their education quickly. However, it needs to be studied whether this occurs in reality or is it a more utopian thought. Therefore, the present study aims to understand executives' learning inclination, relationship with demographic variables, and preferred learning modes.

Bransford, Brown, and Cocking (1999) discuss learner requirements such as the role of prior knowledge in learning, learning as an active process, learning for understanding, adaptive expertise, and learning as a time-consuming endeavor in their early and influential book on the "new science of learning." However, the role of learning inclination in addition to these basic tenets needs to be studied. Although all the requirements mentioned above hold true, learners' inclination toward learning plays a significant role. The present study attempts to explore

learning inclination concerning online learning for executives. These respondents are employed in white-collar/corporate/office jobs ranging from mid-level to the P&L leadership roles.

As many theorists (Garrison and Shale, 1990) have argued and practitioners have experienced for themselves, online learning is a subset of learning in general; thus, issues relevant to how adults generally learn may be relevant to online learning. Nevertheless, the study focuses more on learning inclination and the relationship of the demographic variables.

REVIEW OF LITERATURE

Even before the internet was established, distance courses were available to provide students with education on particular subjects or abilities. Isaac Pitman used letters to teach his students shorthand in the 1840s (NA, n.d.). The first computer-based training program was not introduced to the world until 1960. It was initially created for University of Illinois students. (Santovec, 2003; Liyan, Ernise, Hill, and Myung, 2004). The first online learning systems were set up only to deliver information to the students. However, in the 1970s, online learning started to become interactive. In Britain, the Open University began offering a wide range of interactive educational experiences through the internet and corresponding faster with students via email to benefit from e-learning.

Today, online learning is an established and developed form of learning. Initially, this mode was considered apt for adult learning; however, with the advent of graphics, sound, and motion capabilities of computing, this method is as applicable and popular for children as it is for advanced learners.

Learning Inclination

As suggested by Aristotle, the inclination is the "desire to know," while Kant describes it as "wanting to do" and has always been instrumental in understanding the psyche. If we want to understand the factors responsible for students' academic success, the learning inclination may help. Researchers' are trying to capture the same from a different perspective, such as students' 'Need for Cognition and 'Positive Attitudes Toward Literacy' (Loes, Saichaie, Padgett, & Pascarella, 2012), Self-concept of competence, Task, and Effort orientation, flexibility, and independence (Alexender Seeshing, 2003) or intrinsic motivation as an indicator of a desire to learn (Kerssen-Griep, Hess and Tress 2009)

"Learning inclination" is defined as "the ability to steer one's learning through a mix of certain attitudes, relevant abilities, and suitable help from relevant sources." (Samad and colleagues, 2019). Learning inclination is crucial in online learning. Visible peer pressure, physical supervision, and strict timelines for various assessments help learners grasp and complete a course in classroom settings. However, these benefits are not available in online settings.

Motivation is required to complete any goal-oriented process. External motivation by stakeholders such as teachers (M, Humpherys, & Chan, 2002), family (Knoz, 1977), friends, colleagues (Kashif et al., 2013), and culture (Merriam & Ntseane, 2008) may play a significant part in online learning; however, internal motivation is more important, as argued by Wolters (2003) and Fertig, Zeitz, & Blau, (2009).

Research accentuates the importance of internal motivation, such as the 'interest of the learner' (Krapp, 1999; Schiefele, 1991; Su, Rounds, & Stoll, 2019) 'subject-specific internal motivation' (Staribratov & Babakova, 2019). In a study, Kim & Park (2015) found that internal motivation is one factor that influences adult female learners' dropout of e-learning courses.

A quick review of the literature on learning can explain executives' learning landscape and the position of online learning. Researchers are attempting to understand the phenomenon of online learning and students' connectivity. Many researchers have studied various aspects, such as attitudes (Bertea P., 2009) and people's willingness to learn online (Darban & Polites, 2016). These studies focused on usage, self-reporting inventory, and learners' interest in using the e-content, available on either mail or website.

Several studies explored the willingness to learn from experience in an organizational setting. Zakay et al. (2004) found that a negative outcome triggers the need to learn amongst managers in organizations more than a positive outcome. While searching the relationship between error criticality and organizational learning, Ellips et al. (1999) found the effect of error criticality on the likelihood of developing an organizational learning culture. As these studies explored these issues from the perspective of organizational learning, they focused more on the organizational process and less on individual thought processes or inclinations.

The present study focuses on respondents' inclination towards learning by upgrading professional knowledge, refreshing existing knowledge, acquiring a new skill, and building or enhancing an existing hobby.

RESEARCH METHODOLOGY

The study was conducted in Mumbai using 103 working executives. The data were strictly gathered only from mid-level executives in the P&L leadership role.

Non-probabilistic sampling was used for the study. Age, gender, qualification, occupation, and household income were the demographic variables considered.

The executives' four different learning requirements can be summarized: the urge to update professional knowledge, refresh existing knowledge, acquire a new skill, and learn a hobby. Different statements for each indicator were framed with the help of senior executives. The sum of all four aspects was considered an indicator of learning inclination.

The construct thus formed was tested for reliability and validity using Cronbach's Alfa and unidimensionality using factor analysis.

Research Objectives
1. To capture the online learning scenario of executives
2. To understand the effect of demographics on learning inclination.

Hypothesis
H_{01}: Age does not affect learning inclination
H_{A1}: Age has a significant effect on learning inclination
H_{02}: Gender does not affect learning inclination
H_{A2}: Gender has a significant effect on learning inclination
H_{03}: Qualification does not affect learning inclination
H_{A3}: Qualification has a significant effect on learning inclination
H_{04}: Occupation does not affect learning inclination
H_{A4}: Occupation has a significant effect on learning inclination
H_{05}: Household income does not affect learning inclination
H_{A5}: Household income has a significant effect on learning inclination

ANALYSIS
Descriptive
Table I: Age Distribution
If we go through the respondents' age distribution, only one-third are below forty years of age. The majority of the respondents are over forty years.

		Frequency	Per cent	Valid Percent	Cumulative Percent
	< 30 Years	17	16.5	16.5	16.5
	30–40 years	18	17.5	17.5	34.0
Valid	40–50 years	37	35.9	35.9	69.9
	50+ years	31	30.1	30.1	100.0
	Total	103	100.0	100.0	

Table I: Age Distribution

The age distribution signifies that the respondents are pretty experienced and must have tried different learning mechanisms to cope with their professional challenges.

Table II: Gender & Age Crosstabulation
The gender distribution is skewed in favor of male respondents. It is almost a 30:70 ratio. Female executives are less than the 40-50 age group in percentage terms.

Count

		Age				Total
		< 30 Years	30-40 years	40-50 years	50+ years	
Gender	Male	10	13	24	27	74
	Female	7	5	13	4	29
Total		17	18	37	31	103

Table II: Gender & Age Crosstabulation

The data is not sufficient to comment on, but probably the data portrays the picture of the female employee's journey. As time passes, the women employees leave the job and focus on other things, probably house responsibilities.

Chart-I: Preferred mode of learning for the executives
As Ford said, "Anyone who stops learning is old," so people would like to learn, especially in the work environment where stakes are high. In this study, the respondents were requested to rank their learning preferences such as online learning, On-the-job training, Mentoring, Learning from peers, or related courses.
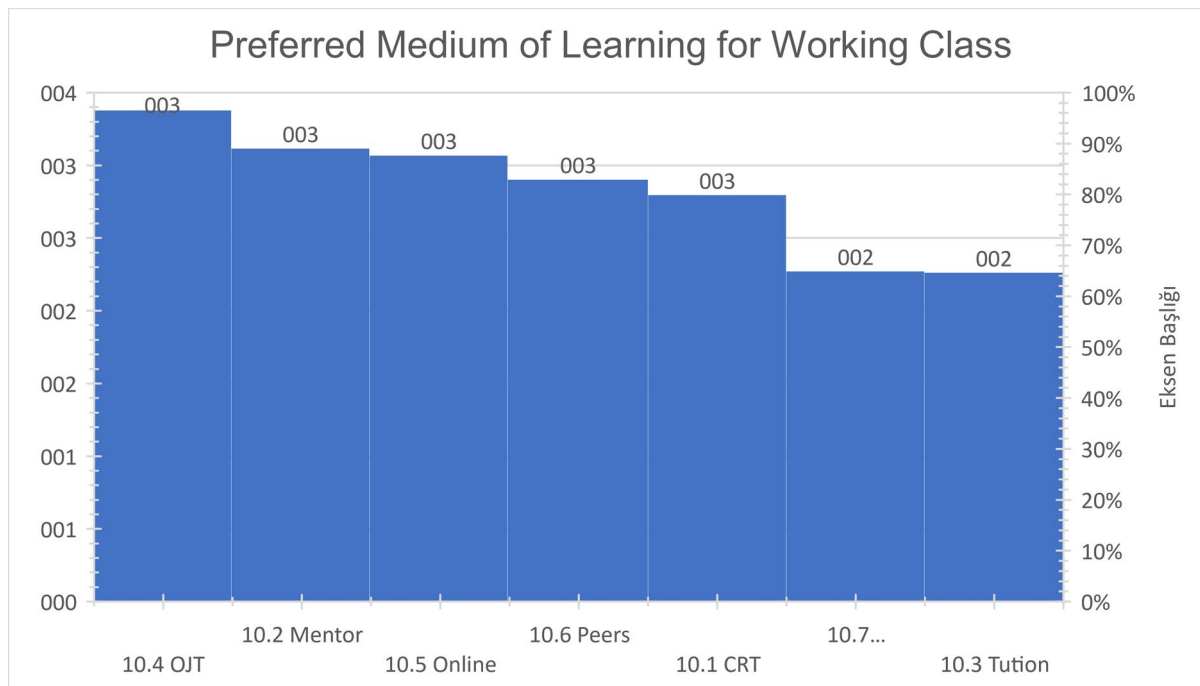
Chart-I: Preferred mode of learning for the executives

As we can see, on-the-job training (OJT) is the preferred choice of learning, followed by mentoring. Online learning stands third. Learning while working suits senior executives probably because of their busy schedules and responsibilities; they can not afford to sit even on the laptop for a session.
Mentoring is the second most preferred choice. Mentoring is specific to the individuals, and the situation probably works better in the case of working executives.

Chart-II: Decisive factor for choosing an online course
While making enrollment decisions about an online course? The respondents were given a curated choice to think upon. The options range from the cost (price) of the course to customization of the course. The program's flexibility, friend's recommendation, and Interactivity were other options.
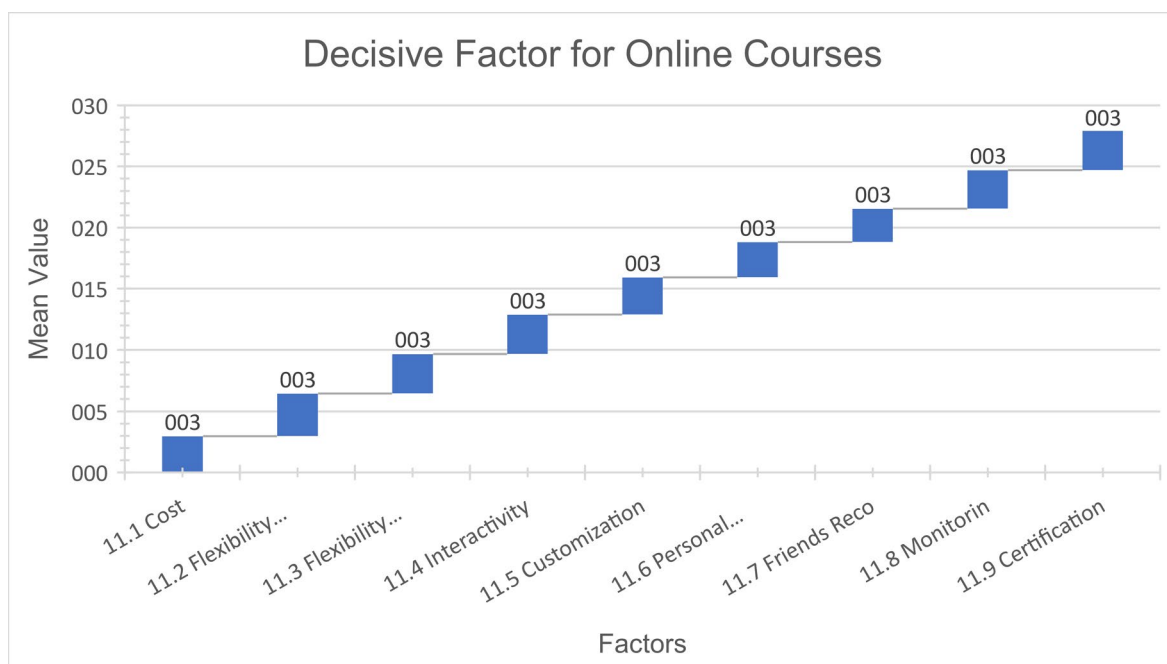
Chart-II: Decisive factor for choosing an online course

The above-ranking chart indicates that certification is of paramount importance. The choice is evident because, in work settings, a certificate is handy while applying for a promotion or a new job.

Interestingly, monitoring during the certification becomes the second important factor. These executives are probably worried that they may miss the deadlines. Hence the certification, so active monitoring of the certification process becomes their second choice when deciding the online enrollment.

Inferential

Learning Inclination as a Single Factor

Factor analysis compresses many variables to a smaller number of components. This method takes the largest common variance from all variables and converts it to a single score. If there is more than one component proposed by exploration, confirmatory factor analysis is recommended; otherwise, it can be assumed that the variables within a factor are highly correlated, and hence convergent validity is assumed.

Table – IIIa / IIIb Reliability Statistics – Learning Inclination

Reliability statistics, or Cronbach's alfa, is the first indicator of internal consistency. Any value above .7 is considered as good.

Table – IIIa Reliability Statistics – Learning Inclination

Cronbach's Alpha	N of Items
.755	4

Table – IIIb Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Updation of professional knowledge	9.60	2.575	.623	.670
Refreshing the existing knowledge	9.81	2.472	.523	.714
Acquiring a new skill	9.77	2.318	.621	.659
Learning a hobby	10.09	2.375	.472	.751

Inference: Internal consistency assesses the continuity of the responses across items within a single measurement scale [(Kline, 2005), as cited in (Tyastuti et al., 2014)]. As in table 3 (*a*), the reliability score was higher than 0.7, signifying the four statements' internal consistency.

Table – IV Correlation Matrix
The four-item learning inclination scale was subjected to exploratory factor analysis (EFA) to examine the scale further. Hair et al. (2006) suggested that EFA can be applied for reduction data by identifying similar variables. The correlation matrix is one of the first few checks before proceeding with the EFA.

Table – IV Correlation Matrix^a

a. Determinant = .449

Inference: The value of the determinant should be more than zero. If the determinant is higher than 0.00001, then there is no multicollinearity, whereas if it is less than that, data are not fit for factor analysis.

Table – V Kaiser–Meyer–Olkin (KMO) and Bartlett's Test
The Kaiser-Meyer-Olkin Measure of Sampling Adequacy is a statistic that shows how much of the variance in the variables is due to underlying factors. Bartlett's test of sphericity tests the hypothesis that the correlation matrix is an identity matrix, which would suggest that the variables are unrelated and thus unsuitable for structure discovery.

Table – V Kaiser–Meyer–Olkin (KMO) and Bartlett's Test

KMO Measure of Sampling Adequacy.		.662
Bartlett's Test of Sphericity	Approx. Chi-Square	80.247
	Df	3
	Sig.	.000

Inference: As a prerequisite of principal component analysis, it is mandatory to ensure that the data matrix has sufficient correlations to justify the application of factor analysis. Bartlett's test of sphericity and the Kaiser-Meyer-Olkin tests of sampling adequacy was taken into consideration for this purpose. The KMO value lies between 0 and 1. Values greater than 0.5 are accepted (Samuels 2017).
In Bartlett's Test, small values (less than 0.05) of the significance level indicate that factor analysis may be helpful. (KMO and Bartlett's Test 2020)

Table – VI Communalities
The amount to which an item correlates with all other items is called communality—the higher the communality, the better the construct.

Table – VI Communalities

	Initial
Updation of professional knowledge	1.000
Refreshing the existing knowledge	1.000
Acquiring a new skill	1.000

Extraction Method: Principal Component Analysis.

Inference: The proportion of variance in a given variable explained by the three components is the communality for that variable. A communality value of 0.5 is considered acceptable (Samuels 2017). The fourth statement was dropped due to low communality.

Table – VII Total Variance Explained
The Total variance is the amount of variance in the original variables accounted for by each component.

Table – VII Total Variance Explained

Component	Initial Eigenvalues		
	Total	% of variance	Cumulative %
1	2.025	67.509	67.509
2	.614	20.451	87.960
3	.361	12.040	100.000

Extraction Method: Principal Component Analysis.

Inference: The major variance explained originated in the first statement. The first component provided almost 67% of the total variance, whereas the first two statements provided a cumulative variance of 87%.

Table – VIII Component Matrix[a]
The unidimensionality of item response data must be investigated as part of concept validity. (Slocum-Gori and Zumbo, 2011)

Table – VIII Component Matrix[a]

a. 1 component extracted.

Inference: Unidimensionality signified the convergent validity of the construct (Farmell and Larcker, 1989).

The Hypothesis
Age and Learning Inclination
H_{01}: Age does not affect learning inclination
H_{A1}: Age has a significant effect on learning inclination

Table – IX - ANOVA – Learning_Inclination1

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	1.732	3	.577	2.270	.085
Within Groups	25.180	99	.254		
Total	26.913	102			

Inference: Calculated *p*-value was higher than 0.05. Thus, the test was accepted, and we accepted the null hypothesis that no difference was found among the various age groups concerning learning inclination. This means that the urge to learn is the same for all age groups.

Gender and Learning Inclination
H_{02}: Gender does not affect learning inclination
H_{A2}: Gender has a significant effect on learning inclination

Table – X - a Group Statistics

	Gender	N	Mean	Std. Deviation	Std. Error Mean
Learning_Inclination1	Male	74	3.3423	.53200	.06184
	Female	29	3.4138	.46849	.08700

Table X - b Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					95% Confidence Interval of the Difference	
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Learning_Inclination1	Equal variances assumed	.009	.924	-.633	101	.528	-.07145	.11287	-.29535	.15244

Equal variances not assumed		-.669	57.789	.506	-.07145	.10674	-.28513	.14223

Inference: Calculated *p*-value was higher than 0.05. Thus, the test was accepted, and we accepted the null hypothesis that no difference was found among the genders concerning the learning inclination. This means that the learning inclination does not get impacted by gender.

Educational Qualification and Learning Inclination
H_{03}: Qualification does not affect learning inclination
H_{A3}: Qualification has a significant effect on learning inclination
Table XI ANOVA
Learning_Inclination1

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	1.664	3	.555	2.175	.096
Within Groups	25.249	99	.255		
Total	26.913	102			

Inference: Calculated *p*-value was higher than 0.05. Thus, the test was accepted, and the null hypothesis found no difference in the educational qualification concerning the learning inclination was accepted. This means the learning inclination does not get impacted by the education level of the executive.

Occupation and Learning Inclination
H_{04}: Occupation does not affect learning inclination
H_{A4}: Occupation has a significant effect on learning inclination

Table XII – a - Group Statistics

	Occupation	N	Mean	Std. Deviation	Std. Error Mean
Learning_Inclination1	Service	71	3.3991	.51523	.06115
	Business	32	3.2813	.50877	.08994

Table XII- b - Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference Lower	Upper
Learning_Inclination1	Equal variances assumed	.022	.883	1.078	101	.284	.11781	.10928	-.09897	.33460
	Equal variances not assumed			1.083	60.551	.283	.11781	.10876	-.09969	.33531

Inference: Calculated *p*-value was more than 0.05. Thus, the test was accepted, and we accepted the null hypothesis that no difference was found among the various occupation concerning the learning inclination.

Household Income and Learning Inclination
H_{05}: Household income does not affect learning inclination
H_{A5}: Household income has a significant effect on learning inclination

Table XIII ANOVA

Learning Inclination1

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	1.190	3	.397	1.526	.212
Within Groups	25.723	99	.260		
Total	26.913	102			

Inference: Calculated *p*-value was more than 0.05. Thus, the null hypothesis that there was no difference between the various household income groups concerning the learning inclination was accepted.

FINDINGS AND CONCLUSION

In this study, learning inclination emerged as a single factor statistically. However, demographic variables such as age, gender, household income, or educational qualification do not impact it significantly.

Initially, four statements were to capture the learning inclination; however, the last statement was discarded due to low communalities (<0.5). The present study showed that senior executives probably did not consider learning a hobby as necessary as learning career skills, resulting in them not being inclined toward learning a hobby.

The descriptive analysis states that learning online is the third-most preferred learning channel for the executives after on-the-job learning and mentoring (Refer to Chart-1). This preference may be because career challenges for mid-level executives are unique and cannot be generalized, whereas formal education (certifications included) is more about generalized knowledge.

Most of the respondents (precisely 66%) in the present study were aged 40 years and above, meaning they were either at a mid-level or top-level position in their careers (Refer to Table-1). These executives must have realized the power of on-the-job training, perhaps shadowing, or other methods. In the same way, mentoring must have given better results than online learning.

As the respondents were in mid to top-level positions, the course's cost was the last priority. The top three reasons to join online learning are certification, monitoring, and recommendation from friends or peers (Refer to Chart-2). This behavior can be easily explained as certification is vital for career growth (and probably a hook on social media for a future employer). The hectic work schedule demands constant supervision from the instructor, and hence 'liberal' online media may not be able to push for continuity of the course. Probably high dropout rates (40 to 90%) (Gregori, Martínez, & Moyano-Fernández, 2018) indicates this finding as closer to the reality. The findings suggested that internal motivation was of secondary importance, making monitoring the second crucial factor when choosing learning sources.

This study may be helpful while planning the course and delivery for the executives. Keeping learning inclination in mind, the course's complexity can be adjusted to enhance learners' understanding of the subject.

Similarly, if 'on-the-job' elements can be embedded with the online curriculum, the course may become more attractive. Adding a few one-on-one mentoring sessions would undoubtedly enhance the utility of the course amongst future learners.

FUTURE SCOPE OF THE STUDY

There is a vast scope for this subject as literature reveals a dearth of studies that relate to understanding learning inclination. Most papers focus on 'attitude scales' such as attitude toward learning English (Al Noursi, 2013), learning chemistry (Yunus & Ali, 2013), and learning management system (LMS) (Alghamdi & & Bayaga, 2016) or e-learning (Bertea P., 2009).

Some researchers tried to capture 'Willingness to learn, such as willingness to learn from experience (Fertig, Zeitz, & Blau, 2009) and willingness to learn in school (Cekaite, 2012). However, the papers discuss acceptance or refusal to learn, in a way, attitude toward learning. In this case, developing a context-free scale to understand learning inclination may be the next natural progression of the present study.

LIMITATIONS

There were several limitations to this study. The scarcity of time and funds was the more generic ones; however, the study's descriptive nature was the most significant limitation. The study describes the learning inclination with the help of indicators and the impact of demographic variables. However, unidimensionality is not sufficient to prove a factor. There are tools such as Known-group validity and nomological validity that would give more

concreteness to the construct. The paper depends upon the Self Reporting Inventory, which is again a limitation. There should be one more data point, such as peers' reports assessing the learning inclination. (Schermelleh-Engle, 2020)

The geographic coverage and sample size were relatively small. We need to cover a larger geographical area and consider a corresponding large sample size better to represent the variables for a decision-maker in the business. As all the social science methods are data-dependent, a repetition of the current study in various geographics and a different dataset would give it more validity for decision-makers to consider.

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MOBILE LEARNING FOR CAPACITY BUILDING OF RURAL DEVELOPMENT PROFESSIONALS

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ABSTRACT

The capacity building and development institutes are increasingly using mobile technology to train Rural Development Professionals. The paper is based on the study undertaken to elicit the educators and rural development professionals' opinions on Mobile for learning and distance education. The research involved semi-structured questionnaire. The sample consists of two groups: 20 Educators and 100 Rural Development Professionals. This study indicates that Mobile learning could be the right communication vehicle and learning source. In conclusion, this contribution identifies future research avenues relating to the use of mobile learning among capacity building institutes.

Keywords Distance Education, Smartphone, Video Calling, Virtual Classes

INTRODUCTION

Mobiles are valuable apparatuses for helping individuals in handling their daily life with ease. Advanced mobile devices such as smartphones are popular among all age groups as they are used to access the internet and social media. It means that the users can load files, educational material, music, videos, and pictures onto their smartphones and can benefit from it while on the move. Thus, the fame of these gadgets is a result of their capacity to work at various levels in view of the headway of portable innovation. Mobile learning is defined as the type of learning that can be achieved through minicomputers. These include smart phone, iPads, and others that are all viewed as e-learning modes.(Zhang 2015a, b).

The issue of mobile learning has been widely explored/investigated in Mobile learning, which alludes to portable organization innovation, basically by means of the Internet, to convey data and directions to people.

Mobile Learning facilitates teachers to conduct classes over the smartphone with the Internet. The technologies also allow people to interact with learners and communicate between a trainer and a learner. Mobile learning may be interactive, which includes more contact, correspondence, and cooperation with individuals (Vavoula 2005), and it provides the features listed below:

   a) Virtual Classes
   b) Audio/Video Conferencing
   c) Chat by Social media applications
   d) Shared learning

As per oneself coordinated learning hypothesis, learning projects ought to be intended to underline self-guided figuring out how to help Rural Development Professionals sort out the working environment and their work encounters (Merriam 2001). There is no certainty that M-learning's objective in the work environment is to upgrade singular execution (Rosenberg 2006).

Understanding portable learning influences the association of homeroom education. Educators ought to refine their present pedagogy techniques and if understudies wish to utilize this strategy for learning, Rural Development Professionals ought to be appropriately ready for an innovation driven climate. (Chen 2016).

According to Ahmad, 2020, his findings revealed that Rural Development Professionals have a generally positive attitude about using mobile phones as a learning tool and incorporating smart phones into learning activities. Rural Development Professionals stayed enthusiastic about its potential as a social networking and collaboration tool.

Objectives

The key objectives of this study are:

- To find out the opinion of the Faculty, Rural Development Professionals on mobile learning for distance learning program.
- To establish the curriculum in the Interactive Video Lesson through a smartphone·
- To find out better Mobile Learning systems / Technology for Rural Development Professionals.

It is hypothetical that interactive mobile learning by smartphone will:

- Support in simplifying the learning process
- Help the learners to understand better the acts, government schemes, success stories, and technological tools that can be used for a variety of versatile and personalized learning activities.

METHODOLOGY

A list of rural development professionals from Alumni of Post Graduate Diploma in Rural Development Management (PGDRDM) of the National Institute of Rural Development and Panchayati Raj (NIRD&PR), Hyderabad, was collected. A well-structured interview questionnaire was constructed. Questionnaires with covering letters were sent to faculty and learners through email, requesting them to fill them up and send them back via email. Apart from this, the researcher also collected data from State Institute of Rural Development, Ranchi. The study has used the random sampling technique. The sample consists of two groups- 20 faculty members of Rural University and NIRD&PR Hyderabad and 100 rural development professionals. Only those respondents who had prior exposure to e learning or distance learning were selected for the study.

RESULTS AND DISCUSSION

Table1 shows that for 50 percent of the faculty and 25 percent of the student's video calling and video chat are the useful tools for mobile learning. 35percent of the faculty opined that Text message is a useful tool for sharing information and 40 percent of the rural development professionals said that chatting through WhatsApp is used as a counseling tool for distance learner.

Table 1: Feedback of Faculty and Rural Development Professionals Regarding Different Forms of Mobile-Learning Adopted in Distance Learning

Respondents	Email (%)	Text message (%)	Counseling Chats (WhatsApp) (%)	Video Calling (%)
Faculty (20)	2 (10%)	7 (35%)	1 (5%)	10 (50%)
Rural Development Professionals (100)	15 (15%)	20 (20%)	40 (40%)	25 (25%)
Total	17	27	41	30

It can be observed from Table 2 that for 80 percent of Rural Development Professionals and 75 percent of faculty mobile learning is a useful tool for interactive learning. It shows that RuralDevelopment Professionals and faculty were positive toward mobile learning, which is a good sign in distance education. The outcomes are likewise reliable with the results of studies by Uddin M (2012)

Table 2: Perception of Faculty and Rural Development Professionals towards Mobile-Learning

Respondents	Very useful (%)	Useful (%)	Least useful (%)	Not at all Useful (%)
Faculty (20)	15 (75%)	-	5 (25)	-
Rural Development Professionals(100)	80 (80%)	10 (10%)	5 (5%)	5 (5%)
Total	95	10	10	5

It can be observed from Table 2 that for 80 percent of Rural Development Professionals and 75 percent of faculty m- learning is a useful tool for interactive learning. It shows that Rural Development Professionals and faculty were positive toward mobile learning, which is a good sign in distance education. The outcomes are likewise reliable with the results of studies by Uddin (2012)

Table 3: Response of Faculty and Rural Development Professionals Regarding Mobile-learning as a Good Communication Vehicle

Respondents	Strongly Agree (%)	Agree (%)	Not Sure (%)	Disagree (%)
Faculty	15 (75%)	-	5 (25)	-
RuralDevelopment Professionals	80 (80%)	10 (10%)	5 (5%)	5 (5%)
Total	95	10	10	5

As per Table 3, it is known that mobile learning feature is to make effective communication. As high as 75 percent of faculty and 80 percent of Rural Development Professionals strongly agreed that mobile learning is an effective and efficient communication tool. This finding is likewise in accordance with the discoveries of Gan and Balakrishnan (2014) who found that utilizing versatile innovation in the homeroom could improve instructor understudy commitment, and that elements like convenience, self-adequacy, and satisfaction assume a major part in portable learning acknowledgment.

Table 4: M-Learning Provides Immediate Instruction and Student Feedback.

Respondents	Strongly Agree (%)	Agree (%)	Not Sure (%)	Disagree (%)
Faculty	15 (75%)	5 (25%)	-	-
RuralDevelopment Professionals	80 (80%)	10 (10%)	10 (10%)	-
Total	95	15	10	-

According to Table 4, 75 percent of faculty and 80 percent of Rural Development Professionals strongly agreed that mobile learning tool was to providing immediate feedback from faculty and Rural Development Professionals. It is a good sign for the institution that are planning to use mobile learning for distance learner. However, 10 percent Rural Development Professionals were not sure of it.

Table 5: Mobile Learning Process Increases Understanding of the Subject.

Respondents (%)	Strongly Agree (%)	Agree (%)	Not Sure (%)	Disagree (%)
Faculty	-	15 (75%)	5 (25%)	-
Rural Development Professionals	15(15%)	75(75%)	10(10%)	-
Total	15	90	15	-

With reference to understanding of the subject through mobile learning, 75 percent of faculty and 15 percent, Rural Development Professionals agreed that mobile learning upholds in understanding the subject well (Table 5). The rates of respondents who differ were irrelevant. The outcomes are additionally predictable with the after effects of studies by Uddin (2017), Brown (2018), Bas and Sarigöz (2018), Bere and Rambe (2019).

Table 6: Does M-Learning Replicate the Physical Classroom Model?

Respondents	Strongly Agree (%)	Agree (%)	Not Sure (%)	Disagree (%)
Faculty	-	2 (10%)		18 (90%)
Rural Development Professionals	-	20 (20%)	20 (20%)	60 (60%)
Total	-	22	20	78

Table 6 shows that, as high as, 90 percent of the faculty and 60 percent of the Rural Development Professionals disagreed that mobile learning replicates the physical classroom mode. 20 percent Rural Development Professionals couldn't recognize the reality about the replication of actual homeroom model so they didn't know. While mobile learning can never totally supplant conventional learning, but when utilized accurately, it can improve the benefit of existing learning styles. (Liaw et al., 2010).

CONCLUSION

Mobile learning integration in educational systems has become one of the most important tools in the learning and teaching process today. Since the start of the epidemic, there has been a substantial growth in the use of mobile learning applications in learning and education. From the above results, we can assume that the available technological development will contribute to the improvement of mobile learning systems for distance education for rural development professionals. This research proves that mobile learning could be the right communication vehicle. Academic and training institutions looking for advanced technologies in their current learning platforms can consider mobile learning as one of the right alternatives.

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ONLINE LEARNING: AN EXPLORATORY STUDY ON COGNITIVE STYLES AND ACADEMIC CAREER OF STUDENTS DURING COVID-19 PANDEMIC

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ABSTRACT
Our educational system has been extremely reformed, shaped, structured and ameliorated by the use of innovative technologies in this field. Computer-based learning swapped the conventional ways of teaching-learning and have a gargantuan role in producing a creative and skilful youth. Though from the emergence of covid-19 pandemic situation, it has significantly been observed and investigated that online learning wholly and solely protected the academic career of our school-going generation. The current paper is purely theoretical and is grounded in some research studies. It is an unpretentious attempt to explore the effect of online learning on the cognitive styles and academic career of students during the covid-19 pandemic. Online-learning modes comprehensively refurbished the cognition of students and improved their cognitive styles, style of thinking, perceiving, problem-solving and learning styles during the pandemic. The review of extensive related literature demonstrated that e-learning pedagogies brought a significant revolution in the teaching-learning process during coronavirus. The present study scrupulously explored the role of online learning in shielding the academic career of students during covid-19 expansion and nurtured their cognition and mental health by the utilization of innovative scientific inventions existing in the field of education.
Keywords: Online Learning, Cognitive Styles, Academic Career, Students and Covid-19.

INTRODUCTION
Globally, the Covid-19 pandemic situation has brought a significant turbulences in human life especially in health, education, and business sectors. It has comprehensively converted normal life into an abnormal one. From the different phases of covid-19 related lockdowns, fluctuations occurred in all the parameters of human life. This outbreak was originally loomed in Wuhan city of China and expanded throughout the world with a big interruption in human interaction. The National and International health organizations stabbed their best to save the lives of people and initiated the vaccination centers all around the world to squash the curve and prevent this disease from its transmission. This uninterrupted chain thoroughly influenced the health & educational system in particular and other businesses, marketing, private sector trades etc. in general also. Even though Bhutan remained the first country to announce the closure of schools with all other institutions and bargain of business hours during the second week of March 2020 (Kuensel, 2020). Hence, when the whole world was punched by Covid-19 inflation, instant actions were taken by the central and state governments to abscond the educational institutions from school to higher education levels throughout the sphere. Lockdown and precautionary measures were espoused in schools, colleges and universities in a direction to evade the physical interaction among students, teachers and with each another. The explosion of covid-19 disturbed the teaching-learning practices in schools and henceforth face to face collaboration was totally obliterated.

NEED AND SIGNIFICANCE OF THE STUDY
Although young generation is still in chaos and are surviving in difficult situations where their cognitive functions have seriously been hampered to a very extent. From the emergence of this ongoing disaster, all the students were being mentally disturbed and they could not decide their future in these perspectives. At the initial stage of this virus, everyone was feared, worried and under stress which affected the power of perception, sensory modes, the capacity of responding to real threats and all the dimensions of cognitive styles. Eventually, World Health Assembly indorses reinforcing measures to armour mental health and its operations during public health emergencies. Hence, it is manifested from the sources that unemployment, financial instability, disruptions to education, social distancing, removal of physical interaction, prohibiting of religious gathering etc. resulted as the risk factors for mental health, cognitive imbalance, behavioural problems, frustration and despair etc. This disastrous period of human life brought significant alteration in different cognitive styles and affected the ways of solving problems, making decisions, power of judgement and learning styles etc. Eventually, 204,158,425 Coronavirus cases were registered so far all over the world, among them, 4,316,479 were reported as deaths, whereas 183,352,407 were recuperated cases. The continuing off-line education and learning of almost 1.38 billion

students of schools, colleges and universities throughout the globe has significantly been affected from March 2019 to March 2021 (Source: UNESCO, 2020).
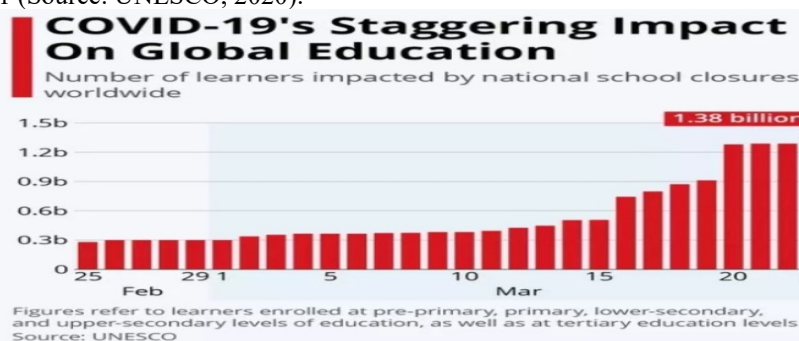
Exploring several precautionary measures to thwart unfurl of covid-19, the education system and the educators called for 'Education in Emergency' by employing several online learning podiums for delivering online classes. The paradigm shift of providing remote learning opportunities has also been weighed as a good opportunity for teachers and students to become more creative (UNESCO, 2020b). The paradigm shift from off-line learning to online format through WebEx, Google meet, Zoom, Slack, Cisco etc. made it possible for students to make their learning continue from home. These applications connected students constantly through android phones or laptops with their respective teachers to continue their education and learning in these difficult situations. The scope of technology used for educational purposes in classes had been shifted or expanded to education received at home through multiple channels. E-Learning apparatuses have conned a decisive role thru this pandemic, assisting schools and universities to facilitate student learning due to the closure of universities and schools (Subedi et al., 2020). Since the emergence of covid-19, the academic career of students has meticulously been affected and kept them in hazardous situations. Even though parents were also feeling ruinous in terms of the academic career of their children as they could not pursue such a professional way of schooling, praying, learning, participating in curricular activities, peer relations etc. Although remote learning did not fulfil all required needed skills, physical resources, infrastructure set up, guidance counselling sessions and organizing technical awareness programmes to ensure the thriving career of students. Getting sudden commotion in the normal way of educating the children in schools, young students in colleges and research scholars in universities etc. brought a significant changes in their academic area.

In this context, some of the important studies are given below:

Dhawan (2020) educational institutions are continuously using the conventional methods of teaching-learning in the classrooms. Hence, for the past few years, many modern technologies of education were being started to use just like the blended approach was introduced in some academic institutions. Nevertheless, the explosion of the covid-19 outbreak shook the entire world and influenced the whole education system. This outbreak systematically changed the educational pedagogies from offline to online mode. This covid-19 outbreak significantly affected the incoming-outgoing process of schools, colleges and universities. During the covid-19 period, our traditional approaches of teaching-learning methodologies drastically shifted from offline to online mode. In this study, the importance of strengths, weakness, opportunity and challenges of online learning were included in this scenario. The present study also highlighted the value and importance of Edu-Tech startups during challenging days of the natural disaster of Covid-19. Hence, for the continued growth of the educational system various online platforms were initiated for achieving the multiple goals of students, faculty, communities, societies, and the entire nation.

Jena (2020) explained the sudden expansion of the covid-19 outbreak and its significant influence on whole humanity. Whereas the second-hand educational structure was devastated and due to this global outbreak, all educational institutions were closed off. The teaching-learning procedure was thoroughly shifted from offline to online platforms. The reports showed that 32 crore learners ceased their learning and could not take part in the school. The present study evoked that higher education institutions continued their efforts to run the process and managed the continuity of teaching-learning through online modes. Instead of covid-19 out-break the research and services were also not hampered in higher education with some innovative tools and techniques. The present study highlighted the impact of Covid-19 on HEIs in India. This study searched out that instead of covid-19 pandemic novel and innovative methodologies, pedagogies, techniques and other scientific inventions that occurred in the field of education were employed at the highest level in India to provide the best educational service to students of today and tomorrow.

The study of **Mahyoob (2020)** highlighted that the covid-19 has disrupted the whole globe. This calamity included industries to some extent but the educational system was most affected and were transferred from offline to online mode. To continue the learning process of the education system, online learning was the only great source for

educational growth in the world. The present study was done to define the challenges and obstacles faced by English language learners. After, data collection descriptive statistical measures were employed to analyze the data which signposted that impact of online EFL learning during covid-19 were associated with technical, academic, and communication challenges. The results also represented that EFL learners were not found gratified with online methods of learning as they could not regulate their virtuous progress in language learning performance.

Pokhrel & Chhetri (2021) indicated that the whole globe was badly affected by the covid-19 disaster and abruptly made unpredicted encounters about which no human was familiar. It brought total disruption in the chain of teaching-learning at all levels of education in human history and approximately 1.6 billion learners in more than 200 countries were severely affected. According to the reports of online surveys, 94% of the world's students were found out of schools by this outbreak and took a historical significance on earth in human life. After getting some relaxation in this disaster reopening of schools and slowly joining of students was another challenge for students and the whole educational system. Entering into schools was not easy now for students as they should have to track preventive measures of wearing the mask, social distancing, and low rate of students in the school etc. Although this study emphasis on providing a comprehensive report of Covid-19 and its effect on online teaching-learning platforms and indicated the way through which we go with these online formats in offline classrooms.

Radha (2020) demonstrated that e-learning has grown as an essential component in the teaching-learning process at all levels of education. E-learning mode provides efficient, purposeful, dynamic, ingenious and self-paced opportunities for learning. In this study, a stratified random sampling method was used and primary data was collected through Google forms from 175 students. The collected data was analyzed to know the attitude of students towards e-learning. The findings of the study described the effect of e-learning on students, their interest in e-learning formats and their performance. The results also demonstrated that e-learning has taken place in the cognition of students and became popular among students in the pandemic period.

Thus, the present paper is a genuine attempt to explore the effect of online learning on the cognitive styles and academic careers of students during the covid-19 pandemic.

OBJECTIVES OF THE STUDY
- To explore the effect of online learning on cognitive styles and academic careers of students during the covid-19 pandemic.
- To study pedagogy of online learning and its consequences during the Covid-19 pandemic.
- To study online learning platforms used by the learners during the Covid-19 pandemic?

METHODOLOGY OF THE STUDY
The present study is purely theoretical and is based on some research studies. Various research studies related to online- learning, cognitive styles, academic carrier and covid-19 pandemic have thoroughly been reviewed to design the current paper. While preparing this paper researchers have consulted reputed journals of national and international level, reports, essays etc. to achieve the objectives of study.

ACCESSIBILITY AND OPPORTUNITY TO ONLINE LEARNING DURING COVID-19
Covid-19 outbreak designed the online structure of teaching-learning and helped in acquiring knowledge that incited students toward the usage of digital equipment for educational purposes. Consequently, it was a big challenge for students to get education and learning opportunities from different e-learning sources because most of the students from remote areas had not adequate internet facilities to utilize these platforms. Despite this, maximum number of students at the school level had no android phones or laptops to take their classes in online mode. The students having good access to these digital equipment's did not face any challenge or workload as compared to those who were less privileged. The students whose parents are still not capable to purchase the smartphone for taking online classes are far away from the benefits of online education. Having access and opportunity to these online educational platforms would also benefit the differently-abled students to learn and educate them at their own pace in homes. Online learning also allows physically challenged students with more freedom to participate in learning in the virtual environment, requiring limited movement (Basilaia & Kvavadze, 2020). From the covid-19 pandemic, the regular up and down of students from school to home was entirely eradicated due to which their social relationships were also hampered. Some of the students who were facilitated instantly by their parents with digital equipment of learning did face the least challenges rather than those who had not these facilities at the preliminary flash. A large number of students in India belong to rural and far-flung areas where the internet, Wi-Fi, broadband facilities are still not available hindered their academic progress to the great extent. The parents of these disadvantaged students also felt unsatisfactory and found the academic career of their children at stake due to not having the facility of online learning tools. Fortunately, with the passage of time most of the students arranged smartphones for their online classes which continued their academic progress and ensured them to take the benefits of online learning. Due to the unceasing growth of covid-19, an engorged number of

students were found who significantly used the online-learning equipment and apps for their academic purposes. Various online educational platforms were already established like ED-TECH and cloud computing as they are manageable at judicious prices and are easily accessible. Making teaching accessible from a long-distance students have been using online platforms and applications for efficient learning. Platforms like G-Suite and Edu-Page are widely employed in the education process (Google. 2020 and Edupage 2020). In these pandemic situations online learning platforms just like Google, Microsoft, Zoom and Slack were mostly employed for educational purposes.

IMPLICATIONS OF E-LEARNING REGARDING COGNITIVE STYLES OF STUDENTS

No two individuals are identical in the world neither from physical appearance nor from cognitive modes. The term cognitive styles refer to a universal perspective that involves attention, perception, learning, memory, reasoning, decision making and problem-solving etc. A few decades ago, generally traditional methods were used in the classrooms which had the great impact on the psychological well-being of students. Henceforth gradual developments in the pitch of education in terms of technology brought significant changes in the thought process of humans. However from the last 2.6 years, online learning thoroughly impacted students in the context of personality development, academic development, cognitive psychology, mental development, emotional development, school and social adjustment etc. The use of ICT and E-Learning contents transform the current generation from old random memorization methods to intellectual knowledge gaining, skill acquisition, behavioural and cognitive functionalities. Comprehensively exploring the relevant literature of national and international levels it is illuminated that upshots of modern educational transactional approaches on cognitive functioning and its various styles are of supreme connotation. These intellectual meta-analyses exclusively suggest the accruement in the academic field of the current generation at all the levels of education. Conveniently these scientific experiments and inventions in the field of education extended broader outcomes at a significant level and enhances mental development, cognitive styles, intellectual perspectives and broaden all the dimensions of cognition.

The valid and reliable data obtained from National Study on Student Learning (NSSL), Flowers, Pascarella, and Pierson (2000) discovered that the usage of computers or email to communicate with an instructor about course-related matters influenced scores on standardized measures of reading comprehension, mathematical reasoning, critical thinking, or a composite measure of all three dimensions of cognitive development. Online platforms solely rescued our educational system during these pandemic days and continued the teaching-learning process through online modes through which students did not face any academic anxiety. The psychological well beings empowered the technical skills, intellectual power, mental ability and academic integrity while staying at home during coronavirus phase. In the existing epoch, cognitive functioning and structure are refitted by the up-to-date technologies, knowledge and expertise of computer systems which lengthened the thought process and created innovative ideas in one's mind. The scientific inventions promoted the diversions in one's cognitive functioning and hence proved the drastic changes in cognitive styles along with their learning styles. E-learning platforms accrue the curiosity among students to be more indulged in difficult tasks and try their best for solving them. Although one's engrossment with these methods of learning and emergent technologies stretch the vision and advance the good mental health of the young generation. Scientific summaries and research thoroughly explored the significant role of E-learning on the cognition of students at all levels.

ACADEMIC CAREER OF STUDENTS DURING COVID-19 OUTBREAK

Instead of providing supportive e-learning podiums, the researchers have also demonstrated that the closure of schools resulted in concrete learning losses. Such research from Belgium, The Netherlands, Switzerland and the United Kingdom depicted both inequality and learning losses. The formative and summative evaluation techniques to check the student's progress cordially changed from off-line to an online mode which created hesitation and misperception among the students, teachers and parents as well. Having no access to digital infrastructure like android phones, laptops etc. needed to join the online classes had created inequality and frustration among psychological well beings to the great extent. The performance level of students in the academic arena was likely to be thrown down for both year-end examination and internal examination due to reduced contact hours for learners and a dearth of consultation with teachers when facing difficulties in learning/understanding (Sintema, 2020). The true nature of the academic career of students lagged during the covid-19 session and restricted their harmonious development at par. The success of teachers and the whole education system is based on the prosperous achievement of students that insist teachers for needed improvements in the education system. From the past two years, formal way of education system meticulously retained off and put massive influence on the intellectual abilities of school going generation through the globe. To ensure the continuation of delivering teaching, various online platforms have been hunted and utilized to provide a learning experience and academic skills. Fortunately, the current innovations in the field of educational technology enhanced personalized, and collaborative teaching-learning to meet the required needs and skills of the 21st century. Keeping in view the nature of E-learning environment, it should be noted that it removed face to face interaction from one side and the disciplinary way of education of youth from another side. But uncountable and independent advantages of E-Learning pedagogies

transform the whole education system from darkness to light and lay focus on developing the potential and creativity of the learners in innovative and unexpected ways. During Covid-19 period online classes did not resist and hindered the learning opportunities for students and rescued their academic career from spoiling. Though the current pedagogy of taking online classes for all the courses fetched a great satisfaction among parents about the education of their children. Open Educational Resources (OERs) and MOOC with other online devices and applications like Zoom, Google Meet, Cisco WebEx, etc. have conferred myriad teaching, learning, experience need-based training and skills which are mandatory for students to overcome these hindrances and jubilate their personal, social and academic life.

EFFICACY OF ONLINE LEARNING DURING COVID-19

Everything dwelling in the universe always possesses some advantages from one side and some disadvantages from another side. Online learning has also some positive and negative aspects which help us in determining and selecting the appropriate methods for efficient delivery of learning without any interruption. To remove the traditional methods of teaching-learning which only focused on remembering and memorization new technologies in the educational scenario were initiated. Throughout the covid-19 pandemic phase, the formal way of schooling was closed which had ruined the academic career of students to the great extent. But fortunately, online learning modes were used from a distance to reach the students for continuing their education and learning. Still online learning modes could not full fill the objectives of every student but it also escaped students from destroying their academic careers. The mammoth number of students across the country who did not possess smart phones or laptops had faced principal encounters during covid-19 to continue their educational progress. Not at all but to the great magnitude online learning had sufficiently fulfilled the purposes of students, education, society and nation as uncut. Online learning has a significant contribution to online classes, teaching, learning, taking the regular assignment, testing, and evaluating. Education at home was not an easy task for school, college or university going students but it is online learning platforms that made it possible for them in an intelligent way.

FINDINGS OF THE STUDY

In the present study, various online documents, reports, researches and research papers of national and international level published in reputed journals were comprehensively reviewed and explored. This related literature on online learning in the context of cognitive styles and academic career of students during covid-19 pandemic have marvellous importance in the educational formation of today and tomorrow. In the current study major findings and results depicted from the above exploration are below:

- The covid-19 pandemic has significantly augmented the level and opportunities of distance learning at all educational stages.
- Coronavirus played a role of big disaster for the whole humanity and resulted in human and economic losses.
- Cognitive styles are a primary unit for any educational contribution and online learning technologies of education broaden the scope of intellectual functioning.
- Scientific inventions in the field of education transferred the fifth generation from rote memory and convergent thinking to creative and divergent thinking.
- These technologies offered great access and opportunity to broaden one's vision, perception, thought and mental operations to the highest.
- Students containing different disparate cognitive styles use and take great advantage of these online platforms in different perspectives and prepare them for problem-solving activities.
- Outcomes of the study also demonstrated that the education system has completely been disrupted and lost its bearing in the teaching-learning milieu like before.
- Inequalities were also seen in the system of education during covid-19 because every student did not possess the online pieces of equipment for teaching-learning.
- The study also explored that some students from disadvantaged sections of the country who were not accessible to regular schools got an opportunity of equal learning.
- Online learning has created an inclusive setting where children with special needs were taught along with normal ones in the digital atmosphere.
- Differently-abled students got an opportunity of learning at their homes irrespective of any discrimination.
- Online-learning modes protect the students from being the victims of covid-19 and save their precious life at home.
- By employing online learning modes students have availed the benefits of continuing their education instead of strict lockdown and their regular classes, quizzes, assignments, tests and evaluations were done through online platforms.
- The present study also revealed that the academic career of students was badly affected to the great extent by the closure of formal interaction in the schools and ruined the social interaction of students.

- Instead of online educational opportunities students did not fulfil their educational objectives promptly as smoothly they might only be achieved in the offline mode.
- Lack of internet services, weedy signal, and disruptions during online classes resulted in the learning loss of students at par.

EDUCATIONAL IMPLICATIONS OF THE STUDY

- Online learning tools should be used at school level so that students will become competent to utilize these platforms in an intelligent way in future.
- Workshops should also be conducted in which teachers and students learn in collaboration the use and consequences of these online learning tools.
- Educational boards and higher authorities should include importance of online learning tools and their application in the syllabi from the early stages of education.
- Curriculum framers must also include online learning pedagogies and its consequences in education system and the real life of 21st century.

CONCLUSION

Today is the world of science and technology and the solution of every task is in online mode available now. Through the pleasant contribution of technology in the field of education make teaching and learning more accessible to students without any discrimination. From the Covid-19 epidemic, online learning platforms penetrated the whole globe to provide online teaching through multiple application software's which was not possible a few decades ago. In these stressful conditions, the structure and functionality of the psychological world of students are comprehensively altered through online modes of learning. Students' motivation, readiness, classroom practices, formal ways of interaction, cognitive styles and learning styles to the prodigious level has significantly been affected by online modes of learning. How so ever, online learning platforms did not give any chance to put the academic career of students at palisade. These current and online learning techniques or pedagogies nurtured the cognition, mental health and academic career of students during the covid-19 outbreak and made them techno-savvy.

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PRE-SERVICE TRAINEE TEACHERS' EXPERIENCES ON COMPUTER-MEDIATED LEARNING DURING THE COVID-19 PANDEMIC REVEALED THE NEED OF REVAMPING ONLINE PEDAGOGY IN INDIA

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ABSTRACT

This study attempted to understand the perceptions of Indian pre-service teacher trainees towards computer-mediated learning after two months of exposure to synchronous online classes in 2020 that came along with the outbreak of the COVID-19 pandemic. The survey-based approach employed Likert-rating scales (and items) and open-ended questions to elicit the experiences of 180 final-year students enrolled in pre-service teaching courses at Regional Institute of Education (a constituent unit of the National Council of Educational Research and Training) Bhubaneswar, OD, India. The semi-qualitative analysis of the responses reported that more than one-third of the pre-service trainee teachers (36.6 %) considered online classes as a poor mode of teaching while about one-third (30.6 %) are in a state of confusion. Given the present social situation of self-isolation and unpredictable arrival of 'normal' life, this study could help to improve the teaching practices, considering its applicability across a large swath of different educational disciplines. In addition to that, this paper aims to be a valuable resource to improve computer-mediated learning in India since future teachers have been considered as the sample of this study.

Keywords: COVID-19, India, Online classes, Pedagogical issues, Pre-service trainee teachers

INTRODUCTION

The 2020 outbreak of the novel SARS CoV 2 virus was not veiled from anyone- from children to the aged, from jobless to white-collar jobs, from students to professionals- the entire society was and still is crippled, being refrained from normal lives. The World Health Organization (WHO) announced it as a global public health emergency of international concern on 30th January 2020 and subsequently a pandemic on 11th March 2020 (Cucinotta & Vanelli, 2020). Given that viral transmissibility is through contact with the respiratory droplets of the infected individuals (Zhu et al., 2020), the medical fraternity has resorted to the solution of 'social distancing' to curb the spread of the pandemic (Wilder-Smith & Freedman, 2020). Social distancing was tagged as a credible non-pharmaceutical measure (Fong et al., 2020) and that was adopted by governments across the globe to announce 'lockdowns' in their respective countries (Coccia, 2021). Eventually, this administrative intervention resulted in the closure of academic institutions- schools, colleges, and universities- in approximately 107 countries (Mahmood, 2021), endorsing the idea of online classes.

Globally, the developed countries are acquainted with the concept of computer-mediated online classes (Ramij & Sultana, 2020)- it dates back to as early as the 19th century when the western academicians opined that conventional education demanded extra cost in light of increasing population and expanding economies (Moore & Kearsley, 1996) and online classes could be a socially congenial solution. Alternatively known as distance learning, online classrooms turned out to be an affable teaching-learning medium considering the costs of storing and transmitting information got much easier (Çakıroğlu, 2014). This new advancement in education was gradually approved by the instructors and they honed their pedagogical skills accordingly (Loniie & Andrews, 2009). In a pre-pandemic study, it was reported that there is seemingly an inverse relationship between a teacher's physical presence in the traditional classroom and increased technology use in the online classroom setting (Arrosagaray et al., 2019). It has been reported that instructor facilitation is the most crucial aspect to ensure students' engagement in online classes (Markova et al., 2017; Martin & Bolliger, 2018). The features of online classrooms like video-

conferencing, whiteboards, and chat windows are found to be facilitative in the student-instructor and student-student interactions (Stewart et al., 2011). It has also been observed that the post-assessment performance of students remotely taking exams (online classrooms- no invigilation) is similar to students conventionally taking exams (regular classrooms- with invigilation) (Goldwater et al., 2012). Bolliger & Martin (2018) highlighted the importance of inter-student communication and collaboration as an aid in rendering the learning experiences more 'engaging'. Quite similar to this observation, a 2010 study on students' participation style in collaborative online classes revealed a unique blend of their behavior- less contribution, coordination emphasizing, communicative or task-oriented (Chiu et al., 2010). Landrum (2020) added students' confidence to learn through online classes is the decisive parameter of satisfaction and academic utility of online classes. Now, the unprecedented arrival of the COVID-19 pandemic pushed the situation in a way that online classes turned out to be a necessity than an option (Dhawan, 2020). A qualitative study on Arabic pre-service teachers' perceptions of online learning during the COVID-19 pandemic indicated that their basic needs concerning online classes are: competence, arousal, self-determination, and relatedness (Batmang et al., 2021). Another study with a similar objective was carried out with Albanian university students and the authors found that the students are quite reluctant to accept online learning (Xhelili et al., 2021). The suggestion derived from this paper (Xhelili et al., 2021) was to integrate the online teaching modules gradually into the regular curriculum with attention being bestowed on students' characteristics. A study conducted on private and public universities in Iraq reported that both these higher education sectors are showing a low level of readiness to embrace the online classes that were introduced due to the pandemic (Budur et al., 2021). Ali (2020), in his meta-analytic study on online learning in higher education institutes during the COVID-19 pandemic, asserted that the adoption of online classes is not only a technical but also a pedagogical and instructional challenge. In a case study on online teaching during the COVID-19 lockdown in the UK, the authors vented their concern on equity- access to stable internet connection and sufficient infrastructure- among the learners during the online classes (Peimani & Kamalipour, 2021). In a similar study conducted in China during the pandemic, Clark et al. (2020) conveyed that students using computers in online classes have shown more progress in academic achievement than students using smartphones. A review article exploring the global impacts of the COVID-19 pandemic on teaching-learning processes realized the degree of motivation among the learners as one of the limiting factors in academic achievements (Pokhrel & Chhetri, 2021). For instance, innately motivated students will be relatively unaffected during online teaching as compared to the students from the vulnerable group (like, with learning difficulties) (Pokhrel & Chhetri, 2021). Rafique et al. (2020) examined the online learning readiness of Pakistani students enrolled in library and information sciences during the pandemic where they found that males show significantly greater computer/internet and online communication self-efficacy than females.

Having said much about global studies on online education before and during the COVID-19 pandemic, the Indian education system still believes in the conventional teaching-learning transaction wherein the physical presence of teachers is considered imperative. The latest study, during the pandemic, revealed that 98% of the students enrolled in an undergraduate degree at an Indian medical college realized the need for a blackboard as an effective teaching media (Padmalatha, 2020). Muthuprasad et al. (2021) conducted a similar study with the agricultural graduates in an Indian university where the students responded in favor of recorded classes with quizzes at the end rather than synchronous online classes. Additionally, the students pointed out that online learning during such a pandemic situation can be a lucrative option, given that there are no technical constraints and an instructor can effectively communicate during the classes (Muthuprasad et al., 2021). Slightly deviating from the usual notion, Kesharwani (2020) opined that the onset of the pandemic and the subsequent conception of online classes has indirectly ameliorated the technical abilities of both teachers and students in India. In another study, the authors distributed online google forms to 500 students from different Indian schools/colleges/universities and it was found that 78.4 % of students were not willing to participate in online classes during the pandemic (Raj & Fatima, 2020). In a study to inspect the impact of lockdown caused by COVID-19 on undergraduate and postgraduate learners of various colleges and universities of West Bengal (India), it was reported that 12.6 % of students felt that their home learning environment is not amiable for the online classes (Kapasia et al., 2020). A comparable, qualitative study was conducted with randomly selected teachers and students from four cities in Uttar Pradesh (India) through the lockdown and it was deduced that only 36% of those surveyed agreed to the possibility of online examination during the pandemic (Agarwal & Dewan, 2020). Citing to a 2021 survey concerning the north-eastern undergraduate students (Assam) of India, 46.21 % and 19.70 % of students perceived online learning amidst the

pandemic as partially effective and ineffective respectively (Rahman, 2021). As one of the merits of online learning during the lockdown in India, Jena (2020a) pointed out that physically challenged learners and female students from conservative families can find this mode of learning easily accessible. As a demerit of online learning during the lockdown in India, Jena (2020b) felt that online classes may broaden the social gap between the financially privileged and unprivileged students. Further, Jena (2020c) mentioned that the closure of schools, due to the COVID-19 lockdown, deprived the indigent students of the mid-day meal(s) which is usually an incentive for the students to attend classes. A cross-sectional study was performed among school-going students and parents from different parts of Rajasthan and Uttar Pradesh (India) to study their perceptions of online learning amidst lockdown38- the authors observed that parents are relieved that their children are safely studying through online classes, albeit they are concerned about their wards' anxiety issues and mental health due to a significant increase in the screen times for the classes. Naik et al. (2021) surveyed 874 responses from students, faculties, parents, and the general public/other professionals to understand the state of online teaching and learning of higher education in India during the COVID-19 lockdown. After the study, they found that 72.4 % of participants felt that the online classes affected their individual growth and 72 % of the respondents are not curious about online classes (Naik et al, 2021). In a study on student engagement in online learning during the period of the COVID-19 pandemic in India, Deka (2021) listed the factors- instructor characteristics, course design, student characteristics, learner's environment, course content, technology/administrative support- as determinants of learner engagement in online classes.

Considering the research hitherto, it is evident that studies on the relationship between COVID-19 and academia (curricula/contents based on the national needs) are quite context-specific and differ from each other (Al-Hattami, 2005; Reyes-Chua et al., 2020; Seymour-Walsh et al., 2020). Literature on educational research indicates a gap in studies on the future Indian teacher students' perceptions of online learning, though the subjective attributes of the pandemic are an integral part of the search for the best learning model during the pandemic, especially in the pandemics of India. Therefore, the present study aimed to explore the perceptions of pre-service trainee teachers after experiencing synchronous online classes for two months after the announcement of the national lockdown in India. Given that the sample population of this study is the future teachers of India, the suggestions and feedback from the qualitative analysis will aid in reconsidering the academic attitude towards how can the online learning platforms be improved, how the learning should be assessed in the online format, and how to ensure inclusive online learning experiences to foster an empowered student and teacher base. The implications of this study are valid for policy-makers, educators, curriculum designers, and technology experts worldwide since the responses are coming from the prospective teachers of the second-most populous country, India. Besides, it is transparent from the literature survey that the teacher-student interaction is of paramount importance in online learning (Malhotra & Bhatia, 2021), therefore, a pre-service trainee teacher should be able to decipher the online pedagogical technicalities like planning online lessons, discussions during webinars, and organizing online assessments through their own experiences. That is why this study is of cardinal value in global education to enquire about their readiness to engage in a computer-mediated educational environment in this time of uncertainty where 'new normal' is social distancing.

With that in mind, the present study is an attempt to address the following research objectives:

I. Understanding the pre-service trainee teachers' experience and satisfaction regarding different aspects of teaching-learning transactions (Interaction, Engagement, and Assessment) in online classrooms.

II. Exploring the advantages and disadvantages of online classrooms through pre-service trainee teachers' perceptions.

III. Interpreting the acceptability of online classrooms as a future media of education from the viewpoints of prospective teachers.

IV. Summarizing the suggestions of the respondents to get a clearer picture of what is that lacks in the online classroom settings

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METHOD
Research model and procedure
The research model adopted for this study was inspired by the Technology Acceptance Model (TAM) proposed by Davis (1986, 1989, 1993) dedicated to investigating technological impacts on the users (Liu et al., 2010).

Multiple papers dealing with the educational experiences of students during the COVID-19 pandemic have borrowed their idea from the TAM model (Lazim et al., 2021; Mailizar et al., 2021; Quadir & Zhou, 2021; Vladova et al., 2021). The research design and thereafter, the development of tools followed the given schema of TEAM-

T- Technological access of the pre-service trainee teachers to attend online classes.
E- Experiences and acceptability of online classes reported by the pre-service trainee teachers.
A- Assessment of the satisfaction with the student-teacher interaction during the online classes
M- Marking the challenges, benefits, and limitations of online classes through the responses of pre-service trainee teachers.

The procedure of this research was limited to the purview of the online platform (google forms) since we can't fetch the physical presence of the respondents in light of the COVID-19 pandemic. For the study, different kinds of questions about feasibility, flexibility, technicality, variability, utility, intractability, profitability, and difficulty of online classrooms were structured. The questions were crafted in such a manner that they catered to the different opinions held by the pre-service trainee teachers- be it a 2nd year or a 4th-year student(s). The initial questions were devoted to gathering the demographic profile (name (optional), gender, email address) of the respondents which helped the investigators to record the demographic details. The google form was made available to the entire cohort of 4 years integrated B.Sc.B.Ed. pre-service trainee teachers for 2 weeks. The settings in the form were such that a given respondent (with a google mail id) can fill the form only once. The forms bore an option of the consent of participation with no compulsion for mentioning the names of the respondents and the respondents were assured of confidentiality regarding their identity through the forms.

Research context, sample, and data collection
As stated earlier, the context of this study was to unveil the experiences of the pre-service trainee teachers in the online classes during the COVID-19 pandemic. Hence, the study was conducted within the Regional Institute of Education (RIE), Bhubaneswar wherein the 4 years integrated B.Sc.B.Ed. (2nd, 3rd, and 4th year) students (pre-service trainee teachers) were provided with google forms containing the questions/items. Located in the eastern state of Odisha (India), this institution is one of the constituents of the National Council of Educational Research and Training (NCERT)- the apex body of the Government of India which caters to policies and programs about school and teacher education. The experimental protocols were approved by the Ethical and Scientific Committee of the Department of Education in Science and Mathematics and the Department of Education, Regional Institute of Education (NCERT), Bhubaneswar.

The first half of the google form collected the quantitative data of the respondents that included names (optional), gender, and email addresses. In addition to that, this section consisted of their consent to participate in the survey. To unveil the technical limitations that the pre-service trainee teachers might be facing, this section also contained a question on their access to personal computers during the classes. Further, the google form was designed with individual Likert items (questions related to study hours, engagement with household chores, feedback, and future of education as online classes). The Likert scale was envisioned to understand the teacher-student interaction in the online classes, so, three Likert items containing different aspects of classroom interaction were developed (rating the interaction during class, rating the interaction/doubt clearing after class, teacher's ability to engage the students/trainee teachers). The open-ended questions were meant to explore the challenges, benefits, and limitations of the online classes from the perspectives of the pre-service trainee teachers.

Description of Tools used and their validation
The research tools for the study were a 5-point Likert rating scale(s) and 5-point Likert item(s) followed by open-ended questions. Likert scales are commonly used tools in educational research to elicit responses from the different actors involved in the formal education system. The bipolar Likert scales have considerably evolved from measuring respondents' approval (Agree-Disagree) to forms like measuring frequency (Often-Rare) or importance (Not at all important-Very important) (Harpe, 2015). Uebersax (2006) has used the term 'Likert-type scales' for the latter examples; in the present paper, the authors have unanimously used 'Likert rating scale or Likert scales' to avert any ambiguity since there is no significant variance between the two names of the similar tools. The Likert rating scales majorly occur in two forms- symmetric and asymmetric- depending on the position of the neutral

option (Joshi et al., 2015). Symmetric Likert scales have the position of the neutral option (Neutral/Don't know) in the middle of the two extremes of strongly disagree and strongly agree. Asymmetric Likert scales have the option of neutrality inclined towards either extreme, thus offering fewer choices on either side of the neutral option (Boone & Boone, 2005). Since teacher-student interaction has been observed to be the crucial element during online classes, it is gauged using the Likert scale for the given study.

The second research tool was a 5-point Likert item which is defined as unique, single, Likert-type questions that are planned with some aspects of original Likert response alternatives (Desselle, 2005; Willits et al., 2016). A Likert item is a specific statement concerned with the quantitative assessment of the attitude/opinion/experience of a given respondent (Subedi, 2016). The primary philosophy behind the Likert items is single items may be a useful reflection of the comprehensive appraisal of a complex experience of the respondent(s) (Harwell & Gatti, 2001). It differs from the Likert scale in the fact that Likert items won't be combined into a composite scale (Clason & Dormody, 1994) to conclude a common attribute of the referents. Therefore, it can be considered that a Likert scale consists of multiple, similar Likert items to conclude, while Likert items, when not a part of the scale, are individual response sets of attitudinal measurement (Subedi, 2016). Nevertheless, both Likert scales and Likert items collect ordinal data and need to be analyzed carefully to avoid type-I errors (Harwell & Gatti, 2001; Jakobsson, 2004).

Open-ended questions have been observed to be a potential tool in social science research because of their ability to stimulate responses that are otherwise ignored in the close-ended framework (Reja et al., 2003). It is observed that the close-ended questions provide the respondents with no scope to put words to their opinions/responses due to (pre-designed) limited options (Foddy, 1993). In addition to that, it is often observed with the students/young respondents, that the multiple options provided in close-ended questions serve as an easy alternative to restrict their answers (Schuman & Presser, 1979; Schuman & Scott, 1987).

The validation of the research tools was performed through the face and content validity. The face validity (Trochim, 2005) was calculated through two methods to ensure that tools were apropos to measure the perceptions of the pre-service trainee teachers towards online learning- first, 10 pre-service teacher educators with M.Ed. the degree were consulted to rate the tool according to clarity (use of language and words), precision (clear dissemination of message), and understanding (ability to derive a meaning out of the statements). Fleiss' kappa index (evaluates inter-rater agreement) was calculated to account for agreement among the raters (acceptable range- 0.41-0.60) (Osorio & Jaimes, 2019). These raters were contacted through emails for individual distribution of the google form and were requested to assign 1 or 0 to clarity, precision, and understanding for each statement/question in the form. Second, the level of comprehensibility was measured to ensure face validity- for this, 10 faculties of Education from the Regional Institute of Education (NCERT) Bhubaneswar were asked to assign percentages for comprehensibility (equal to or greater than 85 % = high comprehensibility; 80-84.9 % = moderate comprehensibility; and less than 80 % = low comprehensibility) of tool statement/question catering to the research objectives (Osorio & Jaimes, 2019). This was also followed by an estimation of Fleiss' kappa index. The content validities of the tools were measured through 10 online pedagogy experts for an overall remark on its content- each statement/question of tools was categorized as essential, useful but not essential, and not necessary and the individual experts nodded in favor of the category. Further, content validity ratio (CVR) was computed (González et al., 2016) through the Lawshe index and any item whose CVR was less than 0.62 (n= 10) was planned to be dejected:

$$CVR = \frac{n_e - \frac{N}{2}}{\frac{N}{2}}$$

where, n_e = number of experts who marked the "essential" category
N = total number of experts
Content validity index (CVI) of the tool is the average of the CVRs of the accepted items.

Data analysis of responses

The excel-based analysis yielded the validity indices of the tool following the methods mentioned above. The quantitative analysis involved descriptive statistics like percentages to sort the responses from the Likert items and Likert scale into three categories as given below:

Negative extremities (Unsatisfied/Disagreed/Decreased)
Neutral option (Don't Know/Neither Agree nor Disagree/No change)
Positive extremities (Satisfied/Agreed/Increased)

In addition to that, statistics inference like paired t-tests and one-way ANOVAs were performed to interpret statistically significant ($\alpha < 0.05$) relationship between participants and their opinions. The semi-qualitative analysis of the responses to the open-ended questions was graphically represented using pie charts. All the analyses were performed in PAST 4.0 software with a probability level of 0.05.

RESULTS

Validity of the Tools

The tool validity was determined through face and content validity as discussed in section 2.3. Now, the face validity was tested through two methods: the first one was through the rating of the tools for clarity, precision, and understanding (Table 1) and the second one was through percentage scoring of tools' comprehensibility (Table 2).

Tool type	Clarity	Precision	Understanding
Likert Items			
How would you rate your study hours in the present scenario?	1	1	1
How would you rate the Feedback from teachers regarding the assignments/projects?	0.9	1	1
How will you rate your engagement with household chores?	0.9	1	1
Consider that in the near future, there is no chance to resume physical classes. How would you rate the Virtual classes as a Future course of Education?	1	0.9	1
Likert scale on teacher-student interaction			
Interaction with teachers during online classes.	1	1	0.9
Interaction with teachers after the class hours (doubt clearing).	0.2	1	0.3
Teachers' ability to engage in the lectures.	0.4	1	0.2
Open ended questions			
What do you find most challenging in the Virtual Classes?	0.6	0.7	0.6
What do you like the most in Virtual Classes?	0.2	0.2	0.4
Please state any "two" suggestions that you would be happy to find in the online classes as a mark of improvement.	0.3	1	1

The Fleiss' kappa index of inter-rater agreement was determined for clarity (0.419), precision (0.516), and understanding (0.457). The acceptable range of Fleiss' kappa index falls in the range of 0.41 to 0.60 and values greater than 0.61 are labeled as good or very good67. Therefore, it can be inferred that there is acceptable agreement among the 10 raters (pre-service teacher educators) concerning the clarity, precision, and understanding of the statements/questions in the tool. For comprehensibility, the Fleiss' kappa index was found to be 0.476 which also falls in the acceptable range. Within the tools, 5 statements/questions lay in the range of moderate comprehensibility (80- 84.9 %) and 5 statements/questions lay in the range of high comprehensibility (85 % and above). Therefore, combining both the results, it can be affirmed that the tools in this study are having acceptable face validity. The content validity ratios (CVRs) were calculated through the Lawshe index as tabulated in Table 3; since the CVRs were more than 0.62 (n= 10), none of the statements/questions were rejected. The overall content validity index (CVI) was obtained to be 0.9 which supports the validity of the questions/ statements used in the tools.

Table 1. Inter-rater agreement of the 10 pre-service teacher educators regarding the criteria of clarity, precision, and understanding for the statements/questions of the research tools.

Tool type	Comprehensibility (in %)
Likert Items	
How would you rate your study hours in the present scenario?	87.9
How would you rate the Feedback from teachers regarding the assignments/projects?	88.9
How will you rate your engagement with household chores?	84.2
Consider that in the near future, there is no chance to resume physical classes. How would you rate the Virtual classes as a Future course of Education?	83.3
Likert scale on teacher-student interaction	
Interaction with teachers during online classes.	80.1
Interaction with teachers after the class hours (doubt clearing).	80.3
Teachers' ability to engage in the lectures.	81
Open ended questions	
What do you find most challenging in the Virtual Classes?	91.9
What do you like the most in Virtual Classes?	93.5
Please state any "two" suggestions that you would be happy to find in the online classes as a mark of improvement.	91.6

Table 2. Inter-rater agreement of the 10 faculties of Education regarding the comprehensibility of the statements/questions of the research tools.

Tool type	Essential	Useful; non-essential	Non-essential	CVRs
Likert Items				
How would you rate your study hours in the present scenario?	9	1	0	0.80
How would you rate the Feedback from teachers regarding the assignments/projects?	10	0	0	1.00
How will you rate your engagement with household chores?	9	0	1	0.80
Consider that in the near future, there is no chance to resume physical classes. How would you rate the Virtual classes as a Future course of Education?	10	0	0	1.00
Likert scale on teacher-student interaction	10	0	0	1.00
Interaction with teachers during online classes.	9	0	1	0.80
Interaction with teachers after the class hours (doubt clearing).	10	0	0	1.00
Teachers' ability to engage in the lectures.	9	1	0	0.80
Open ended questions	9	0	1	0.80
What do you find most challenging in the Virtual Classes?	10	0	0	1.00
What do you like the most in Virtual Classes?	9	1	0	0.80
Please state any "two" suggestions that you would be happy to find in the online classes as a mark of improvement.	10	0	0	1.00
CVI				0.90

Table 3. Content validity ratios (CVRs) and content validity index (CVI) of the statements/questions used in the tool

Demographic analysis and technological access of respondents

The total number of participants in the survey was 180- it is evident in every Regional Institutes of Education of India that female trainee teachers outnumber the male trainee teachers. To circumvent any biases concerning a greater number of female respondents, all the analyses are done in percentages. Fig. 1 depicts the gender demographics of the respondents which reflects the higher number of female pre-service trainee teachers (70.6 %) followed by male pre-service trainee teachers (28.9 %). One respondent chose not to specify the gender which accounted for 0.6 %. From Fig. 2, we can conclude that more than half of respondents don't have access to personal computers (55 %) while 45 % of respondents own a computer in their homes. It is also one of the majorly marked limitations of online classes as commented by the respondents (discussed in section 3.4).

Experiences of pre-service trainee teachers concerning online classrooms

The Likert items were concerned with quantitative aspects of online classrooms that included present study hours, feedback patterns, engagement of household chores, and acceptability of Online classes as the future learning platform.

The majority of the respondents (45 %) considered that there is no notable change in the study hours in the present social situation of online classes (Table 4). 30 % of respondents opined that their study hours have decreased or extremely decreased through online classes. The absence of a proper learning environment is believed to create the regression of study hours.

Assessment is one of the vital features of the teaching-learning process. Pre-service trainee teachers' contentment with the assessment pattern is important for the successful transmission of knowledge and acceptance of the learning process. The data of the present study (Table 4) showed that 33.9 % of respondents believed that no difference in the assessment process prevailed before the advent of online classes from the one they are being subjected to in the present times. 21.6 % of pre-service trainee teachers were dissatisfied/extremely dissatisfied with the assessment patterns while 44.5 % of respondents were satisfied/extremely satisfied with the assessment patterns. The difference in the responses to the given Likert item is levied on individual preferences and also linked with subject specificities; the investigators asked this as a general statement and not confined to a given subject. Being at home also brings responsibilities that include household chores like cleaning, washing, and cooking. The hostel accommodation (in the normal times) is quite different from the home-dwelling- because almost every student at Regional Institute of Education (NCERT), Bhubaneswar lives in the hostels, the investigators were interested to know the Pre-service Trainee Teachers' involvement in household chores in the present time. 35.6 % of respondents realized no difference in their involvement in the household chores in the present day if compared with the past. This response can be interpreted as the self-dependent lives students lead in the hostel and thus, they practice the same at their homes. More than half the respondents (56.2 %) reported that they are quite busy with the chores and therefore, one can assert that their productivity concerning studies might be indirectly hampered in these trying times (Table 4). Only 8.4 % of respondents considered their participation in household activities to be less- the disparity in the responses between the two extremities can be the financial background of the pre-service trainee teachers. Regional Institutes of Education (5 at present) across the nation encourage inclusive education and the low financial charges of courses in these institutions allow pupils from economically poor families to get enrolled. Staying at home in the present situation, the pre-service trainee teachers have to engage in household chores to help their families and the high percentage of responses against the right extremity can be explained through this context.

The Likert item i.e. the acceptability of online classes as the future platform of teaching-learning transaction not only helped us to understand the success of the online classes in the present situation but also showed the attitude of future teachers toward the notion of online classes (Table 4). The extremities are nearly equal to each other with a small difference. 36.6 % of respondents considered online classes as a poor mode of the teaching-learning transaction while 32.8 % of respondents embraced online classes as a good mode of learning for future generations. 30.6 % of respondents displayed confusion (not sure) about the adaptability of online classes as a good learning platform.

	Ranks				
	1	2	3	4	5

Likert item(s)	Negative extremities		Neutral/Don't Know/ No change	Positive extremities	
	Responses are in percentages				
1) Pre-service Trainee Teachers' perception of study hours during Lockdown (viz. online classes)	8.89	21.11	45	19.44	5.56
2) Pre-service Trainee Teachers' satisfaction level of Assessment patterns being practiced in online classes	4.44	17.22	33.89	33.89	10.56
3) Pre-service Trainee Teachers' involvement in the household chores	0.56	7.78	35.56	35.56	20.56
4) Pre-service Trainee Teachers' acceptability of online classes as the future media of Education	14.44	22.22	30.56	25	7.78

Table 4. Different responses of pre-service trainee teachers towards online classes during COVID-19 outbreak.

Teacher-student interaction in the online classroom

The investigators developed three Likert items about 'Teacher-Student Interaction'- an essential component of teaching. Table 5 shows the results where the responses are taken in percentages and the statistical analysis follows the table.

It is clear from the above table that the percentage of responses in favor of satisfaction (ranks 4 and 5) exceeded the percentage of responses in favor of dissatisfaction (ranks 1 and 2). Around 30 % of responses in each Likert item are marked for the neutral option (rank 3) wherein the student preferred not to comment on their satisfaction or dissatisfaction. The responses from Likert items were significant different within each other ($F_{4,10} = 41.82$, $p < 0.001$; One-way ANOVA; Fcritical= 3.48).

For paired t-test, we have grouped the responses into three categories (as discussed in the methodologies): Negative extremities (ranks: 1/2); Neutral option (rank: 3); Positive extremities (ranks: 4/5). The null hypothesis for the paired T-test is H_o: The two samples (here, extremities) are taken from populations (here, responses) with equal means. The results of the paired t-test are grouped in Table 5 and we conclude that the observed t-value (9.9702) exceeds the critical t-value (2.7764) at p=0.05 (Also, pobserved< 0.05).

We reject the null hypothesis and accept the alternate hypothesis H_1: The two samples are taken from populations with unequal means. In other words, there is a significant relationship between the positive and negative extremities in the given Likert rating scale.

Items in the Likert scale	Ranks				
	1 (Extremely dissatisfied)	2 (Dissatisfied)	3 (Neutral)	4 (Satisfied)	5 (Extremely satisfied)
	Responses are in percentages				
1) Interaction with teachers during online classes.	3.9	14.4	32.8	38.9	10
2) Interaction with teachers after the class hours (doubt clearing).	3.3	11.7	26.7	37.2	21.1
3) Teachers' ability to engage in the lectures.	1.7	6.7	35.6	36.7	19.4

Table 5. Pre-service trainee teachers' rating on teacher-student Interaction in online classes during COVID-19 outbreak through Likert scale.

Extremities (Samples) (A)	No. of responses (B)	% of responses (C)	Mean of C (D)	Variance	95 % Confidence level	t-value	*p*- value

Positive extremities	294	163.3	54.3	24.173	(42.22, 66.647)	9.9702	0.00056
Negative extremities	75	41.6	13.9	25.41	(1.378, 26.422)		

Note: Significant at α<0.05

Table 6. Paired t-test of the responses of pre-service trainee teachers retrieved from the Likert rating scale

Semi-qualitative assessment of challenges, benefits, and limitations of online classes: Pre-service trainee teachers' suggestions to improve online classes

The three open-ended questions were meant to decipher the challenges, benefits, and limitations of online classes. From the open-ended questions, we concluded the major possible reasons depending on the repetition of the responses. The results of the present study revealed that the maximum number of respondents found access to a good internet connection (86.7 %) and the absence of laboratory experiments/activities (80.6 %) challenging (Figure 3). It was followed by 55 % of respondents preferring that lack of peer interaction is challenging in the course of online classes. 42.8 % of respondents felt that online classes are vulnerable to easy distractions and interferences due to the lack of a classroom environment. Lack of access to library books (19.8 %) and inability to write proper notes (25.4 %) received minimum responses as challenges in online classes (Figure 3). These challenges are vital for consideration to improve the online classroom platforms, considering these are the perceptions of future teachers.

About three-fifth of pre-service trainee teachers (59.4 %) considered that online classes save time that was otherwise being devoted to walking from hostels to classrooms (Figure 4). On a similar scale, 60.6 % of respondents believed the use of power-point presentations, as a part of online classrooms, is beneficial to their learning process. The use of audio/video clips (48.3 %) and a relaxing home environment (34.4 %) during the online classes are some of the perks as opined by the pre-service trainee teachers (Figure 4).

The last open-ended question was intended to receive suggestions from the pre-service trainee teachers, precisely the future teachers. The majority of suggestions stated by the respondents that they would like to experience the online classes. Maximum respondents felt the need to have a proper class timetable/schedule (81.2 %) which they find absent in the online classes. 76.7 % of respondents realized the need to have regular assessment systems as an improvement to the present online classes. This suggestion is followed by 73.4 % of pre-service trainee teachers reporting the need to provide a proper course syllabus (content structure) to them so that they can be prepared for the classes. A good recommendation that came from the respondents was to record the class videos and share the same with them after the class is over (65.1 %). Not all the instructors were sharing the recorded videos- creating a room for the given suggestion. In a similar notion, 67.9 % of pre-service trainee teachers believed sharing the PPTs after the class will be beneficial for making notes (Figure 5). The findings of the present study can be used to accrue a successful online classroom interaction - also, the suggestions are coming from the prospective teachers' perspectives and therefore, serves to be a worthwhile implementation for the future online classes.

DISCUSSION

This study intended to decipher the perception of the undergraduate students, engaged in pre-teaching courses, towards the advent of online classes- a teaching-learning platform which is extremely new in the context of Indian Education. Salmon (2000) has reported the need to understand the behaviour of students towards the teaching practise as an important step towards effective learning- this study is an effort in the similar pursuit. According to the findings of Ogunnowo (2016), students' acceptance to the online learning is directly related to the access to technological aspects of online learning platform(s) since that increases acceptance while allowing self-paced learning environment. Similar observation was recorded in the present study wherein 86.7 % respondents considered lack of internet connection (like Wi-Fi) a major challenge in the online classes. In a study by Peytcheva-Forsyth *et al.* (2018), it was found that the bachelor students own a positive attitude towards the technologies they are well informed of. The investigators of the present study observed that 60.6 % respondents considered PPTs as a benefit to online classrooms- we can expect this response is owing to the awareness of the PPT mode of teaching

interaction. According to Liaw & Huang (2003) and Liaw & Huang (2011), the experience and expertise of the students with respect to specific web technicalities and applications in the educational context influences their attitude towards the online learning. These observations consociate with the present study-Indian education was never practiced through the online learning and the sudden transition from conventional method did not allow the teachers and students to gain any prerequisite skills, therefore, the respondents have vented out so many challenges-audio/video technicalities (38.9 %), inability to make notes (25.4 %), and easy distraction (42.8 %). Though the investigators did not observe intense enthusiasm among the future teachers for considering online classes as a future of teaching-learning transaction, there were 32.8 % responses in favour of embracing online classes. There were 30.6 % responses that accounted for the option of 'Don't Know' in this Likert item. We believe this finding is in line with the observations reported by Hardy (2011) where he has mentioned the need to develop online courses in better depth as there seem to be a strong proclivity among the prospective students to pursue the online classes. Our study found that a section of respondents preferred the traditional learning process as was reflected in the open questionnaire- 55 % respondents realised the lack of peer interaction in online classes while 38.3 % respondents felt the absence of chalk-board mode of teaching as an impediment to online classes. This statement also supports findings from the research of Ogunnowo (2016) and Salawudeen (2008) where it was revealed that a high proportion of students voted in favour of traditional classes. In addition to that, the intrinsic nature of the students is to be "social learners"- preferring to learn and interact in groups (Weaver, 2002). The study was conducted in an Indian institution where students- pre-service trainee teachers- from diverse socio-economic classes are enrolled for the degree. Seamless execution of online classes is subjected to internet connectivity and a high bandwidth Wi-Fi at home is a luxury which many parents cannot afford for their children- this can be an impediment for the pre-service trainee teachers (lack of proper internet connection: 86.7 %) to attend the classes as is also reported by Kruse (2006). As an advantage of online classes, 59.4 % respondents stated that online classes save time of travel from their hostels to classrooms- Gunasekaran et al. (2002) described the same advantage where e-learning saves expense and journey time of travelling from homes to the institutions. Relaxing home environment and classroom class schedules- 34.4 and 15.3 % respondents respectively labelled these two facets as advantages of online classes. This finding resonates with the study by Featherstone (2006) where he considered students' ability to control their learning environment as a primary benefit to pursue E-learning courses- this is also supported by the Adult learning theory. Jaggars (2014) concluded that many students find it difficult to adopt the online classes due to their inability to balance home-family-study demands. In a similar observation from our study, 56.11 % respondents have found themselves to be highly engaged in household chores. We observed that majority of the pre-service trainee teachers have positively affirmed to teachers' ability to engage them in the online classes (Likert scale)- Irwin & Berge (2006) have also referred teachers can break the obstacles of online classes by a healthy teacher-student interaction. It is reported that there is a relationship between use and access to online classes and students' satisfaction level (Qazi *et al*., 2020)- such can be a plausible explanation for many of the pre-service trainee teachers realizing that online learning is not an acceptable future teaching-learning platform.

CONCLUSION, LIMITATIONS AND FUTURE RESEARCH

The competence of online classrooms to allow interaction in an independent spatio-temporal platform is a feature of great worth in the present social situation. The COVID-19 pandemic has left everyone baffled as to when a 'good time' will arrive but it has opened the premise of online classrooms as a new educational paradigm for the future. Teachers, though willing to accept the new technologies, have vented the need to train their professional skills through seminars and workshops (Lowrie, 2007). The given study fits with the present social situation when the students are restricted in their homes and the major findings reflect the perspectives of pre-service trainee teachers regarding the online classes through the lens of Indian educational practises- more than half of the respondents displayed doubt and discontentment in the assessment patterns of the online classes; more than half of the respondents were in a state of incertitude and clear reluctance to accept online classes as a future medium of learning; teacher-student interaction was well appreciated by the respondents in the synchronous online classes; absence of laboratory experiments/activities, internet connectivity, lack of interaction among peers were the top three challenges in the online classes as per the respondents; among the advantages of online classes, use of PowerPoint presentations, saving travelling time from hostels to classrooms and sharing the recorded clips of classes topped the responses of the survey; the respondents felt need for proper class time tables and a better/regular

assessment system for facilitating the online classes. They suggested developing a proper structure of the content(s) to be delivered and that should be shared with them subject-wise before the class commences for that day.

The Indian education system is still in its infancy regarding the online classes and the teachers and students are very new to the new practice. For an efficacious teaching-learning environment, we must be open to suggestions and constructive criticisms- this study can be used to improve the shortcomings of the online classes to create an ambiance where the students are active learners. One way this study can affect the design or use of educational computer systems is to employ techniques of the flipped classroom while delivering content- in that way, one of the suggestions (prior intimation of content) of the pre-service trainee teachers is also considered.

The generality of this study lies with the entire community of teachers, educators, pedagogy experts, and policymakers to ease the execution of online classes. The majority of the studies done with respect to online classrooms have compared the students' performance in e-learning and blended learning practices but this study is unique in its way to explore the pre-service trainee teachers' perception of the online classes, with its applicability across the larger swath of developing nations of the globe. One of the limitations of this study is that due to the absence of participants physically, the data is collected through google forms which they are previously inexperienced with. This may lead to some confusion concerning answering the questions or submitting the responses, though full attention was paid by the investigators to such a situation. Another limitation is that the study was restricted to the level of pre-service trainee teachers which could have been more robust if the faculties were involved in the study.

The future implications of this study can be to report the perceptions of the teachers and the obstacles they face in light of online classes. Moreover, the surveyors took the responses from pre-service trainee teachers of science disciplines; hence, the study can be implied further to the student teachers from humanities and commerce backgrounds- this will provide a more comprehensive understanding. Even a similar study can be repeated with the same sample population after addressing their concerns through a gap of time in the academic year- this will provide their level of contentment with the amendments in the online classes, thereby justifying the amendments.

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PROBLEM FACED BY STUDENTS OF HIGHER EDUCATION DURING VIRTUAL CLASSES: A CASE STUDY OF CENTRAL UNIVERSITY OF KASHMIR

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ABSTRACT

During the Pandemic, the all the sectors went suddenly from off-line to on-line mode, from on-campus to off campus, from office to work from home. The education sector is no exception. Till date the education sector is not fully operational via on-campus or off-line mode. All schools up to universities went from offline mode to online mode of learning within a very short period of time. The qualitative method of research was used to achieve the specific objectives. The research aimed at finding the problems faced by the students during the online mode of learning in various departments of Central university of Kashmir. The study was conducted using a google form questionnaire prepared by the researchers. The questionnaire was based on the various problems or issues faced by the students during online mode of learning & contained 20 questions regarding the problems faced by students. The google link was shared in the WHATSAPP groups of the departments of Central University of Kashmir. The investigator was reminding the student of all the departments on daily basis till required sample size of 104 respondents were reached. Finally, the recorded responses were accessed by the investigator according to the objectives of the study. It was found that majority of students were not interested in taking online classes. So, blended approach needs to be taken under consideration. The most important part of learning that was affected drastically was the practical education as this part of education cannot be fulfilled in online mode of learning. More than one third of students believed that practical part was not justified in online mode of learning. Majority of students feel that technological knowledge has a great role to play in online learning. When both the teachers as well as learners are techno-seavey then the online education becomes possible.

Keywords: Higher education; Virtual class; Central University of Kashmir; Students

INTRODUCTION

During the Pandemic, the all the sectors went suddenly from off-line to on-line mode, from on-campus to off campus, from office to work from home. The education sector is no exception. Till date the education sector is not fully operational via on-campus or off-line mode. All schools up to universities went from offline mode to online mode of learning within a very short period of time. A few years ago, we had a choice to have education via online mode. But in pandemic situations online education has become the only choice for serving the students by providing academic facilities without going for the on-campus education. It has proved helpful to students of all age groups as well as faculty members by serving from home, thus, providing more time for students and teachers regarding their personal and family related responsibilities. However, the online mode of learning had some serious issues like learning facilities, less knowledge about the electronic gadgets both by teachers and students, laboratory works, new applications to be used for online mode of learning, assignments, and evaluation.

Now continuing use of technology in education has compelled education systems to shift its focus from Face-to-Face mode to online mode of learning. Since the electronic devices have variety of multimedia properties, they are helpful to make abstract concepts easy to understand. They are useful in self learning mode rather than face to face where a single teacher is trying to teach a number of learners together irrespective to their learning styles, pace, capacity and study habits. In online mode of learning, the technology plays a crucial role in performing many academic functions such as supplementary teaching, witnessing activities and performances of students, evaluation and assessment of knowledge, record keeping and preserving data, giving feedback and supporting instructions with graphics, pictures, animation and sound. It allows the learners to learn at their own pace, leisure and learning styles. The research can be used to minimize the various issues faced by the students during online mode of learning. The student teacher interaction can be enhanced by providing proper learning schedule and platform. The research showed that the class size and delivery modes during the online learning have a negligible impact on the students' academic performance. The digital technology, internet issues, voice cuts and audibility impacted on the performance of students. The teachers also faced constraints during regular online teaching as they have to position themselves and act in a very liable way. As a matter of fact, the online education should be made a part of the regular course so as to avoid any disturbances and negative impact during any emergency situation like COVID-19 pandemic.

The quality of education is determined by the quality of teachers. With the emerging technologies the teaching-learning, the teacher must have 21st century skills **(Jan, 2017)**. Some faculty members wanted the online education to be the part of the routine curriculum and some want to continue the online mode of learning even after the pandemic **(Gupta et al 2021)**. The implementation of online education in the existing curriculum is very challenging but has to be imparted during the covid-19 pandemic to promote and maintain the learning of students without having much impact on the overall performance of the students. According to Singh et al (2021) initiatives launched by the Department of School Education and Literacy, Ministry of Human Resources Development (MHRD) includes Diksha, Swayam Prabha Channel, Shiksha Van, E-Pathshala, and National Repository of Open Educational Resources (NROER). Apart from the Indian central government efforts, each state has various online education initiatives that are tailored to their needs. Pradas et al (2021) revealed that there was an increase in the student participation as well as the academic performance in the online mode. Lone (2021) revealed that both teachers and students had moderate level of motivation and attitude for online teaching while there is higher level of attitude/motivation of secondaries than collegians. Online learning cannot produce effective results in remote areas like Kashmir, where a huge majority of students are not able to access the internet due to technical and financial issues (Khan et al 2021). Jan (2020) found issues like Administration and management awareness, Technical, Linguistic, Availability of resources; affect the implementation of e-learning in the higher education institutions of Kashmir. MuttuPrassad et al (2021) specified that most of the students (70%) were ready to opt for online classes. The students preferred the recorded classes and quiz at the end for effective learning. Bashir and Bhat (2017) explored the effect of social-media on mental health. Yu-Fong Chang et al (2021) revealed that the students were ready to take online course however it was obtained that the blended learning course i.e., the combination of physical course and online course will be a trend in the near future.

A little research has been carried out related to the higher education students' problems faced while online learning. Aderbigbe (2021) studied that online education can facilitate deep learning provided that the teachers provide students with proper guidelines and reasonable time to spent with colleagues. The online mode of learning also faced the technological issues such as internet disruption, voice cuts other than social effects like isolation and social distancing. Most of the students (70%) were ready to opt for online classes (Prassad et al 2021). Naik et al (2021) analysed the efficiency of online teaching and learning in India. The study revealed that offline classes are always better than online sessions. This is due to lack of facilities, infrastructure, technical tools, and the internet issues being the major setback in taking online session. The study showed that more than 60% students are not ready to take online classes due these issues which leads disinterest and demotivation towards the online mode of learning. The urban scholars possessed more e-learning interest than rural scholars (Jan and Mattoo 2018). So, the present study is to find the various problems faced by the students during the online learning. The need of the hour is to detect these problems and resolve by providing the best solutions. There are various problems in online learning like connectivity issues, learning facilities, student teacher interaction, distractions, learning environment and so on. All such issues of online learning were taken into consideration and the survey was carried on the various departments of Central University of Kashmir. This paper tried to reveal the problems faced by the students of Central University of Kashmir during the online classes.

Objectives
The objectives of the present study are:
- To find out the issues faced by the students of Central University of Kashmir during online learning.
- To suggest the strategies for making online learning more interested and motivating for the students.

Research Question
- What are the issues faced by the students of Central University of Kashmir during online learning?
- What are the strategies to make the online learning more interested and motivating for the students?

METHODOLOGY
Sample
The representative proportion of the population is called a sample. In the present study, the 104 sample was taken from the various departments of the Central University of Kashmir using the stratified proportionate random sampling. The sample was drawn from all the programmes.

Tool used
In the present study, the researchers used the following self-constructed tools.
- **A. Personal Information Blank:** This part of the study includes the personal information blank of the questionnaire. The students need to fill up this part prior to questionnaire response section. The section includes the personal data of the students such as Gender, Department, Semester and area to which the student belongs. These areas were mandatory regarding the research and the personal information acquired from the students was kept confidential to avoid any misuse of the data.

B. Questionnaire: The questionnaire provided to the students was based on the various problems faced by the students during the online mode of learning. The main aim of the questionnaire was to obtain the feedback/responses from the students required for carrying out the research process. The various questions included in the questionnaire were regarding the issues like motivation, effect on mental health, delivery of the content, assignment submission, technical knowledge etc. The questionnaire contained 20 questions regarding the problems faced by students. The questionnaire was 3-point likert type.

ANALYSIS AND INTERPRETATION

In the present investigation, an effort has been made by the investigator to access the problems faced during online learning by the students of various departments of Central University of Kashmir. The data collected from the sample subjects was put to percentage statistical analysis, so as to reach at specific conclusion. Taking into consideration the objectives of the present study, the data were arranged in the tabular form followed by the pictorial representation. The various results obtained from the research are mentioned as:

Table 4.1: Questions related Problems faced during online learning

S.No.	Question	Student response		
		Always	**Never**	**Sometimes**
1.	Are you interested in taking online classes?	26%	32.7%	41.3%
2.	Are you motivated towards online learning?	22.1%	47.1%	30.8%
3.	Does online class have any effect on your mental health?	53.8%	19.2%	26.9%
4.	Are you satisfied with student-teacher interaction in online mode?	28%	57%	15%
5.	Is it easy for you to follow the schedule of online classes?	31%	42%	27%
6.	Do you get deviated by the ads during online mode of learning?	38.5%	46.2%	15.4%
7.	Is there practicum part justified while online mode?	15%	61%	24%
8.	Do you feel isolated while you learn from online mode?	62%	20%	18%
9.	Does technological knowledge play any role in taking online classes?	80.8%	8.6%	10.6%
10.	Do you feel content easy to understand which is being delivered while online mode?	22.1%	43.3%	34.6%
11.	Are you satisfied in taking the assignments online?	48.1%	34.6%	17.3%
12.	Are you satisfied in submitting the assignments online?	61.5%	22.2%	16.3%
13.	Do you feel comfortable while taking online classes?	33.7%	44.2%	22.1%
14.	Are you getting any kind of ads while you are in online class?	19.2%	51%	29.8%
15.	Is your learning being affected by sitting at one place during online classes?	54.8%	20.2%	25%
16.	Do you have any effect of instructors/teachers' skills during online classes?	31.7%	29.8%	38.5%
17.	Are all your teachers cooperative will being in online mode?	65%	13.6%	21.4%
18.	Are you satisfied with the learning facilities provided online?	46.2%	35.6%	18.2%
19.	Do you possess your own device for online learning?	92.3%	7.7%	0
20.	What kind of device you possess?	Phone	Laptop	Other
		76%	20.2%	3.8%

4.1. Interested in Online classes:

After analyzing the student responses from the various departments, it was observed that only 26% of the total samples are fully interested in taking online classes while 32.7% students are not interested (Table 4.1). This shows that the maximum students of Central University of Kashmir were interested in offline as well as online learning. The result is shown in the figure. 4.1.

Fig 4.1: Percentage of students interested in online classes.
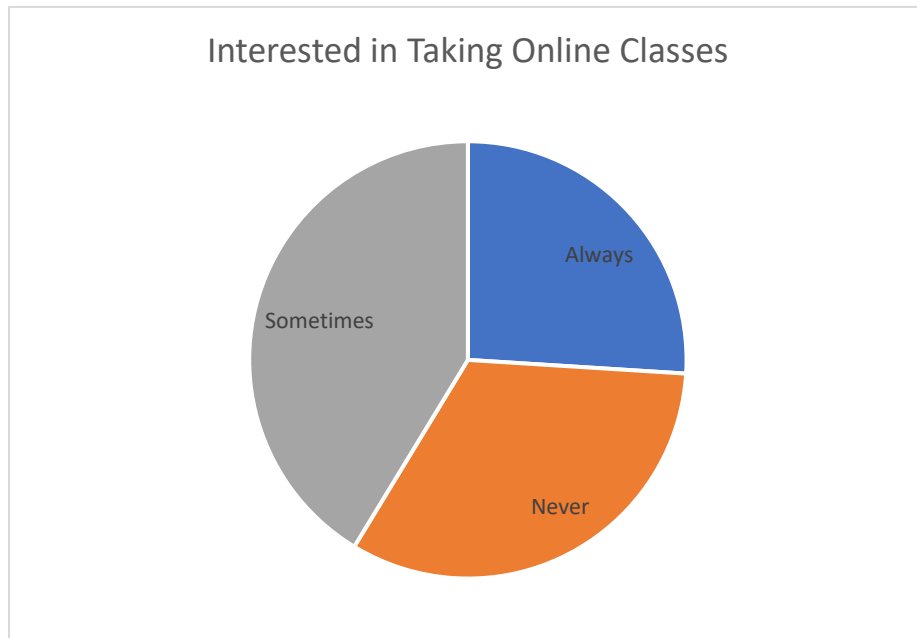
4.2. Motivation towards Online learning

It was observed from Table 4.1, that only a small percentage of students were motivated towards online mode of learning. Most of the students felt very less motivation towards online learning. The results showed that only 22.1% showed motivation towards online learning and 47.1% were not motivated at all towards online learning. Fig 4.2 shows the student motivation towards online learning.

Fig 4.2 Student Motivation towards online learning
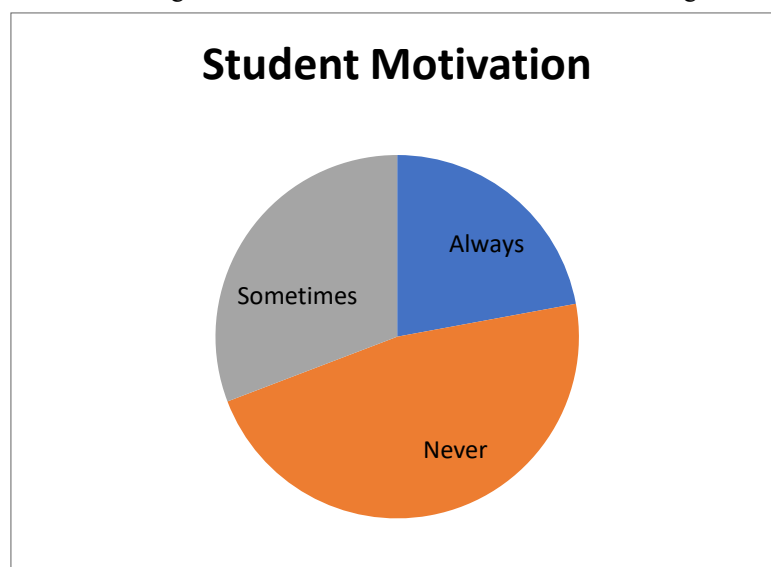
4.3. Effect on Mental Health

The research showed that most of the students were of opinion that online classes have effect on their mental health. After analyzing the student responses, it was observed that 53.8% of students were of opinion that online classes affected them mentally while as only 19.2% students feel that online classes don't have any effect on their mental health (Table 4.1). The graphical representation of effect on mental health is shown in figure 4.3.

Fig 4.3 Effect of online learning on mental Health
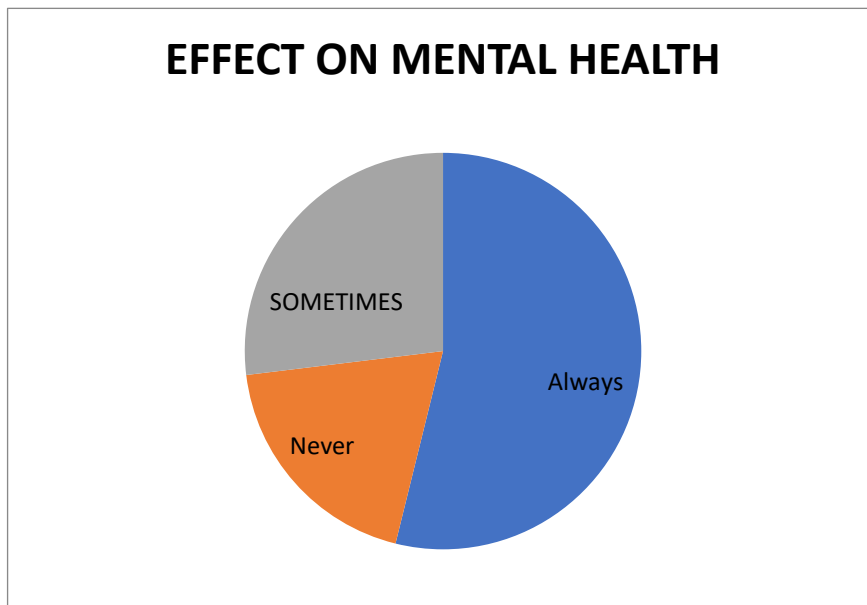
4.4. Student-Teacher interaction in online mode of learning

Most of the students were not satisfied with student-teacher interaction in online mode of learning. Only 28% students were satisfied with online interaction (Table 4.1). Fig 4.4 shows the student teacher interaction in online mode of learning.

Fig 4.4 Student-Teacher interaction in online mode of learning
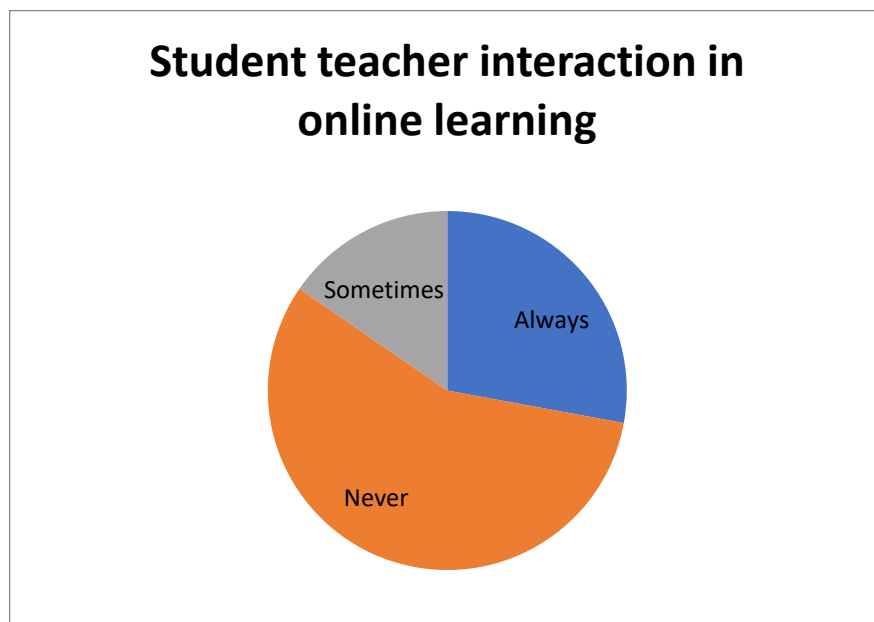
4.5. Schedule of Online Classes

It was observed from Table 4.1, that 42% of students found it difficult to follow the schedule of online classes and 31% found it easy to follow the schedule of online classes while 27% students found it sometimes easy and sometimes difficult. Fig 4.5 shows the percentage statistics of the online schedule followed by the students.

Fig 4.5. Follow schedule of classes in online mode of learning
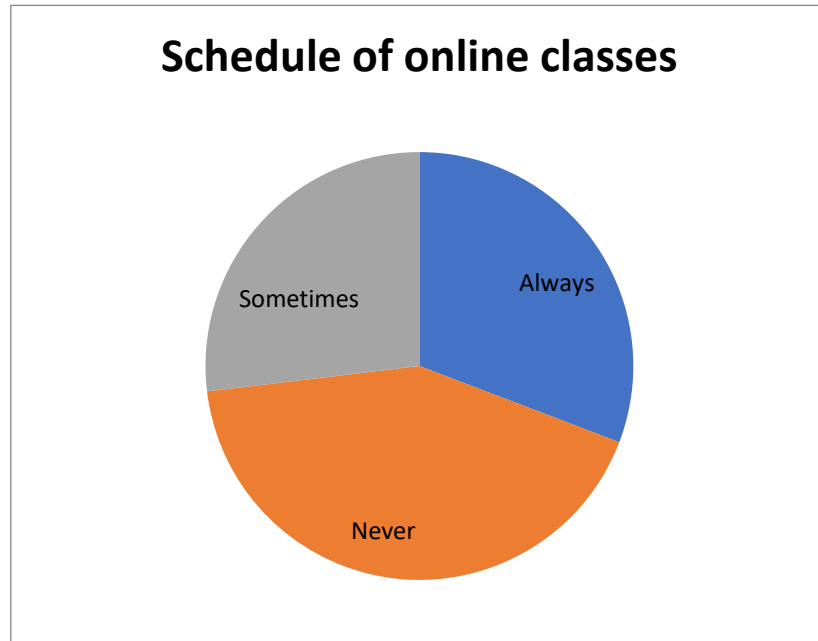
4.6. Deviation caused by the Ads during online learning

The student responses showed that 46.2% students were not affected by ads and 38.5% students were deviated by ads due the distraction caused by these ads (Table 4.1). Fig 4.6 shows the effect of ads in online mode of learning.

Fig 4.6 Effect of Ads in online mode of learning
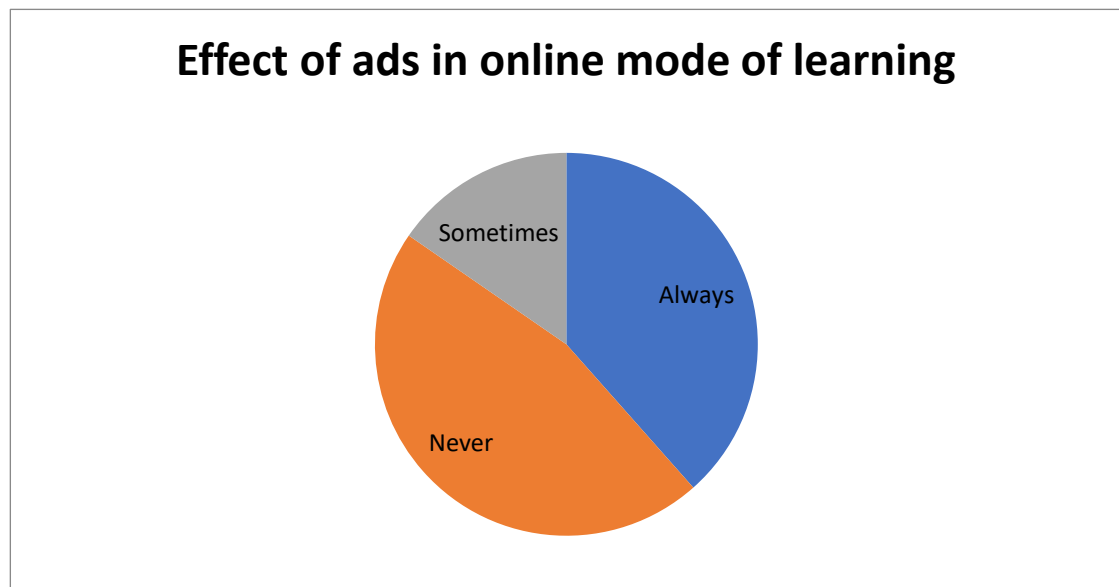
4.7. Justification of Practicum work in online learning

After analyzing the student responses, 61% students said that practical part was not justified in online mode of learning and only 15% students feel that practical part was justified while 24% students feel that practical work was justified to some extent. Fig 4.7 shows the student response regarding the justification of the practical work.

Fig 4.7 Justification of Practicum work in online mode of learning

Justification of Practicum work
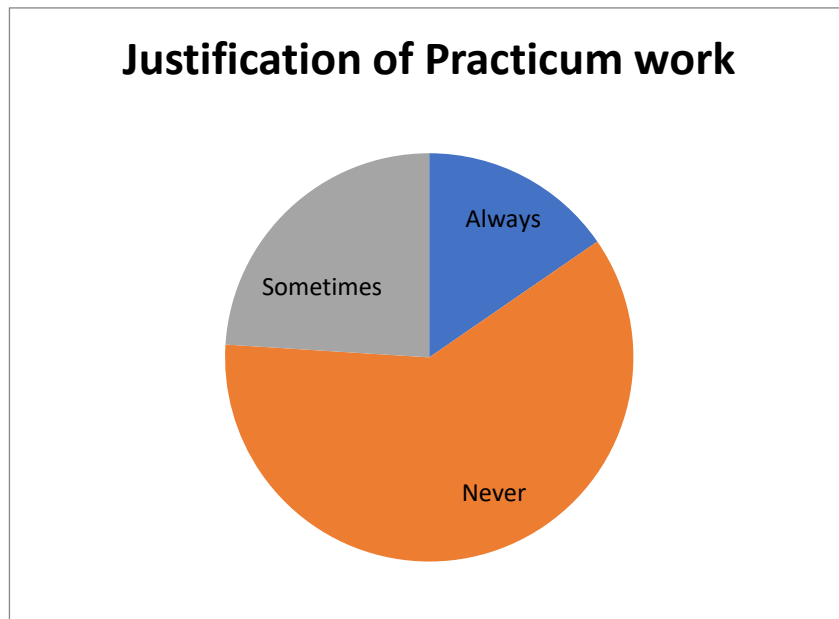
4.8. Feeling isolated during online mode of learning

It was observed that 62% students feel isolated during online mode of learning and 20% does not feel isolated and while 18% sometimes feel isolated. Fig 4.8 shows how the students feel in online mode of learning.

Fig 4.8 Students feeling isolated during online mode of learning

Student isolation in online mode of learning
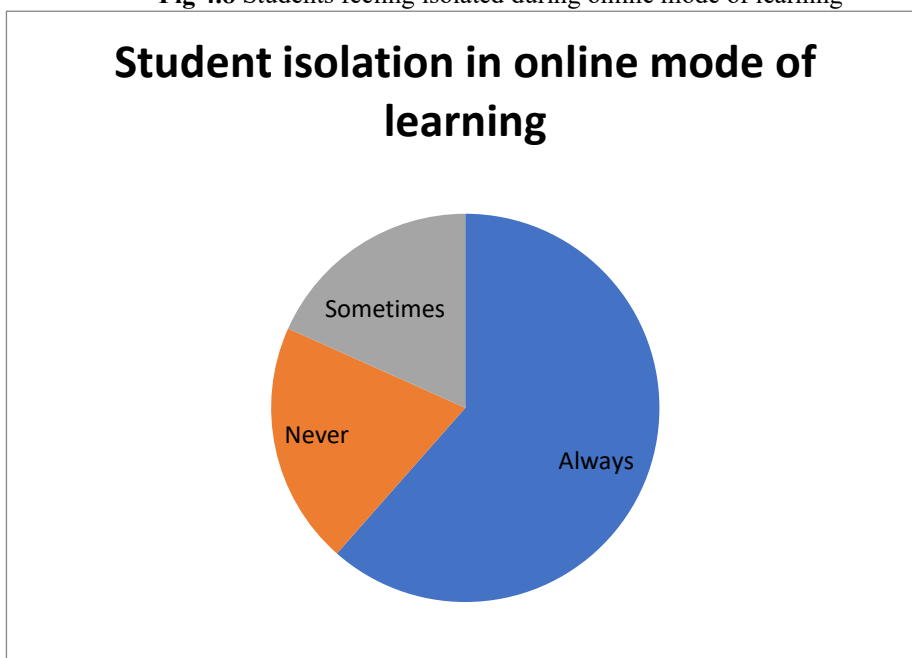
4.9. Role of technological Knowledge in online learning

The results showed in Table 4.1 that 80.8% students feel technological knowledge has a role to play in online learning and 8.6% students feel technological knowledge has no role in online learning. Fig 4.10 shows the role of technological knowledge in online mode of learning.

Fig 4.9 Role of technological Knowledge in online learning
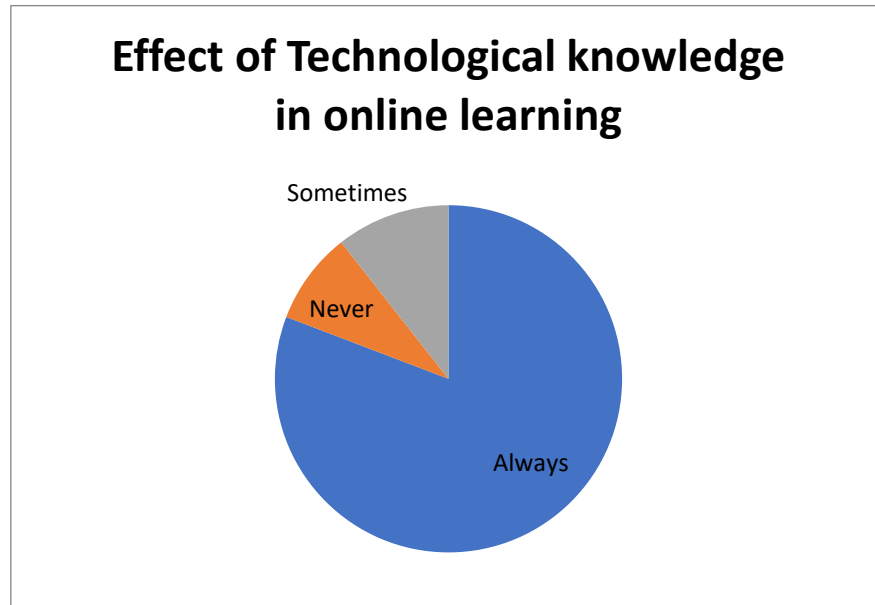
4.10.   Level of Content delivered while online mode

After analyzing the student responses, it was observed that only 22.1% students feel the content easy to understand and 43.3% students found the content not understandable (Table 4.1). Fig 4.10 shows the percentage of students about the content whether easy to understand or not.

Fig 4.10 Understanding the content delivered online
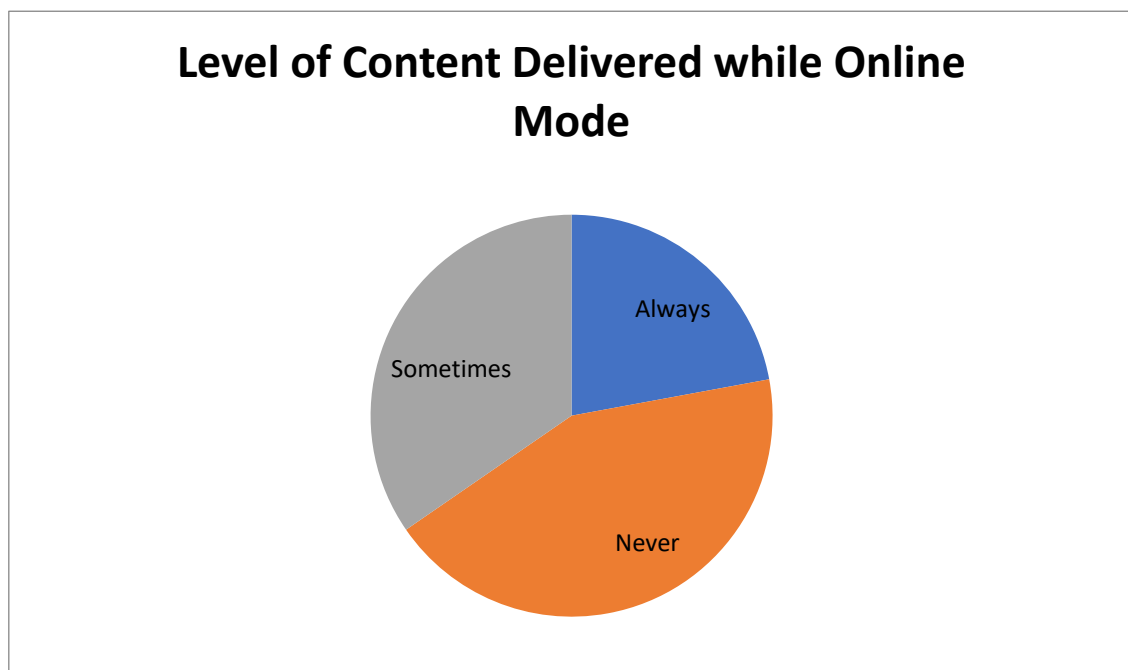
4.11.   Online Assignments

It was observed from Table 4.1, that 48.1% students were satisfied taking online assignments and 34.6% students were not satisfied with online assignment. Fig 4.11 shows the percentages statistics of students regarding the online assignment taking.

Fig 4.11 Online Assignments
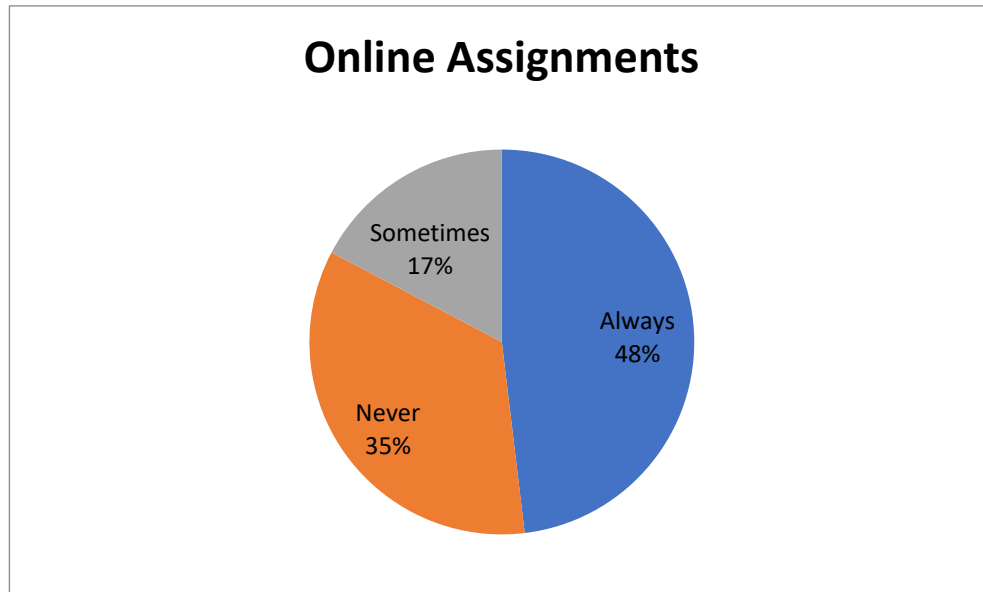
4.12. Online Assignment Submission

After analyzing the responses, from Table 4.1, it was observed that 61.5% students found the online assignment submission much comfortable and easy while as 22.1% students found it difficult to submit assignment online. Fig 4.12 shows the student percentage interested in submitting the assignments online.

Fig 4.12 Satisfaction submitting the assignments online
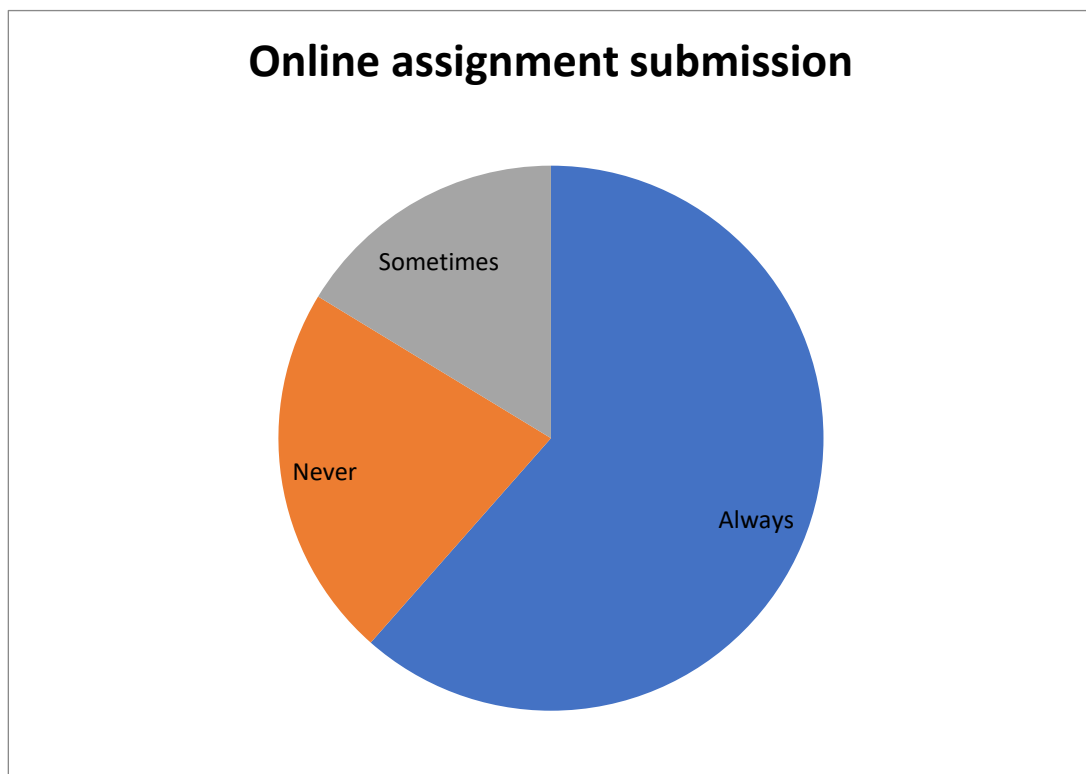
4.13. Comfort

It was observed that 33.7% of students feel comfortable while taking online class and 44.2% student feel uncomfortable (Table 4.1). Fig 4.13 shows the percentage of comfort-ness in taking online classes.

Fig 4.13 comfortable while taking online classes

Comfortable Taking Online Classes
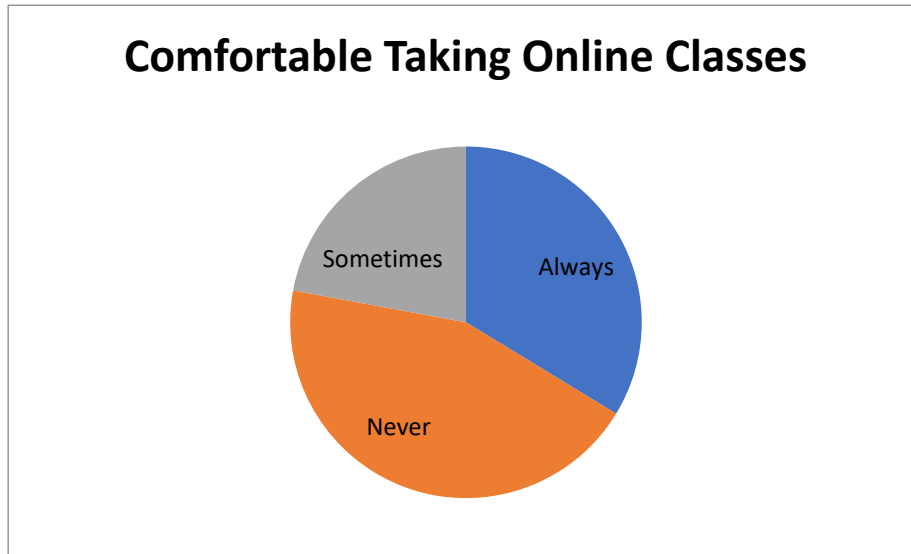
4.14.   Advertisements during online classes

It was observed that only 19.2% students get ads during online classes while 51% student responses were not getting ads while taking online classes (Table 4.1). Fig 4.14 shows the percentage of students regarding the ads during online classes.

Fig 4.14 Get ads during online class

Advertisements during online classes
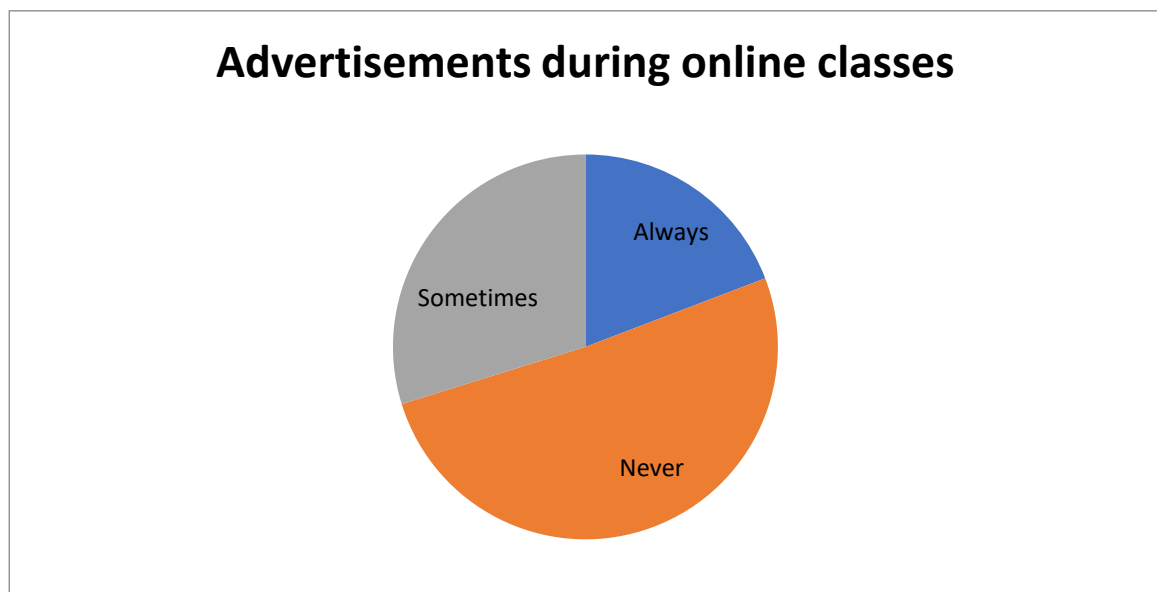
4.15.   Effect of sitting Position

From Table 4.1, it was observed that 54.8% students are affected by sitting at one place and 20.2% students found it comfortable to sit at one place during online mode of learning. Fig 4.15 shows the percentage of students affected by at sitting at one place during online learning.

Fig 4.15 Sitting Position

Effect of sitting Position
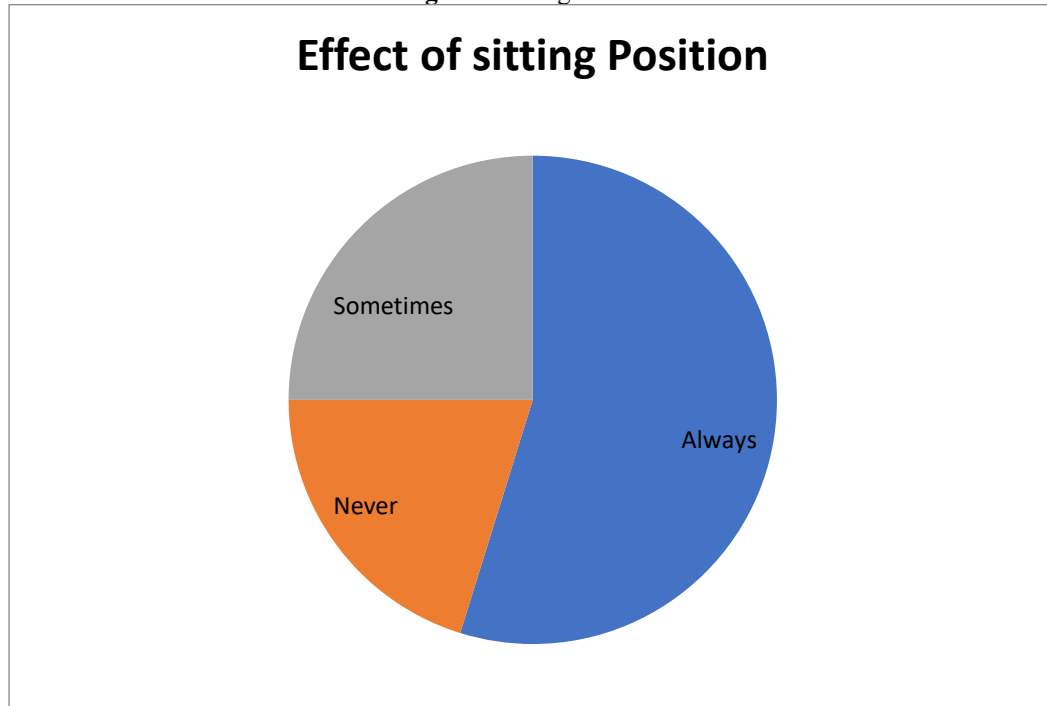
4.16.   Effect of Teachers skills

The students gave different responses and after analyzing the data it was observed that 31.7% students feel teachers' skill play a vital role in understanding the content delivered online and 29.8% students feel that teachers' skills play no role in online learning (Table 4.1). Fig 4.16 shows the student percentage regarding the teacher skills in online mode of learning.

Fig 4.16 Effect of teachers' skills during online classes

Effect of Teachers skills
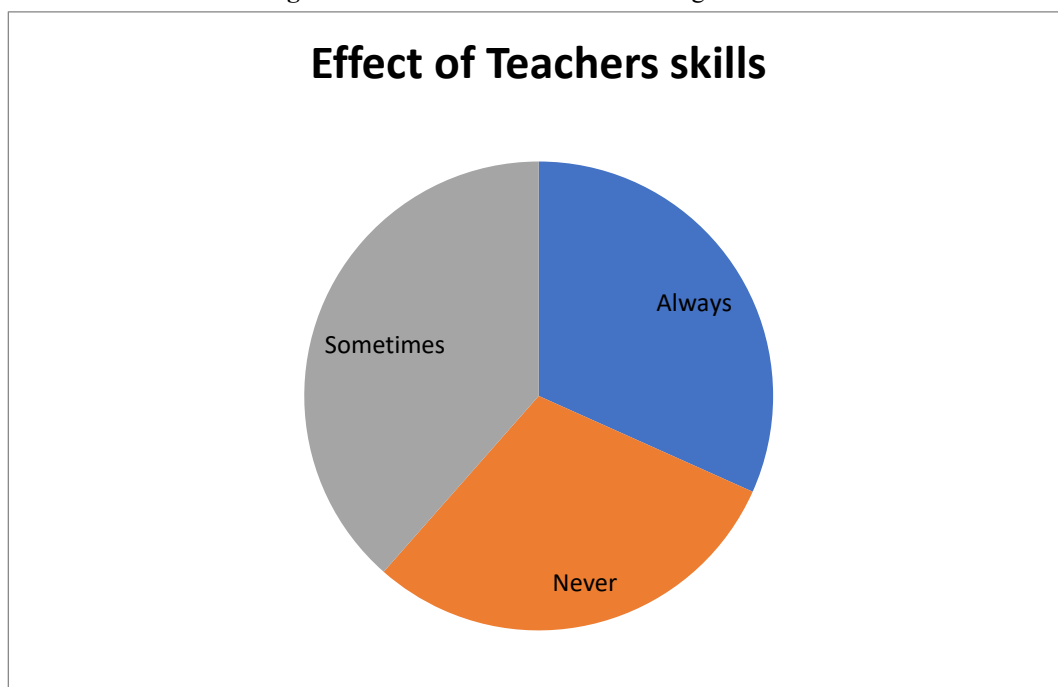
4.17.   Teachers' co-operation

From Table 4.1, it was observed that 65% students said that the teachers are cooperative while 13.6% students feel teachers are not cooperative. Fig 4.17 shows the teacher cooperation in online mode of learning.

Fig 4.17 Teachers' co-operation

Teachers' co-operation
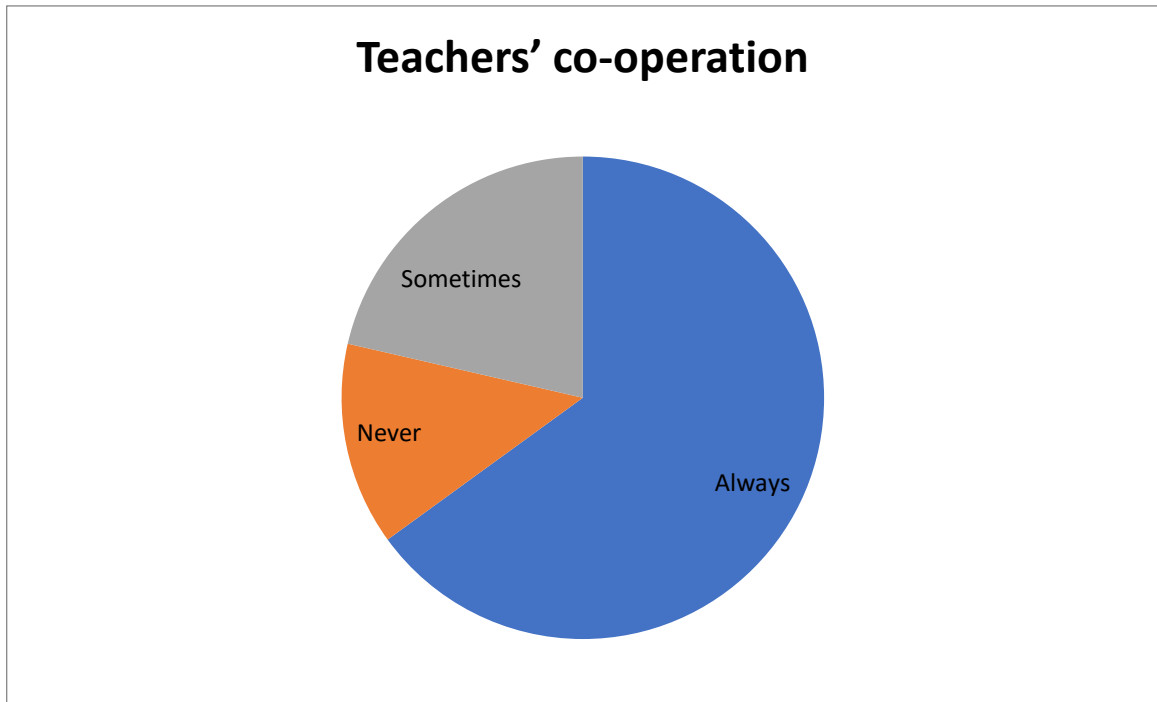
4.18.   Satisfaction regarding Online Learning Facilities

It was observed that 46.2% students were not satisfied with the facilities provided for online learning while as 35.6% students were satisfied with the facilities (Table 4.1). Fig 4.18 shows the percentage of students' satisfaction with online learning facilities.

Fig 4.18 Satisfaction regarding Online Learning Facilities

Satisfaction regarding Online Learning Facilities
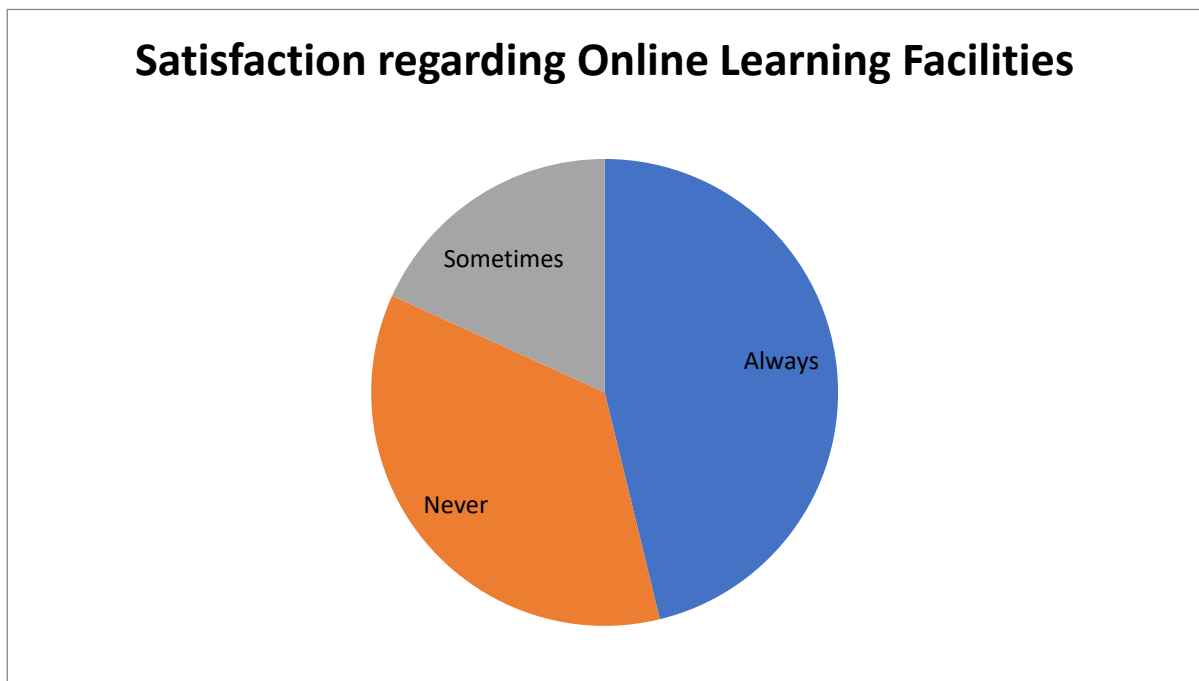
4.19.   Own Device used for taking online classes

After analyzing the results, it was observed that 92.3% students have their own device for online learning while 7.7% students do not possess their own device and use others device for online learning (Table 4.1). Fig 4.19 shows the percentage of students who possess their own device and those who doesn't.

Fig 4.19 Own Device used for taking online classes

Own Device used for taking online classes
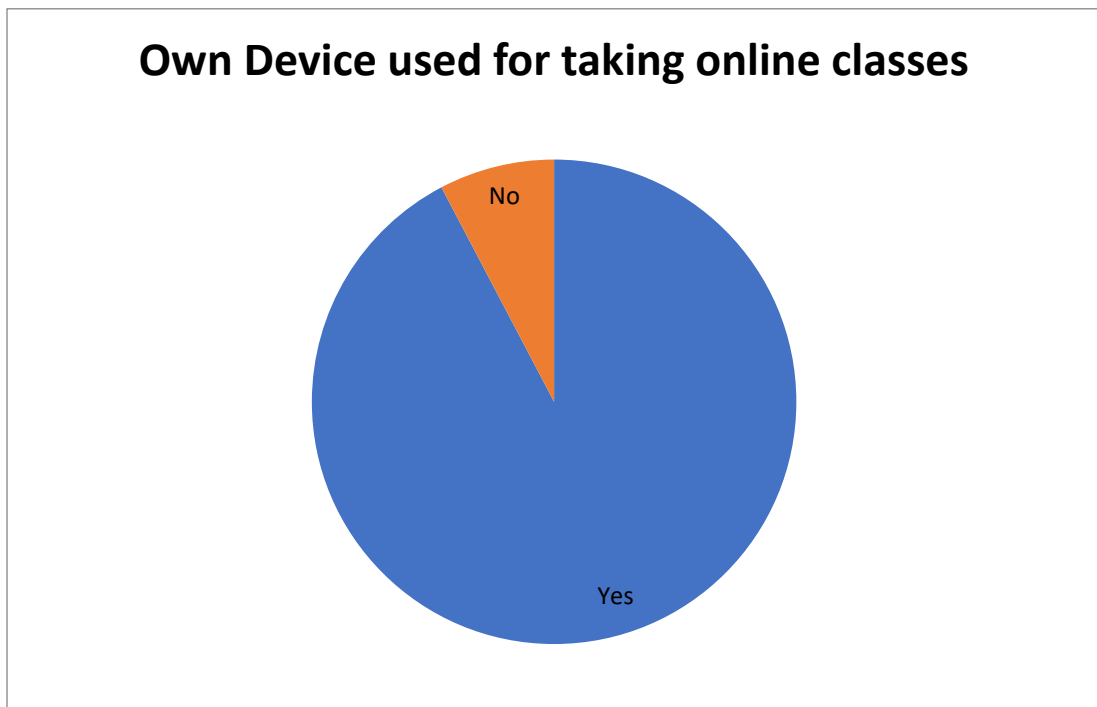
4.20.   Type of device used for online learning

It was seen from Table 4.1 that 76% students use phone, 20.2% use laptop while 3.8% students use some other device for online mode of learning. Fig 4.20 shows the percentage of devices used for online mode of learning.

Fig 4.20 Type of device used for online learning

Type of device used for online learning
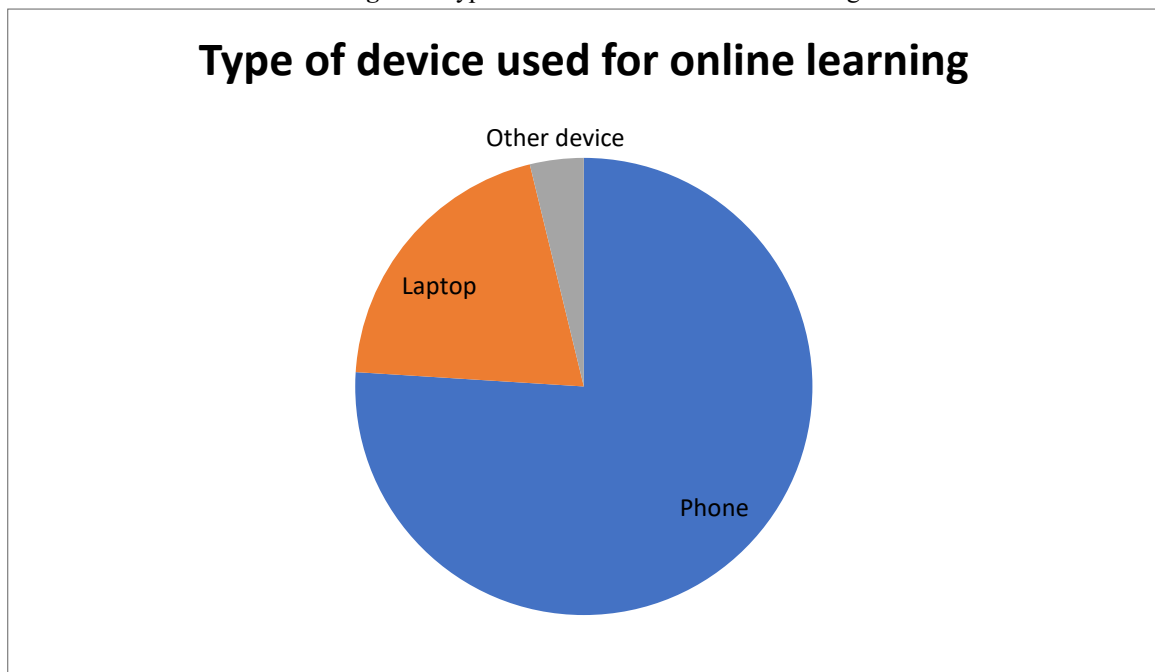
DISCUSSION

During the COVID-19 Pandemic, the mode of learning shifted from face to face to online mode of learning as the pandemic halted the movement of people from one place to other. During this phase, the world saw a drastic change in the learning environment as everyone was confused how to start the educational institutions during these harsh prevailing conditions of COVID-19 pandemic. After a break of few months, the online mode of learning was started throughout the world with most of people not knowing how to cope with the technological issues faced

by both the teachers as well as students. This phase of learning faced many critics as well as hindrances in the beginning but with the passage of time, both the faculty as well as students learned the basics of using the digital platform for learning. However, the problems for both the students as well as teacher doesn't vanish at all, some of the issues still persist in this mode of learning. This research tried to work out the problems faced by the students of Central University of Kashmir during the online mode of learning. After the analysis of data, it was found that most of the students faces problems as:

- Majority of students were not interested in taking online classes. So, blended approach needs to be taken under consideration.
- About half of the students were not motivated to give online learning. The low motivation of students towards online learning may be due to less focus, poor learning environment and other distractions such as ads, technical issues etc. So, students mostly want to continue through face-to-face mode of learning.
- Most of the students who attend online classes have effect on their mental health. The mental illness may be due to increase in the screen time and sitting at one place for a long time leading to some negative thoughts which causes the psychological disturbances.
- The online mode of learning has a drastic effect on the student-teacher interaction as most of the students feel that the interaction with the teachers is below standard in this mode of learning. The students are not able to clear their doubts or confusion during online classes as everyone wants to leave the classes as soon as the class is completed.
- The most important part of learning that was affected drastically was the practical education as this part of education cannot be fulfilled in online mode of learning. More than one third of students believed that practical part was not justified in online mode of learning.
- Majority of the students feel isolated during online mode of learning. The online mode of learning has increased the mental illness and anxiety due to the isolation of the students.
- Majority of students feel that technological knowledge has a great role to play in online learning. When both the teachers as well as learners are techno-seavey then the online education becomes possible.

SUGGESTIONS
- Blended learning approach should be followed by the educational institutions so as to avoid any trouble in future.
- The online facilities should be enhanced for better understanding and comfort of students.
- There should be criteria for filling up the practicum part of education in online mode of learning as practical work plays a vital role in most of the courses and thus cannot be neglected. The gap between the theory and the practicum should be filled in online mode also.
- The students as well as teachers should be made aware about technological knowledge so that they can use the technological tools easily without any hindrance.
- Separate doubt clearance classes should be held to avoid any confusions and it will also increase the teacher-student interaction making the online learning more interesting.

CONCLUSION
It can be concluded that the online mode of learning has both positive as well as negative impacts on the students as well as teachers. The shifting from face-to-face learning towards the online mode of learning has made us to ponder upon the technological development in the field of education which is currently below par in most educational institutions. The study suggests that both online as well as offline mode of education i.e., blended approach should be followed by all the schools as well as universities. From this research it can be concluded that:

- It was observed that the online platform still lacks in various fields like the student teacher interaction where most of the students were not satisfied with the student teacher interaction. It may be because no time was provided for doubt clearance or clearing any sort of confusion.
- The students also complained about the lack of learning facilities in online mode of learning. The lack of facilities hindered the learning abilities of the students.
- The online learning had also mental effects on the students making them prone to depression or some other psychological effects.
- The study also revealed that the lack of learning environment in online mode of learning has also affected their learning skills.

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STUDENTS' AND TEACHERS' PERCEPTIONS ABOUT ONLINE TEACHING DURING COVID-19 PANDEMIC A SURVEY

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ABSTRACT:
The Covid-19 pandemic has led to a dramatic transformation in every aspect of life. The education system has shifted from conventional classroom teaching to virtual mode to encourage the principal of social distancing. The technology played a major role in smooth delivery of educational needs globally during the pandemic. The change to online teaching brought new opportunity for the students to continue teaching but at the same time carried with it many new challenges. Current study is done to evaluate the students' and teachers' perceptions about online teaching in current scenario.

The present study is the questionnaire based survey to know the students' and teachers' perceptions about the online teaching in Northern India. The sample size consisted of 323 students and 146 teachers who responded to the survey questionnaire on google forms.

The IT and infrastructure related issues, the training needs of students and teachers and difficulty is assessing the practical skills have been found to be the main challenges for the smooth delivery of e-learning. There is need to address these concerns to allow the smooth delivery of digital learning in future as it can go a long way to help the global education system.

Virtual learning can play an integral role in the educational system by bridging the gap of distance and travel. Students even at remote areas can benefit from online teaching provided the infrastructure is supportive and the participants have proper training to use the system. Combination of classroom and virtual teaching can be an answer in future for best utilisation of resources and manpower. This is an original research article based on the online survey questionnaire about online teaching.

Keywords: education, teaching, digital, Virtual learning, online teaching, e-learning.

INTRODUCTION:

Outbreak of corona pandemic has affected almost every sphere of life, be it health, social, economic or education. This is an unprecedent emergency and whole world is struggling today under the effect of this pandemic. Though the healthcare is the most affected part directly but no part of our lives is untouched by this. (1)The education system has undergone a notable transformation in the last one year as the classroom teaching has not been possible wholly or partially across almost all the countries. In India, national lockdown was declared in March, 2020 and this led to shutdown of all educational institutes including schools and colleges. For many of the students' formal examinations could not be conducted. As the pandemic continued, there was shift from classroom teaching to virtual mode of teaching. As virtual mode is not the usual mode of teaching in many countries, there were many challenges faced by both the students as well as education providers in the initial months. (2) Few of these challenges are still continuing. Though the digital education has been established since long but that was an optional system and not a common mode of routine teaching till now. Before corona pandemic, digital education was practised in conferences, CMEs and training programmes only. For formal education i.e., schools and colleges, used to rely on classroom teaching only.

We undertook this survey on students and teachers in Northern India to assess their perceptions about online teaching, to know the challenges faced by them and to assess how digital education can play a role in future in the formal education system.

Objective: of the study is to find out perception of teachers and students about online teaching. We tried to analyse the students 'opinion about ease and effectiveness of teaching and teachers views about challenges faced by them and effectiveness of teaching methods.

METHODOLOGY:
This questionnaire based online survey was distributed to the respondents in the form of google forms. Respondents for the purpose of study were the students of class 10th - post-graduate level and teachers of same grades who were randomly picked. The study was based on the descriptive quantitative design to obtain the opinion of respondents. The response was recorded on five- point Likert scale where one denotes strongly disagree and five indicates strongly agree. Both the students and teachers were from varied academic fields like humanities, commerce, science and engineering. Simple random sampling technique was used for the selection of survey. The sample size consisted of 323 students and 146 teachers who responded to the survey questionnaire. Two different surveys were conducted- one for the students and one for teachers. This survey was undertaken in the month of February-March 2021.
The questionnaire was distributed to the participants in the google forms with a consent form stating that the information provided will be used for publication purpose after anonymisation. All participants gave consent to participate in the study. The ethical committee approval was not sought as the study involved a survey based on the voluntary participation to answere a questionnaire and there was no intervention involved.

RESULTS:
A total of 323 students from various streams like humanities, science , computers and engineering and 146 teachers participated in the survey.
The responding students were almost equally from both the genders (55.7% being males and 44% females). Majority of them were in age group of 16-20 years. (Figure1)
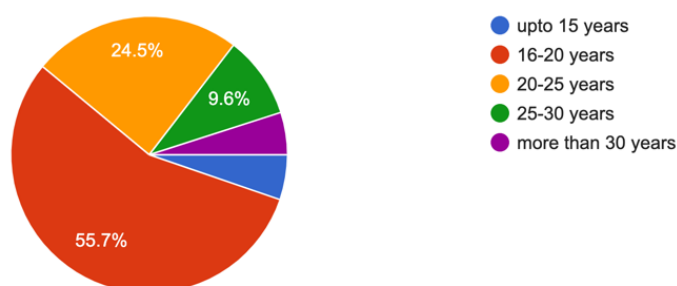

Figure 1- Age distribution of students
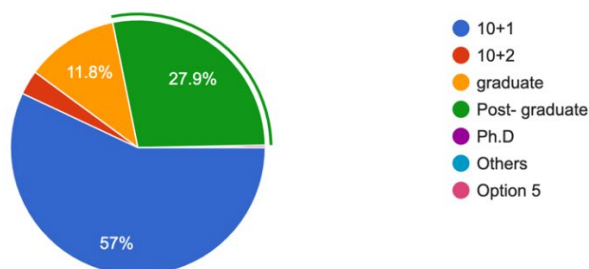
Figure 2- Education Grade of students

Speciality if any
323 responses

- Humanities
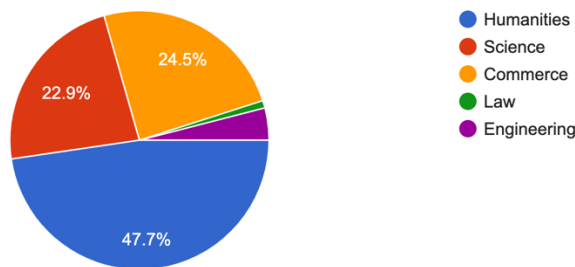- Science
- Commerce
- Law
- Engineering

Figure 3- Distribution of students according to speciality of study

 Almost 60% of the respondents were in higher school and the remaining 40% were graduates and post-graduates (Figure 2)and they came from different streams including humanities, law, science and commerce.(Figure 3) Majority i.e., almost 90% of them had over one year of online studies and just 10.7% said they had more than one year of exposure to online studies. Almost half of them had just basic knowledge of computers and only 8% had advanced knowledge of computers. (Figure 4)

Computer knowledge
323 responses

- basic - can use for email only
- moderate level- can make PPT and word documents easily.
- advanced training
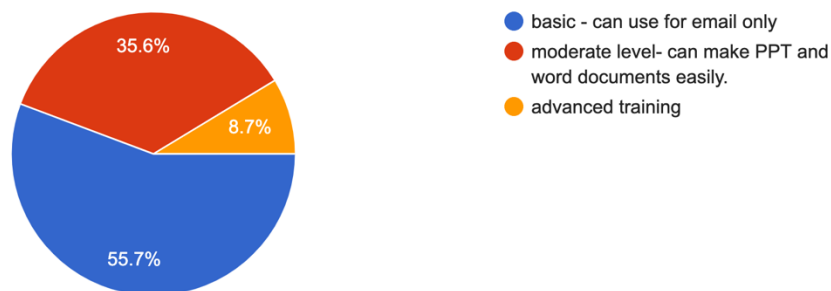
Figure-4- level of computer knowledge of students**.**

Figures 5,6 and 7 depict the students perception about the online teaching. The three main subjects which were enquired were- the general impact on studies, ease of use and the effectiveness of teaching. When asked about their opinion whether the future online teaching should continue or not even after the schools are open , 15.5% of the students were in favour while 24% strongly disagreed to this proposal. (Figure 7)

Figure 5- Students perception of online classes- general impact on studies.
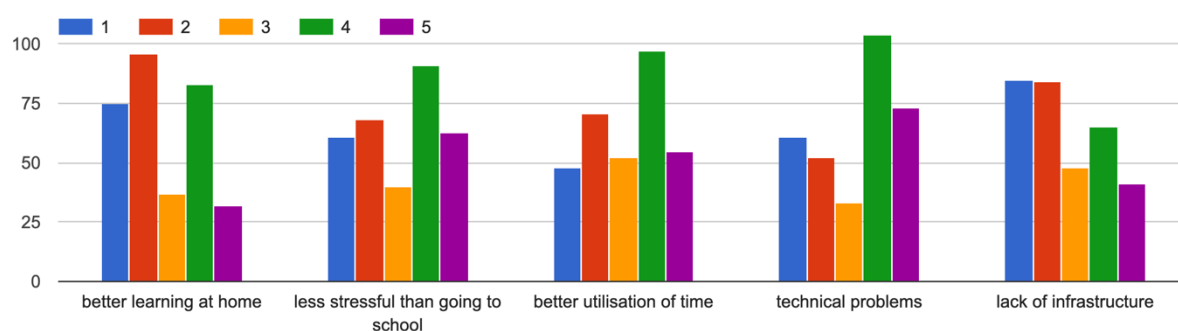
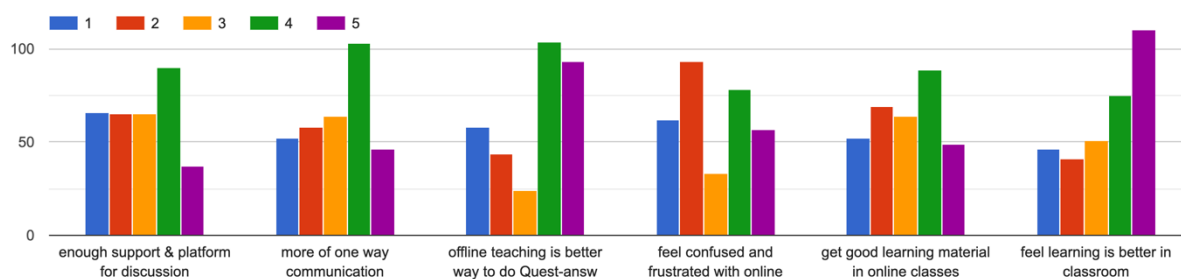Figure 6- Students perception of online classes- ease of use

Figure 7- Students perception of online classes- Effectiveness of teaching

Would you want the online teaching should continue to some extent even after schools are open
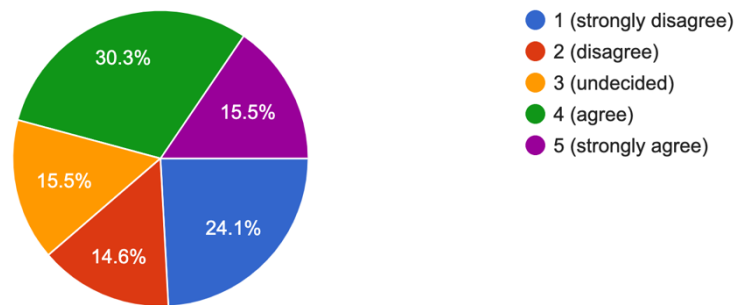323 responses

Figure 8- Students perception of online classes-whether online classes should continue once the schools re-open

The second set of separate questionnaire was distributed to teachers and 146 respondents answered the questions. 50% of the teachers were in age range of 30-40 years (Figure 9) and they taught various students from matric to Post-doctoral programmes. (Figure 10) and varied streams. (Figure 11)
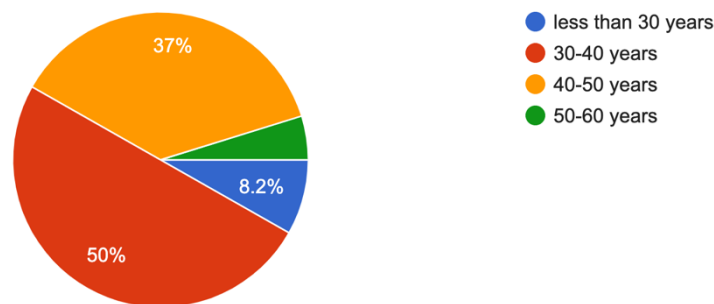
Age in years
146 responses

Figure 9- Age distribution of teachers in the survey

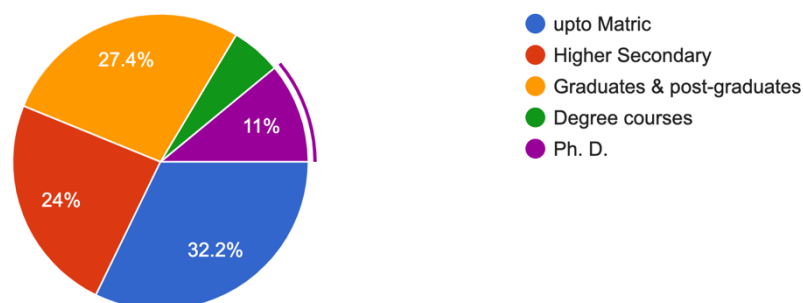**Teaching which level**
146 responses

Figure 10 –Teaching grade of the teachers in the survey
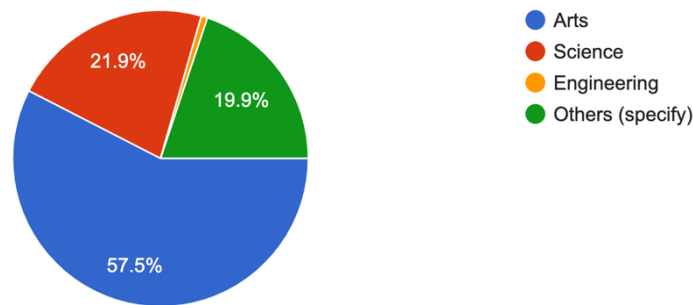
Teaching speciality
146 responses

Figure 11- Teaching speciality of the teachers in the survey

Almost 60% of the teachers had more than ten years of offline teaching experience while the survey was undertaken. (Figure 12). Google meet, Zoom and Whats app were the three most common tools used during online teaching, Microsoft teams and You-tube were the other less commonly used applications.(Figure13)

Teaching Experience for Offline Teaching
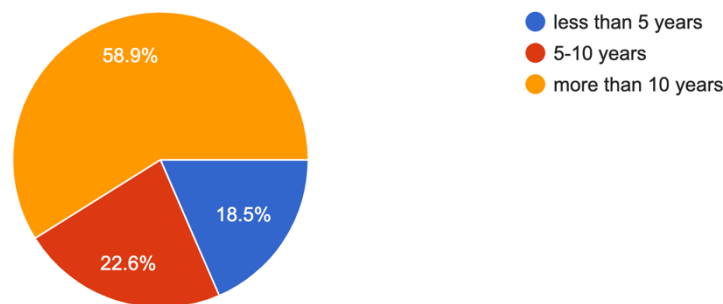146 responses

Figure 12- Offline teaching experience of the teachers in the survey

Tools used for Online teaching
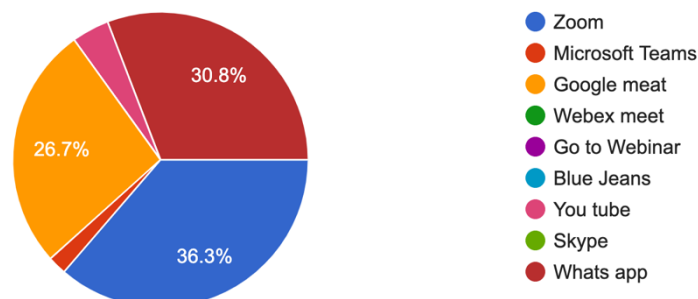146 responses

Figure 13- Tools used for online teaching by teachers

Figures 14 and 15 represent the perceptions of teachers about online teaching, mainly on the technical challenges and the effectiveness of teaching. When asked as to whether they will prefer to continue online teaching when

schools re-open, majority of teachers (82%)disagreed as they felt that online teaching is relatively less efficient way of teaching especially for practical topics and exam assessments are difficult in online mode. (Figure 16)
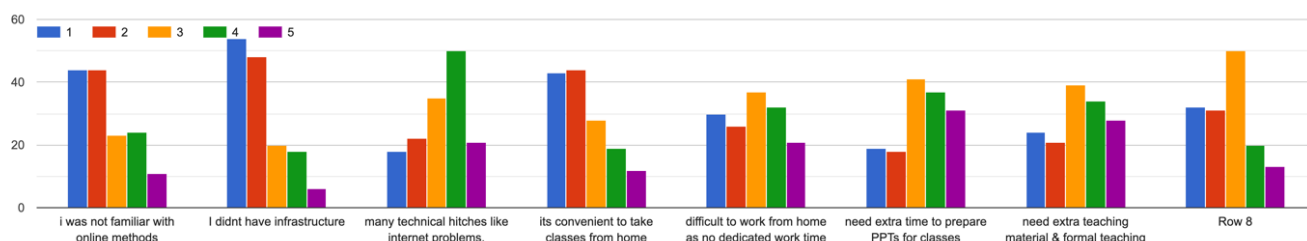
Figure 14- Teachers perception of online classes- Technical challenges faced
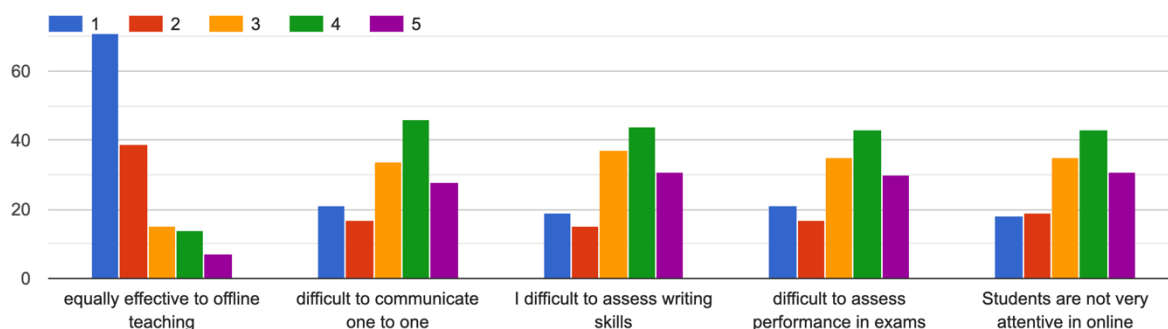
Figure 15-Teachers perception of online classes- Effectiveness of teaching

Figure 16- Teachers reasons for not preferring online teaching when schools re-open

LITERATURE REVIEW AND DISCUSSION

The need for social distancing due to corona pandemic has led to massive changes in education system, mainly shifting from offline to online teaching. India is among the largest users of e-learning programmes. (3)The importance of e-learning has increased further during pandemic, being more of a necessity during this period now. But a survey suggested that the contribution of e-learning will continue to increase in education and corporate set up in coming years. (4) Online courses provide a learning platform to many even at a distance so provides more learning opportunities. In the earlier studies, the positives impressions of students about online classes were quoted as being more 'flexible' and 'convenient' method of learning as compared to classical classroom teaching. (5). In

the current study, majority of students felt classroom teaching as more effective way of learning as there are many technical issues involved in online teaching. Though they felt online teaching to be less stressful and led to learning during pandemic in a homely environment. Though there have been indications from earlier studies to make e-learning more interactive and practical, still many of students in our study felt online teaching as one way tool of teaching and lack of interactive component. (6,) When comparing face to face and online courses , studies found that students when prefer online teaching the main reasons are to avoid travel times and scheduling problems. On the contrary, they felt very less peer communication though the course satisfaction was comparable. (7)

In a similar survey of 800 Polish students , the students felt the comfort of continued teaching while being at home and rated it enjoyable but the technical issues with the IT equipment were the main challenge faced by them and e-learning was rated less effective than face-face learning in terms of technical skills. (8)

There are many institutes where e-learning is practised and they have faculty development programmes as well before implementation of the programme. Teachers have many a times mixed opinions about the effectiveness of online teaching. Many teachers feel that to become a better instructor/ mentor it is important to have faculty development programmes. (9,10, 11)

Many researchers feel that there are limitations of online classes. In current study, majority of teachers were not in favour of continuing online teaching once schools/colleges re-open. Their main limitation they quoted for online teaching was difficulty to assess writing skills/ examinations / practical skills for the students. Besides this the technical issues like internet problems, computer issues and need for additional time required to make power point presentations were some of the other challenges. Similarly in a study by Priyadarshini, majority of teachers were not comfortable with continuing online teaching and they cited lack if training and uncomfortable teaching environment as the main reasons for their statements.(12)In a survey conducted in China after the Covid-19 outbreak, the majority of teachers were willing to take online classes but they faced difficulty due to lack of training. (13)

Feedback is very important part of any learning process which normally takes place informally in classroom teaching. It is equally important to incorporate feedback and interaction in online teaching to make it more effective way of learning. Attitude towards learning is a key factor in satisfaction and enjoyment of course and self-motivation are some important measures to improve the experience of e-learning. Teachers can play a vital role in motivation positive impact of online teaching by improved interaction and feedback.(14)

CONCLUSION & RECOMMENDATIONS

Online teaching has come as a boon during Covid-19 pandemic to fill up the gap of classroom teaching which got suddenly disrupted. It is an exciting new normal way of teaching. With the increasing use of technology, e-learning has brought a positive impact on both students and teachers. It gives an opportunity for distance learning and connecting all across the globe. Though, classroom teaching still remains the gold standard, still there is lot of scope for e-learning in near future. There is need to improve the infrastructure like internet services for optimal utilisation of e-learning.

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STUDY OF THE OPINION OF HIGHER EDUCATION STUDENTS TOWARDS ONLINE TEACHING-LEARNING PROCESS

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ABSTRACT
The purpose of the study was to find out the opinion of Higher Education Students towards the Online teaching-learning process and understand the issues and problems related to it. In the pandemic phase due to the closure of the educational institutions, traditional offline teaching-learning shifted to the online teaching-learning process. The online teaching-learning process has revamped classroom transactions and interaction. In this study, researchers analyzed the opinion of students of higher Education toward the online teaching-learning process
Keywords- Online teaching-learning process, Higher Education Students, Online learning tools.

INTRODUCTION
the teaching -earning process is a process that provides appropriate learning experiences to the students that are coordinated with the needs, mental status, and learning style of the learner, the content to be taught and the resources available. The main components of the teaching-learning process are teacher, taught, content, methodology, and mode or medium of interaction. All these components are crucial and essential in controlling and managing the quality of the teaching-learning process. Influenced by research in the area of educational psychology the methodology and approach of the teaching-learning process have been reoriented various times by adopting different approaches like behaviourism, cognitivism, and constructivism. This has helped to make the teaching-learning process more child-oriented, participatory, and purposeful. Another important component of this process is the mode and medium of instruction. The content and methodology used in the teaching-learning process depend on the medium and mode, any flaw or limitations of the medium adversely affect its efficiency, it plays a vital role to make the content transaction and interaction between teacher and taught functional and successful.

Before the intervention of technology in the education system, the only way of interaction between teacher and taught was only possible in the physical space generally within the four walls of the classroom and the teaching-learning process was conducted with aid of basic teaching materials but with the advent of technology and scientific innovations and their growing impact on every aspect of life the new mode and medium of content, transactions came into use. In the present technological era, the mode of the teaching-learning process has many available variations and the learner has an opportunity to opt for and customize the mode of the teaching-learning process as suitable to her/him. The different modes of the teaching-learning process used today are:
- <u>face-to-face teaching-learning process</u> where teacher and taught are interacting in real life space.
- <u>Online teaching-learning process</u> where the interaction and exchange of ideas between teacher and taught is taking place in virtual space.
- <u>Blended mode</u> where both the classroom teaching learning and learning through the virtual interface are blended to meet the requirements of the learners.
- <u>Distance mode</u> where the interaction between teacher and taught is asynchronous and not essential. The interaction is mainly between the students and the content.

Online teaching Learning mode
an online teaching-learning process is an emerging approach in the field of education where instructions are delivered to the students through the use of advanced information communication technology using hardware like TV, Mobile, laptop, Personal computers iPad, etc. Here internet play important role in delivering the instructions. Instructions may be synchronous or asynchronous. Online learning is known by the different names like e-learning, web-based learning, virtual learning, and net-based learning. In this mode, all the teaching-learning processes are facilitated through the internet and technology.

Characteristics of Online teaching Learning Process
Nowadays online learning has become the need of the hour. Due to the flexible approach of online learning, we can access quality education whenever and wherever we want. We are encountering an innovation in the

education system shaping the teaching-learning process into its technological version. (Josep,2020). The main characteristics of this version of Teaching Learning process are

- It is flexible in terms of place, devices, and software used.
- It is possible through different easily available platforms.
- It is easily accessible.
- It is a cost-effective method of education.
- It is eco-friendly.
- Some of the platforms give the 24 x 7 accessibility
- It provides the scope of using a variety of teaching aids that provide more real-life experiences to students instead of those used during face-to-face classroom teaching
- Online learning is a time saver.
- It has variations so more suitable to cater to individual differences in terms of learning styles and attention span.

Statement of the Problem-
Study of the opinion of Higher Education students towards Online teaching-learning process.
Need and importance of the study
Due to the outburst of the COVID 19 pandemic, the traditional teaching and learning classroom process was shut down for a long period but at this time the online teaching-learning process has emerged as an innovative option. Though online learning was used in the teaching-learning process before lockdown also but the intensity of use was negligible, and especially in India online learning tools were not used regularly in Higher education, but during the lockdown phase there has been a surge in the use of Online learning mode. This mode has become a bliss during the time of crisis maintaining the continuity of Teaching Learning process even though everyone was confined within the four walls.

The success of the online teaching-learning mode depends on the accessibility and speed of internet connection, quality hardware, knowledge of software, and very importantly the attitude and outlook of teachers and students. As the online teaching-learning mode either solely or in blended format is the future of the education system and all stakeholders should be mentally and emotionally ready to embrace this model of the teaching-learning, so, the researchers found it relevant to analyze the opinion of graduates and post-graduate students towards the use of online teaching-learning mode.

Objectives of the Study
The objectives of the study were to:
1. To find out the opinion of higher education students towards online teaching-learning mode.
2. To compare the opinion of undergraduate and post-graduate students regarding online teaching-learning mode.
3. To compare the opinion of male and female students regarding online and offline learning
4. To find out the challenges faced by students in the online teaching-learning mode.

Research Methodology
Type of Research-Descriptive Survey Method
Tool- Self Constructed e-questionnaire containing dichotomous and open-ended questions. it contains 26 items.
Sample – The data were collected from the 259 graduates and undergraduate students of arts, commerce, and science stream streams studying in higher education institutes of Lucknow city.
Data Collection- Data was collected through Google form.
Analysis of data- After collecting the data it was analysed by the researchers. For dichotomous questions, percentages were calculated and open-ended questions were analysed qualitatively. Item wise analysis of the data is as follows

1- Which model do you prefer for the teaching-learning process?
As represented in Figure 1 In answer to this question, 69% of students have preferred the offline mode of the teaching-learning process while 31% of students have preferred the online mode.
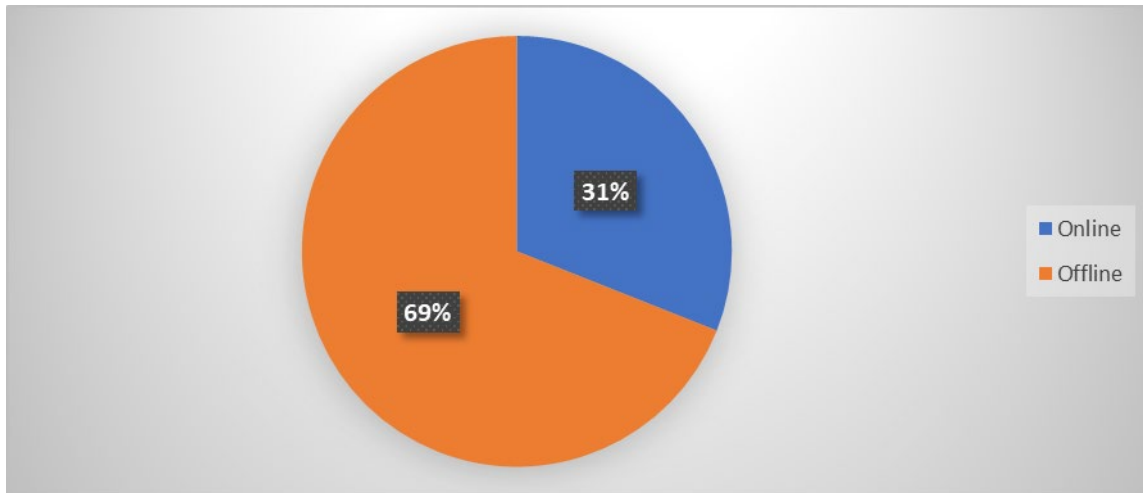
Figure-1: percentage of students who preferred online and offline mode

This shows that the opinion of students' is towards the traditional model of the teaching-learning process. Although, due to the pandemic, all traditional students and teachers are using digital platforms for exchanging learning experiences still students mostly preferred the offline mode of the teaching-learning process.

2. Why do you prefer online mode/ Offline mode?
The next question was the open-ended question which was designed to find out the reason why they prefer the particular mode of the teaching-learning process. Students' who prefer d Offline mode, have given the following reasons:
- ❖ face to face interaction with teachers is possible
- ❖ it feels like real learning experiences
- ❖ because this mode has a fixed time-table
- ❖ Proper communication between students and teachers is possible.
- ❖ It promotes the feeling of togetherness.
- ❖ Missing campus life

While Students who preferred the online mode, have given the following reasons for their choice: -
- ❖ Online learning is easy to understand.
- ❖ The online mode of learning is very comfortable
- ❖ It is flexible
- ❖ It seems more Convenient
- ❖ It is safer during the pandemic
- ❖ Easy to access and reliable, flexible, timesaving
- ❖ It saves time.

3. Which device do you use for attending online classes?
Among many tools like Television, desktop, and laptop, mobile phones have become the favourite choice of students for attending classes online. Due to their compact small size, mobile phones are easy to operate. According to the report of ICEA, the users that use mobile as the device to use the internet are nearly ninety-seven percent (ICEA, July 2020)
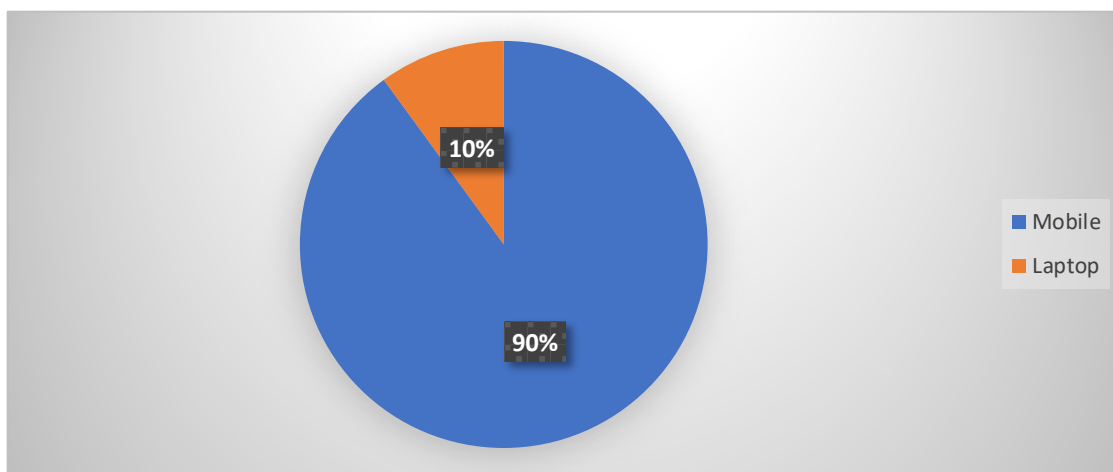
Figure-2: Students' preferences for the device through which they attend online classes

4. Which platform is being used for your online classes?
From students' responses zoom has emerged as the most preferred online platform among Google Meet, Google Classroom, and Microsoft teams. Approximately 54.5% of students have selected zoom. (Figure 3) (Knorr, C. April 2020)
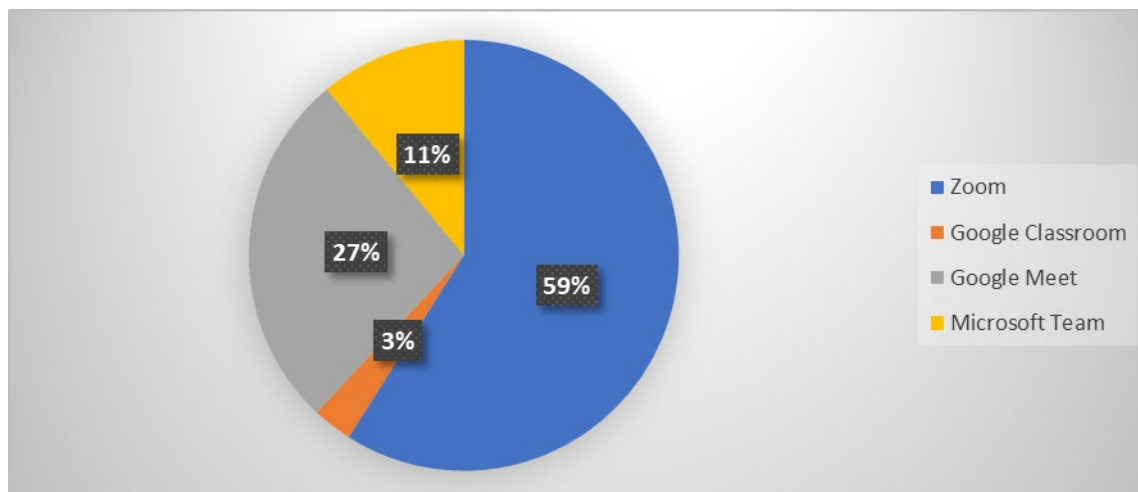
Figure-3: Students' preferences for Online Platform

5. Before the lockdown, were you familiar with Online learning platforms like WebEx meet, Google Meet, Google Classroom, Moodle, Student Portal, Zoom, and Microsoft Teams?
56% of students have accepted that they were not aware of these online platforms i.e. Zoom, Google Meet, Google Classroom, and Microsoft team before lockdown. During the lockdown, when they indulged in the process of online teaching-learning then they got the opportunity to know about the different types of online platforms.

Figure-4: Percentage of students who were aware of the Online Learning Platform

6. Do You have sufficient computer knowledge to manage your online learning?
In this question, 84.9% of students accepted that their awareness and knowledge regarding the use of computers and skills related to it are sufficient to manage the online learning process. while 15.1 % of students accepted that they are unable to manage their online learning tasks. This shows that the increasing affordability of smartphones has made students well aware of software and computer skills.
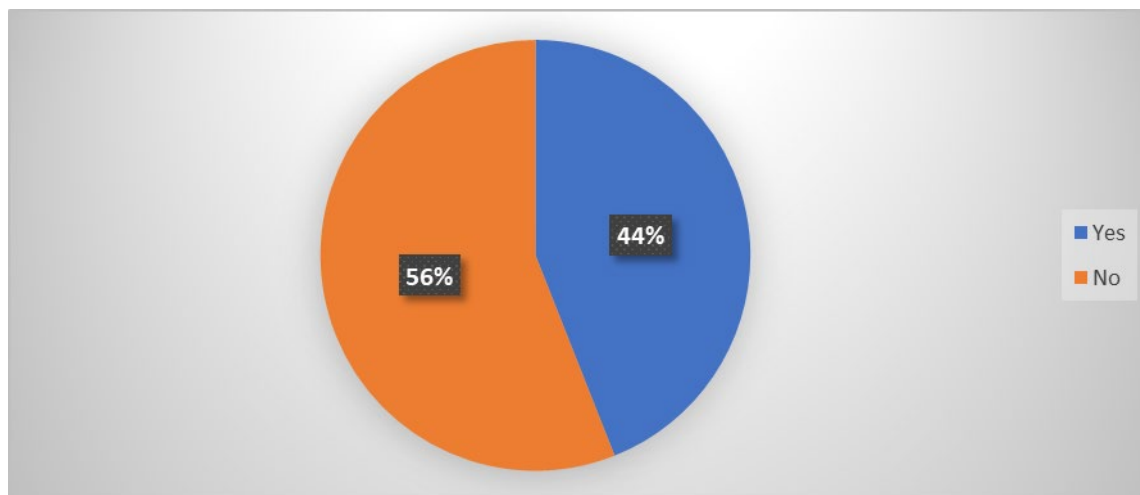
7. Do you think that the Online Platform helps you to learn at your speed?
65.8% of students have accepted that Online Platforms help them to learn at their speed while 34.2% of students have not accepted this. Many students accepted that online platform is useful in learning with their speed i.e. here they can watch classroom lecture and educational videos when it is suitable for them.

8. Do you think Online learning complicates group activities?
67.2% of students have accepted that Online learning complicates group activities while 32.8% of students have not accepted this. Students have given reason that in offline teaching-learning mode, they have the opportunity to join the classroom and work with their classmates but this kind of opportunity is missing in the online mode of teaching-learning.

9. Proper Guidelines are provided (ex. how to use relevant online tools) before starting online lectures by your lecturer
In this question, 84% of students have accepted that they received proper instructions for using the tool from their teachers while 16% of students have not accepted this. The satisfaction of the online mode of teaching-learning depends on the proper operating of the particular online tool; this is possible only when students and teachers both are aware of the operating mechanism and features of the particular online tool.

10. Do you think the learning materials are clear and well-structured in online learning?
In the next question, 56.9% of students have admitted that learning materials are clear and well-structured, and easy to understand in the online mode of teaching and learning while 43.1% of students had a negative opinion regarding it.

11. Do you think that online tools are easy to use?
In this question, 80% of students have admitted that online tools are easy to use while 20% of students have not admitted this fact. According to the opinion of students, these tools help establish an effective learning environment as they are user-friendly.

12. Are you satisfied with online teaching methods and learning materials?
51.4% of students are satisfied with the online teaching method while 48.6% of students are not satisfied. The difference is low and the reason behind this is that many students are still accustomed to the traditional classroom teaching-learning environment.

13. Do you think that Online lectures are more effective than traditional/live classroom lectures?
In the next question, only 30.7% of students have accepted that Online lectures are more effective than traditional classroom lectures while 69.3% do not find online mode effective. This trend in response reflects

that Indian Higher Education students are still not very contented in online leaching learning mode. Many students accepted that they feel easy and comfortable in real classroom settings.

14. Why do you think that Online lectures are more effective than traditional/live classroom lectures?
Though students have preferred the offline mode they have given the following merits of the online teaching-learning process

❖ Online Lectures are Easy to understand
❖ Online lectures are effective
❖ Online lectures are Timesavers
❖ We can learn at our speed
❖ Online lectures cover a large area of information
❖ Online lecture develops thinking ability in students
❖ It has the scope of systematic presentation

15. Are you getting the proper opportunity to participate in online classes?
In the next question, 75.3% of students have accepted that they get the opportunity to participate in online classes while 24.3% of students gave a negative answer. Many students have admitted that online platforms provided them with a proper channel of interaction with their teachers and classmates.

16. Do you find yourself motivated to participate in the online teaching-learning process?
In response to this question percent of students that feel inspired and enthusiastic to use the online teaching-learning process is 66.5% while 33.5% of students reported that they don't feel the motivation to participate in the online teaching-learning process.

17. Are you satisfied with student-teacher interaction during online teaching & learning?
53.9% of students were found to be satisfied with the level of interaction between taught and teacher during online teaching & learning while 46.1% of students are not satisfied because they don't think virtual medium can provide a better interactive environment. Though some students think that in the online mode of teaching-learning, students and teachers interact more easily and comfortably as they are not in a real classroom so they don't hesitate to share their views or ask questions.

18. Do you get the opportunity to interact with teachers during the online teaching-learning process?
79.1% of students agreed that they get the opportunity to interact with the teacher during the online teaching-learning process while 20.9% do not agree.

19. Do you think your skill in using the internet has increased due to the online teaching-learning process?
In this question, 89.1% of students have accepted that their skill in using the internet has increased due to online teaching-learning while 10.9% of students have not accepted this. Students' ability to use and manage the internet and computer has increased.
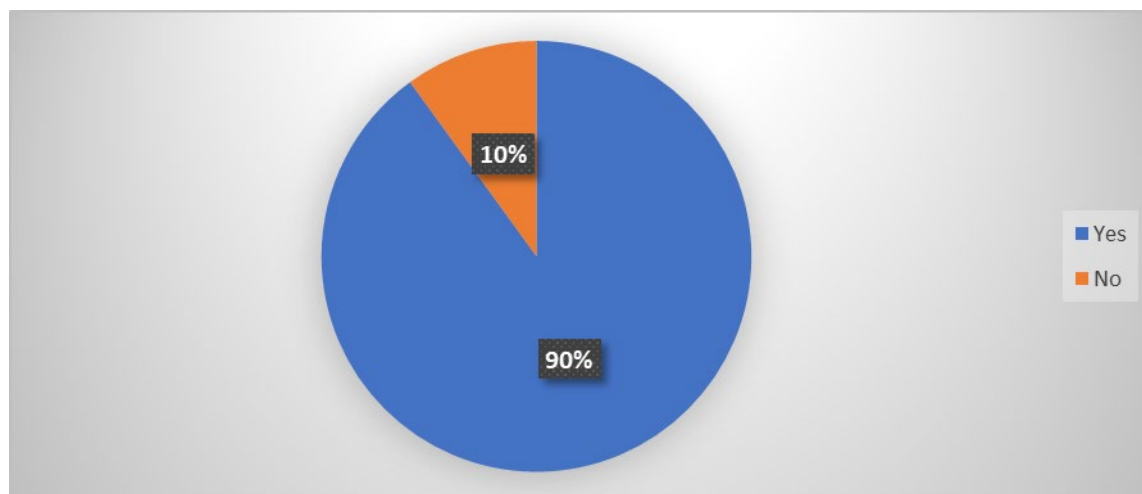

Figure-5: Students' preferences for increasing skill in using the Internet

20. Do you think that your communication skill has increased due to the online teaching-learning process?

65.7% of students have admitted that their communication skill has improved due to the online teaching-learning process while 34.3% of students have not admitted it. The online mode of the teaching-learning process provides an interactive environment for the students so that they can share their thoughts on the online platform. This enhances their communication skill in a better way.

21. Do you find the home environment suitable for participating in the online teaching-learning process?

54.9% of students have accepted that they find the environment of their home cordial and appropriate for participating in the online teaching-learning process while 45.1% of students have not accepted it.

22. Do you often suffer from technical issues?

83.1% of students have accepted that they suffer from the technical issue while 16.9% of students have not accepted it. Many students accepted that they suffered from technical issues during the online teaching-learning process. Technical issues related to the problem of connectivity, slow internet connections, audio problems, etc. but in many areas especially rural, there are not proper connections to high-speed internet, and many students do not have the facility of smartphones, desktops, and the laptop.
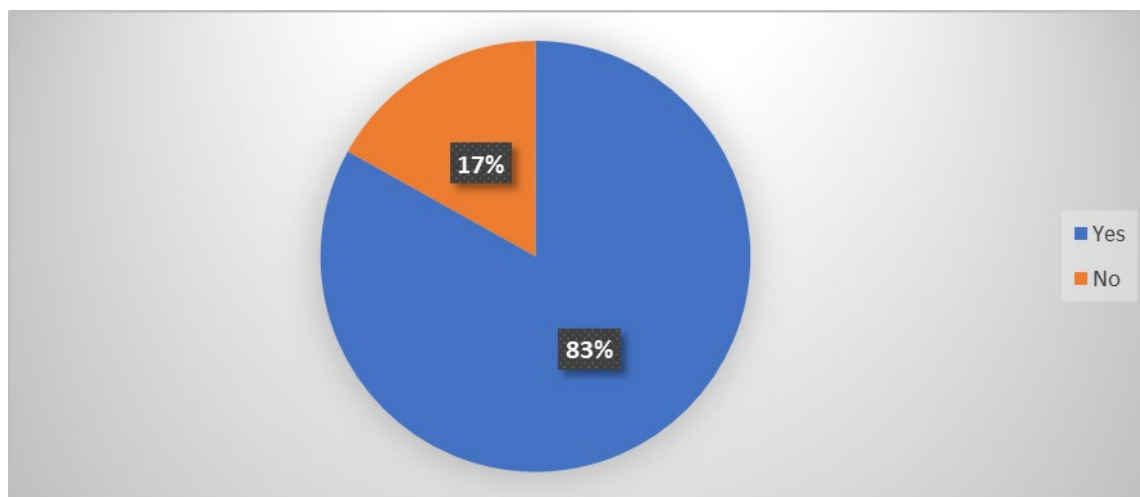

Figure-6: Percentage of Students who suffered from Technical Issues

23. Do you often feel fatigued while attending online classes?

57.5% of students have accepted that they feel fatigued while attending online classes while 42.5% of students denied it. Students' accepted that they feel fatigued, have neck pain, and irritation in their eyes during online classes. Students are subjected to 5-10 hours of screen time in a day which is affecting their health adversely.

24. Do you have the Availability of Internet/Wi-Fi Connection at Home?

Data revealed that 79.6% of have availability while 20.4% of students do not have Internet/Wi-Fi Connection at Home. This is the main constraint in the growth of the online mode of teaching and learning. According to a report by IAMAI in 2019, the access to the internet and smooth internet connectivity is not available to nearly seventy percent of the population of rural areas and a few states concluded that 70% of the rural population does not have an active internet facility with states like West Bengal, Bihar, Jharkhand, and Odisha have been reported to have poor access to internet and poor network quality. (IAMAI,2019)

25. Are you able to attend your classes uninterruptedly?

52.8% of students have accepted that they can attend their online classes uninterruptedly while 47.2% of students have suffered from the issue of connectivity to the internet. There are many areas in India whether it is urban or rural that face low internet penetration. These areas are still receiving a 2G network of the internet in the time of 4G service of internet. This makes a huge digital divide in the whole country which affects the process of online learning. According to NSSO data, the percentage of people living in the rural area who have their personal computer is only 4.4 percent and in urban areas, this percent is 23.4, the percentage of users who have internet access on their computers is 42 percent in urban areas and only 14.9 % in the rural areas. (Chadha, K. November 2020).

26. If given the option which mode will you prefer for the teaching-earning process?
70.3% of students preferred the offline mode while 29.7% of students preferred the online mode. This finding correlates with the result of research done by Wong & Fong (2014) which reported that students were in favor of the classroom teaching-learning process where they can directly interact with teachers and other students as they feel more inspired in that setting.
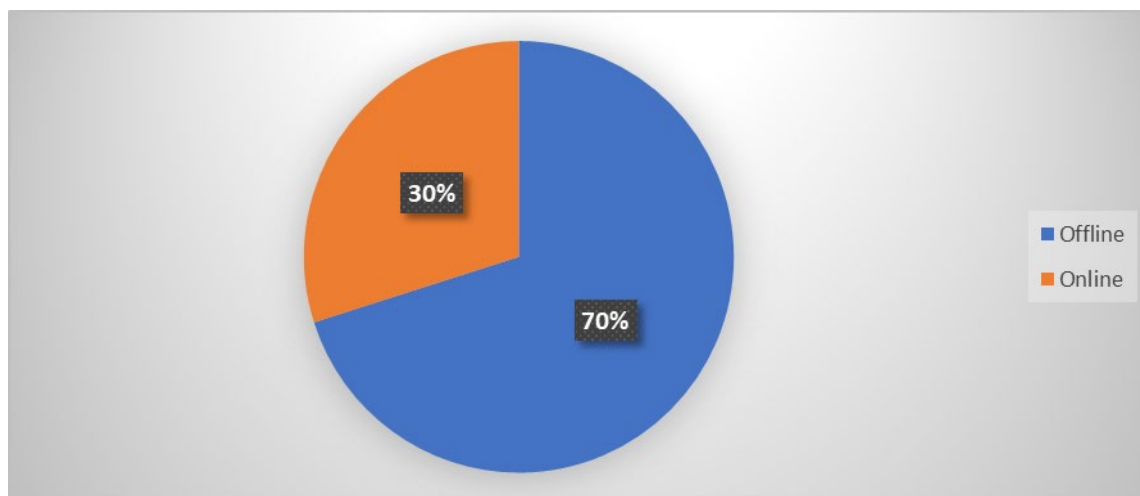

Figure-7: Students' preferences for Online and Offline modes of teaching and learning

RESULT
The results according to the objectives of the study are:

1. The offline mode of teaching-learning has emerged as the most preferred mode by the students in our study. According to the research study by Pasha & Gorya (2019) which was conducted on the undergraduate and postgraduate students of Hyderabad city the majority preferred the online mode of education and only 26% of people preferred the offline mode of education, this result does not correlate to the result obtained from the present study. the study by Pasha and Gorva was done in 2019 that is pre epidemic period whereas the present study is based on students' excessive and continuous exposure to the online teaching-learning process during the lockdown period so maybe this experience has made the students identify some limitations of the online teaching-learning process causing their opinion in favour of the traditional mode of teaching-learning

2. 75% of undergraduate students who took part in the study have accepted that the online mode of teaching and learning is the best mode of providing education while the percentage of post-graduate students in favour of the online teaching-learning process is less i.e. only 25%. The result reflects that undergraduate students are much more interested in the online mode of teaching-learning as compared to post-graduate students. Post-graduation study involves some dissertation work, field study, and laboratory experience which is not possible through the online mode this might be the reason that post-graduate students have preferred the offline mode of teaching-learning.

3. Female students are more interested in the online mode of teaching-learning as compared to male students. 91% of female students have preferred the online mode of teaching-learning while the percentage of male students is only 9%. The reason behind it is mostly female students have admitted that online mode provides them the opportunity to manage their household work along with their studies, so, they find ease in the online mode of teaching and learning.

4. Based on the analysis of data, the challenges faced by the students in online teaching-learning mode are as follows
   ❖ Teachers and Students are not accustomed to online learning
   ❖ Digital Divide
   ❖ Technical challenges
   ❖ Insufficient hardware facilities
   ❖ Adverse effects on health.
   ❖ Internet connectivity problems

Educational Implications
the online teaching process is evolving as an option for the traditional offline teaching-learning process. Although this pandemic has made us realize that we need to revamp our educational system but still our students are not showing interest in online teaching-learning mode because they are have not been given enough practice in this mode, there is no compulsory provision of online teaching-learning mode in our education system, the

number of institutions that use this mode is very less so we must adopt this mode in regular basis and try to make students familiar with this mode and its benefits. The result of this study can be used to imply the following modifications in our education system-

- ❖ Teachers should start using Blended Learning Mode to make students accustomed to the online teaching-learning mode
- ❖ The online teaching-learning process should be made more interactive and interesting by fully utilizing the facilities of this mode.
- ❖ Students should be motivated to use online learning by incorporating online teaching-learning features like videos, games, and competition through daily quizzes or discussion platforms.
- ❖ Refresher Programmes for Teachers should include training to create interesting learning situations in online mode.
- ❖ Remote areas and rural areas should be provided with high-speed connectivity by improving the digital infrastructure.

Conclusion

The present study was conducted after the lockdown period when students used only the online teaching-learning process due to the lack of other options and so nearly seventy percent of students preferred the offline mode of the teaching-learning process where they get more opportunities to interact with teachers and their peers so we can conclude that we should use the online teaching-learning process to supplement the traditional classroom teaching and not as its substitution. Both the modes have their advantages and limitations so blended more is a better option to choose. The pandemic phase has very well demonstrated that even the developing countries cannot ignore the need and significance of the online teaching-learning process so rigorous efforts should be made to meet the challenges and remove the limitations of the online mode of teaching-learning. The interpretation of results is signifying that In India the wide digital divide is still existing. The problems are related to accessibility to hardware as well as network connectivity and quality of internet connection. The government authorities and individuals related to educational administration should try to focus on these issues so that our country will be in a better position to face any future situations like this and our students and teachers will be well equipped and trained as well as mentally ready to adapt and accommodate to both the modes of teaching-learning.

Acknowledgment

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USE OF MOODLE TO DEVELOP ONLINE TRAINING PACKAGE ON PROBLEM BASED LEARNING STRATEGY (PBLS) FOR STUDENT TEACHERS

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ABSTRACT

It is the need of today's society that people are able to solve complex problems efficiently. Being able to solve problems successfully is more than just accumulating knowledge- it involves development of flexible, cognitive strategies that help analyze different problem situations to produce meaningful learning outcomes. Online training package on Scaffolded Problem Based Learning Strategy using the learning management system, MOODLE is planned to guide student teachers to become experts in the field of study, proficient in identifying the problems based on the domain knowledge of the discipline and analyzing and contributing to the solutions in a completely online mode.

The online training package, designed on the lines of ADDIE model is assigned four credits and student teachers need to put in 120 hours of study for completion of the training. The package incorporates PBLS, follows collaborative approach and has provision of scaffolds. The study was carried out on forty-one student teachers of a College of Education. The student teachers were selected on the basis of their competence in the use of computer and internet. The student teachers undertook the online training in Scaffolded Problem Based Learning strategy (PBLS) wherein the student teachers had to solve ten problems related to difficulties faced by school teachers and administrators in the implementation of various aspects of PBLS.

Effectiveness of the online training package was measured in terms of formative and summative achievement in the theory of PBLS. Findings indicate more than 80% of the student teachers scored more than 80% marks each in the formative and summative achievement tests on the theory of PBLS.

Keywords: Online, Learning Management System, MOODLE, teacher training, Problem based learning, Scaffold

Introduction

People typically face a web of simple and complex decisions, daily hassles, and stressful and even traumatic life events. How people respond to difficult life problems is an exceedingly complex process (Heppner & Krauskopf, 1987) and seems to depend on many personal and environmental factors (Zeidner & Endler, 1996). Some people bring many skills and strengths to how they approach problems, whereas others have significant problem-solving deficits.

Researches on problem solving appraisal indicates that the effective problem solvers have better psychological and physical health, better coping effectiveness and better vocational adjustment. Ineffective problem solvers have shown (a) fewer social skills and (b) more social uneasiness/distrust/distress (Heppner & Peterson, 1982). It is the need of today's society that people solve complex problems efficiently. This necessitates the need for competence in problem solving, thus leading to a demand for problem solving skills to be taught in schools and colleges so that the future generation can lead happy and fulfilling lives.

Problem Based Learning Strategy (PBLS), based on the premise of constructivist epistemology, represents a major development in higher education practice that continues to have a large impact across subjects and disciplines around the world and engages the learners in the problem-solving process. Problem Based Learning Strategy (PBLS) is an instructional strategy that initiates students' learning by creating the need to solve authentic problems collaboratively.

In the Indian context the use of Problem Based Learning Strategy (PBLS) is attempted in the disciplines of Medicine, Nursing, Pharmacy and very rare studies conducted in the field of Engineering, Teacher Education and School Education.

Researches conducted on the effects of Problem Based Learning Strategy (PBLS) compared with those of traditional approaches on measures of knowledge application and acquiring content knowledge favored students involved in Problem Based Learning Strategy both in face-to-face as well as online mode. This is reflected in studies conducted by Dochy et al. (2003); Fasko (2003); Miller (2003); Beers and Bowden (2005); Linda and Bethany (2008); Hmelo-Silver et al. (2009); Lin et al. (2010); Celik et al. (2011); Chen and Chen (2012); Karami et al. (2013); Hamdan et al. (2014); Crowley (2015); Gould et al. (2015); Jansson et al. (2015); Wijnen et al. (2015); Abdullah et al. (2016); Baran (2016); Botty et al. (2016); Caesar et al. (2016) and Paternite (2016).

Researches conducted on the effects of Problem Based Learning Strategy (PBLS) compared with those of traditional approaches on measures of knowledge application and acquiring content knowledge did not favor students involved in Problem Based Learning. This is reflected in studies conducted by Webster (2006); Witte and Rogge (2012) and Liu (2013).

Training teachers in effective use of PBLS to improve the capacity and motivation of teachers to develop and integrate such problem-solving skills into their classroom practice should be the focus in today's context. Technology comes as an effective aid for providing training for professional development to in-service and pre-service teachers.

Online Training Package on Scaffolded Problem Based Learning Strategy (PBLS) is planned to lead student teachers to become experts in their domain of knowledge, proficient in identifying the problems based on the knowledge of the discipline and analyzing and contributing to the solutions. Online Training Package is the strategy of instruction used so as to produce learning experiences that lead to pre-specified learning goals through the learning management system, MOODLE. Effectiveness of Online Training Package on Scaffolded Problem Based Learning Strategy is assessed in terms of Achievement in the theory of Problem Based Learning Strategy (PBLS).

Objective of the study
To study the effectiveness of Online Training Package on Scaffolded Problem Based Learning Strategy (PBLS) for student teachers in terms of achievement in the theory of Problem Based Learning Strategy (PBLS)

Hypothesis of the study
After training 80% and more student teachers will be able to achieve at least 80% and more scores in the theory of Problem Based Learning Strategy (PBLS).

Method and Instrumentation
For the present study, the researcher used pre-experimental category of experimental design. Since online learning is available to student teachers 24×7, mastery learning is expected to be the criteria of judging effectiveness of learning. Also, the hypothesis of this study is mastery learning. Hence the pre-experimental category was selected by the researcher.

The study was carried out on forty-one student teachers of a College of Education. The student teachers were selected based on their competence in the use of computer and internet. The student teachers were not exposed to online training and most of them were unaware of Problem based learning as well the scaffolding. The student teachers undertook the online training in Scaffolded Problem Based Learning strategy (PBLS) wherein the student teachers had to solve ten problems related to difficulties faced by school teachers and administrators in the implementation of various aspects of PBLS.

The Online training package on Scaffolded Problem Based Learning Strategy (PBLS) used the technique of Scaffolded Problem Based Learning Strategy (PBLS) to sensitize the student teachers to the Problem Based Learning Strategy (PBLS).

The Online training package is assigned four credits and student teachers need to put in 120 hours of study for completion of the training. Since Problem Based Learning is a novel and complex task for the student teachers who are novices in area of constructivism, they need to be provided with scaffolds for Problem Based Learning Strategy (PBLS). The scaffolds provided help in reducing the cognitive load of learners as they encounter the problems to be resolved leading to effective learning. Also, the various online resources available for interaction and collaborative work act as scaffolds which is possible only in an online mode.

The salient features of the Online Training Package on Scaffolded PBLS are as follows:
- It is designed on the lines of ADDIE model,
- It incorporates Problem Based Learning Strategy
- It is based on constructivist approach
- It has provision of variety of Scaffolds
- It is available 24×7
- It makes good use of Activity features of MOODLE and
- It has provision for collaborative learning.

For the present study, the researcher constructed a) Formative achievement tests based on the theory of PBLS using the activity features of MOODLE b) Summative achievement test to study the effectiveness of Online Training Package in terms of achievement in theory of PBLS

The achievement test on theory of PBLS was prepared in following manner:
1) The content related to the theory of PBLS was analyzed
2) The instructional objectives based on the content identified were written
3) The blueprint based on identified content, instructional objectives and types of questions was prepared.

The formative achievement tests comprised of contribution to the discussion forum, glossary, quiz activities and assignments. The formative and summative achievement tests were subjected to content validity to check the clarity and appropriateness of the questions in accordance to the objectives. The five experts gave suggestions regarding the test after which the test was refined. The experts gave suggestions with respect to modifying certain words in the questions. The student teachers were expected to undertake formative achievement test at the end of every problem and the summative achievement test was given on the completion of the ten problems. The percentage of problem wise scores on formative and summative achievement test are as follows:

Table 1 gives percentage of problem wise scores on formative achievement tests in the theory of PBLS using activity features of MOODLE

TABLE 1 PERCENTAGE OF PROBLEM WISE SCORES ON FORMATIVE ACHIEVEMENT TESTS IN THE THEORY OF PBLS USING ACTIVITY FEATURES OF MOODLE

Problem wise Formative Achievement tests in the theory of PBLS	Number of student teachers who scored more than 80% (Out of 41 student teachers)	Percentage of students who scored more than 80% score
Problem 1- Discussion Forum activity feature	38	92.68%
Problem 2- Discussion Forum activity feature	39	95%
Problem 3- Quiz and Discussion Forum activity feature	37	90%
Problem 4- Assignment activity feature	39	95%
Problem 5- Glossary activity feature	34	82.92%
Problem 6- Discussion Forum activity feature	38	92.68%
Problem 7- Quiz activity feature	34	82.92%
Problem 8- Quiz activity feature	33	80.48%
Problem 9- Quiz activity feature	34	82.92%
Problem 10- Discussion Forum activity feature	39	95%

Table 2 gives the percentage of posttest scores achieved by student teachers on the summative achievement test on the theory of PBLS

TABLE 2 PERCENTAGE OF POSTTEST SCORES ACHIEVED BY STUDENT TEACHERS ON THE SUMMATIVE ACHIEVEMENT TEST ON THE THEORY OF PBLS

Student Number	Achievement Test Theory (Out of 50)	Achievement Test Practical (Out of 10)	Total Score (Out of 60)	Percentage
1	46	10	56	93%
2	42	10	52	87%
3	40	9	49	82%
4	36	9	45	78%
5	40	10	50	83%
6	37	10	47	78%
7	38	10	47	78%
8	41	8	49	82%
9	40	9	49	82%
10	36	9	45	78%
11	41	10	50	83%
12	42	10	52	87%
13	39	10	49	82%
14	38	10	48	80%
15	45	10	55	92%
16	42	9	51	85%
17	41	9	50	83%
18	43	10	53	85%
19	42	9	51	85%
20	38	10	48	80%
21	39	10	49	82%
22	41	9	50	83%
23	42	10	52	87%
24	44	9	53	88%
25	44	9	53	88%
26	42	10	52	87%
27	43	9	52	87%
28	42	9	51	85%
29	41	10	51	85%
30	39	9	48	80%
31	38	9	47	78%
32	41	10	51	85%
33	42	9	51	85%
34	43	10	53	88%
35	40	9	49	82%
36	41	10	50	83%
37	42	9	51	85%
38	41	9	50	82%
39	42	10	52	87%
40	43	10	53	88%
41	43	10	53	88%

Findings of the study

Table 1 reveals that more than 80% i.e., 80.48% (33 student teachers out of 41 student teachers) of the student teachers scored more than 80% marks on the ten formative achievement tests in the theory of PBLS using activity features of MOODLE. Hence after the training, 80% and more student teachers are able to achieve at least 80% and more scores on the formative achievement tests in the theory of PBLS using activity features of MOODLE.

Table 2 reveals that more than 80% i.e., 90.24% (37 student teachers out of 41 student teachers) of the student teachers scored more than 80% marks on the summative achievement test on the theory of PBLS. Hence after the training, 80% and more student teachers are able to achieve at least 80% and more scores on the summative achievement test on PBLS.

Analysis and Discussions

The analyses of findings show that the Online Training Package on Scaffolded PBLS can positively influence the achievement of student teachers. Student teachers who experienced the Online Training Package gained thorough knowledge about PBLS.   According to Fullon (1990), Teachers of today and tomorrow need to do much more learning on the job, or parallel with it- where they can constantly test out, refine and get feedback on the improvements they make. Fullon's view is reflected in this study wherein the student teachers were exposed to problems during the online training that they would face on job, they had to work out solutions for the problems, refine and receive feedback from both mentor and peers. Thus, formal training of PBLS has the potential of professionally preparing teachers of tomorrow.

There is ample empirical research evidence to suggest that students' achievement is significantly related to the professional preparation of teachers (Darling-Hammond, 2000; Goldhaber & Brewer, 1999). The Online training helped the student teachers in achieving mastery of PBLS which in turn would put the student teachers in a position to plan and deliver content using PBLS. The Online Training Package on Scaffolded PBLS provided for an experiential approach to understanding the theory of PBLS thus enabling the learners to construct knowledge by their own experiences.

The paradigm shift in professional development suggests a change in emphasis from transmission of knowledge to experiential learning; from reliance on existing research findings to examining one's own teaching practice; from individual focus to collaborative learning and mimicking best practice to problem focused learning. The Online Training Package on Scaffolded PBLS enriched the students' knowledge on PBLS wherein the student teachers had to indulge in problem discussion, raise learning issues collaboratively, find answers individually to the issues and then finally arrive at the solution to the problem collaboratively. This is in agreement with the views put forth by Schmidt (1983) that a PBLS environment enables students to draw upon their prior knowledge and skills, bring real-world context in the classroom and reinforce the knowledge through both independent and cooperative group work.

According to Schmidt (1983), Learning in a PBLS curriculum is more effective than in a traditional classroom setting due to the emphasis on the activation of prior knowledge in PBLS. This is seen through the mastery learning criteria fulfilled by the students on formative and summative achievement tests on the PBLS theory. Utecht (2003) observed that students of a PBLS curriculum develop better analytical skills and apply the knowledge gained in meaningful and productive ways. The student teachers acquired mastery in the theory of PBLS by indulging in finding solutions to ten real life contextual problems. This has ensured that the students' learning was not just theoretical but application based and student teachers would retain the knowledge gained through the package.

The package also provided the student teachers with resource material which enabled them to search for the answers to learning issues and also use it in different situations. This is seen in the high scores obtained by student teachers in the summative practical test on identifying resources for the problems given. The Training Package demanded the active and total involvement of student teachers through the individual and group tasks that had to be completed.

Conclusion

 The Learning Management Systems such as MOODLE have provision of a variety of features that can be used to provide learning experiences in an online mode. This study indicates that varied activity features of MOODLE may be used to design courses using constructivist learning strategies like PBLS to ensure effective learning. Since the strategies such as PBLS impose heavy cognitive load on students', scaffolds may be provided to ensure that students experience a reduction in the complexity felt due to the deep learning possible. The study implores the need for more research on a variety of constructivist learning strategies delivered through activity features of MOODLE.

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