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Message from the Editor-in-Chief

Hello from TOJDEL

TOJDEL welcomes you. This journal was initiated in January, 2013 to share knowledge with researchers, innovators, practitioners and administrators of education. We are delighted that more than 190000 researchers, practitioners, administrators, educators, teachers, parents, and students from around the world had visited TOJDEL since January, 2013. It means that TOJDEL has diffused successfully new developments on distance education and e-learning around the world. We hope that the volume seven issue four will also successfully accomplish our global distance educational goal.

I am always honored to be editor in chief of the TOJDEL. Many persons gave their valuable contributions for this issue. I would like to thank to all reviewers.

For any suggestions and comments on the international online journal TOJDEL, please do not hesitate to contact with us.

October 01, 2019

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A STUDY ON PERCEPTION OF ACADEMICIANS TOWARDS ONLINE EDUCATION COURSES

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ABSTRACT

The number of academicians enrolling for online courses has rapidly grown in last decade due to its merits. Besides having many merits, academicians are forming a pattern of perception and facing the problems which lead us in direction of research. The purpose of the study is to explore the factors which affect the perception and challenges of academicians towards online education courses. The study has been conducted in the time period of August 2018 to November 2018. A survey has been conducted and data has been collected through questionnaires from 100 academicians who are teaching at colleges & universities located in Jalandhar, Phagwara & kapurthala cities. Factor analysis has been applied to find out the factors which affect the perception and challenges of the academicians. From the analysis it has been interpreted that there are six factors which affect the perception of academicians i.e. Level of satisfaction, Performance with online mode, Abilities of instructor, learning from the course, Time period of course and Economical and in case of challenges, there are two factors which are becoming the barriers for the academicians i.e. Problem in accessing and Problem during performance.

Keywords: perception, online education courses, academicians, challenges

INTRODUCTION

Today online education courses are becoming a trend and so many people are taking initiative and getting enrolled for these courses. These courses are easily available and accessible, whosoever wants to do these courses can get enrolled for any institute or university in which it's going on. It will lead to enhance the knowledge, teaching skills, potential, learning, more concept clarity and helps in career growth and promotion. There are so many institutes and universities in India and in other countries who are providing such courses. For example, in India such courses are provided by eminent bodies and institutes like IIM's, IIT's, AICTE, IGNOU, SWAYAM, NPTEL etc. & so many other renowned institutes and universities in foreign countries for example Stanford university, Oxford university, Cambridge university etc. So enroller has a lot of choices, they can join any course anywhere in any university or institute. These courses are duly certified and economical also.

In other countries, blended learning is followed in which whole learning and teaching pedagogy involve both online and face to face interaction with the help of equipment's which leads to two way communication (Haron, 2012). But, in countries like America, Australia and Russia many cheating cases are found when there is only online mode of learning which devalue the education experience and misrepresentation in grades (Lupton, 2002). Serwatka (2000) revealed that by following only online mode, it become difficult to share and test information, so face to face interaction is necessary to understand the level of students. For the proper implementation, to avoid the plagiarism & to reduce the cheating cases, software's are required to be used and every candidate has to be provided with a login and password so, that the location of the source of information can be traced (Olt, 2010).

Evaluation of the online education courses is done through the satisfactions of the candidate and the quality of the course. Quality of the course is very important because it will result to the satisfaction of the candidate. Satisfaction of the student is the significant element because it leads to positive learning, attitude, experience and outcomes (Biner et al., 1997; Liao & Hsieh, 2011). There are few factors which contribute to student satisfaction i.e. interaction, internet self-efficacy, self-regulated learning, category of course, cost of course

(Kuo et al., 2014). Interaction is very important factor it can be one way or two way. In traditional time period there is two way learning (Anderson, 2003) which is called as classroom, such learning explores the new horizons of knowledge and give birth to many ideas & creativity. Two way interaction have no limitations, it helps in making new meaning and exploration (Juwah, 2006). Internet self-efficacy is related to do the self-evaluation and arrange the internet activities in order and into a course of action (Eastin & LaRose, 2000). With the growth in online education, internet self-efficacy is also growing at large scale (Liang & Tsai, 2008; Tsai et al., 2011). Candidates who are less involved with internet self-efficacy have low academic results (Livingstone & Helsper, 2010; Shi et al., 2011) as compared to those who are more engaged with it, they are more confident. Self-regulated learning is very important factor because without this their no satisfaction. This concept totally student centered, it wholly dependent on the candidate how they plan their course & schedules, how to maintain it and keep themselves motivated during the duration of learning process (Moller & Huett, 2012). Next is category of the course also influenced the satisfaction that which area of study it belonged, level of course, areas and curriculum covered in the course (Kiriakidis, 2005 & Macon 2011). Last is price factor, before enrolling for any course candidate go for fee structure of the course and its other expenditures because if it is too costly than candidate would not prefer it (Beqiri et al., 2010).

Online education courses are not restricted to learner only, the instructor also has a significant role. If the instructor is having the full knowledge, devotion, skills and proper guidance of topic only then the purpose of online education can be accomplished (Wu, 2004). Clark(2010) suggested that learner has bigger role than instructor, if the learner is active, self-motivated, focused, and hardworking only than he can learn.

There are so many challenges faced by instructors and learners while pursuing for online education courses. On the part of instructor sometimes, they feel difficulty in understanding & evaluating the work of learner, cheating cases, lack of concentration of students, not taking assignments seriously, absence of quick feedback & response and on other part of the student, hard to understand the concepts, lack of time, costly affair and lack of focus (Hew, 2014).

Besides so many challenges still academicians prefer these courses due to its attractiveness i.e. short duration courses, helpful in promotion, quality, accessibility, affordable, knowledgeable, give an edge to career (Bolliger, 2009).

STATEMENT OF THE PROBLEM

In the present scenario, so many people are enrolling for online education courses to enhance their skills, knowledge and for faculty development programs. It has become mandatory in some institutes to do such courses. Due to the burden of job activities & responsibilities and home activities & responsibilities, it become difficult for academicians to pursue regular courses. So to understand the current scenario, the present study will focus on exploring the perception of academicians towards online education courses and challenges faced by them while pursuing it.

NEED OF STUDY

The present study has not been explored and touched much till yet in India from the academicians's point of view. From the student's point of view, number of studies are there but perception of academicians are required to be explored as yet. They are becoming the major and active enroller to these online education courses. So, there is a high time to explore this area to know the perception of academicians towards online education courses and the challenges faced by them during the course.

OBJECTIVES OF STUDY

- 1 To study the perception of academicians towards online education courses
- 2 To study the challenges faced by academicians during these courses.

RESEARCH METHODOLOGY

- **Research Design:** In the present study descriptive research design is used to describe the characteristics of a population or phenomenon being studied.
- **Sampling Design**

Universe of study: In the present study, due to paucity of time, Jalandhar, Phagwara and Kapurthala cities of Punjab state have been chosen as a universe for study. Data is collected from academicians who are teaching at different colleges and universities of Jalandhar, Phagwara and Kapurthala.

Population: Population consists of the academicians having the age group between 21-50 and teaching at all levels in different colleges and universities of Jalandhar, Phagwara and Kapurthala.

Sampling Technique: In the present study convenience sampling has been used.

Sample unit: The sample unit consists of the respondents who are in teaching field and working in universities and colleges of Jalandhar, Phagwara and Kapurthala and having the awareness regarding online education courses.

Sample size: In the present study, the size of sample is 100 academicians who are teaching in different colleges and universities of Jalandhar, Phagwara and Kapurthala.

- **Method of Data Collection**

In the present study data has been collected through primary & secondary method. For primary data, questionnaire is constructed and filled from academicians and secondary data is collected from journals, articles, research papers and websites.

- **Tools of presentation and analysis**

Different tools have been used for presentation of data. SPSS software is used for analysis of data. From SPSS factor analysis is used for extracting the factors and analyzing the variables. For demographics, frequency and percentages are used.

DATA ANALYSIS

Reliability of Data: Reliability of data has been checked to see whether data is authentic or reliable for research. For that purpose, Cronbach's Alpha is used. Its value lies between $0 < \alpha < 1$. If the value of greater than 0.6 than it has more valid result and can be used for further analysis. So, the reliability of the present study is 0.807 which is above 0.6 and it shows that the data is reliable and it can be used for further analysis.

Table 1. Analysis based on Reliability of Data

Cronbach's Alpha	Number of Items
.807	39

Source: Author's calculations based on primary data

Analysis of demographics: In present study age group, gender and profession is taken as demographics and frequencies and percentages are used for analysis of demographics.

Table 2. Table of Demographic analysis

Age group	Frequency	Percentage of respondents
21-30	74	74%
31-40	17	17%
41-50	9	9%
Total	100	100%
Gender	Frequency	Percentage of respondents
Male	40	40%
Female	60	60%
Total	100	100%
Profession	Frequency	Percentage of respondents
Director/ Principal	2	2%
Head of department	5	5%
Professor	6	6%
Associate professor	2	2%
Assistant professor	85	85%
Total	100	100%

Source: Author's calculations based on primary data

Interpretation: It is interpreted from the table that in case of age group, maximum respondents lie in the age group of 21-30 that is 74. In 31-40 age group 17 respondents are lying and in 41-50 age group 9 respondents are lying. It can be interpreted from the gender demographics that maximum respondents are females which is 60 and rest are males that is 40. It is interpreted from the profession demographics that basically five designations are taken for choices that is director/ principal, head of department, professor, associate professor and assistant professor. From the table it is depicted that maximum respondents i.e. 85 are assistant professors, 6 respondents are professors, 5 respondents are HOD, 2 are associate professor and 2 are director.

Factor analysis

Objective 1 To study the perception of academicians towards online education courses.

Factors guiding perception of academicians towards online education courses.

Factor Analysis is a commonly used data/ variable reduction technique. This multivariate statistical technique is used for three primary reasons:

- Reduce the number of variables, from large to small
- Establish underlying dimensions between measured variables
- Provide construct validity evidence

KMO and Bartlett's Test

To study the factors that help in analyzing the perception of academicians towards online education courses for this twenty three factors were tested on five point likert scale and factor analysis technique was applied using SPSS 24 version to reduce the inefficient factor and to know the key factors responsible for affecting the perception of academicians in Jalandhar, Phagwara and Kapurthala city. Following is the result interpreted for the applied test.

Table 3. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.812
Bartlett's Test of Sphericity	Approx. Chi-Square	1093.174
	df	253
	Sig.	.000

Source: Author's calculations based on primary data

A value of KMO greater than .5 is desirable. The value of the KMO statistic (.812) is also large (>.5) thus, factor analysis may be considered appropriate technique for analyzing the correlation matrix.

The initial components are the numbers of the variables used in the Factor Analysis. However, not all the 23 variables will be retained. In the present research only the 6 factors will be extracted by combining the relevant variables. In the present research the first 6 factors explain 66.241% of variance. The rotation sums of the squared loading represent the distribution of the variance after the varimax rotation with Kaiser Normalization. The varimax rotation tries to maximize the variance of each of the factor. On the basis of varimax Rotation with Kaiser Normalization, six factors have been extracted. Each factor is constituted of all those variables that have factor loadings greater than 0.5. 23 variables were clubbed into six factors. These six factors were extracted from the 23 variables used in the study.

Table 4. Table of Total Variance Explained

Component	Initial Eigen values			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.824	34.019	34.019	7.824	34.019	34.019
2	2.148	9.341	43.360	2.148	9.341	43.360
3	1.523	6.622	49.982	1.523	6.622	49.982
4	1.334	5.799	55.780	1.334	5.799	55.780
5	1.309	5.690	61.470	1.309	5.690	61.470
6	1.097	4.771	66.241	1.097	4.771	66.241
7	.981	4.266	70.508			
8	.831	3.611	74.119			
9	.793	3.448	77.567			
10	.693	3.012	80.579			
11	.602	2.619	83.198			
12	.525	2.281	85.479			
13	.496	2.155	87.634			
14	.453	1.968	89.602			
15	.421	1.831	91.433			
16	.393	1.710	93.143			
17	.342	1.485	94.627			
18	.276	1.200	95.827			
19	.248	1.078	96.905			
20	.217	.944	97.849			
21	.186	.808	98.658			
22	.177	.767	99.425			
23	.132	.575	100.000			

Extraction Method: Principal Component Analysis.

Source: Author's calculations based on primary data

Identification of the Core Factors

The Rotated Factor Matrix represents the rotated factor loadings, which are the correlations between the variables and the factors. The values have been highlighted in each of the rows to group the 23 variables into 6 core factors. Thus, after rotation, Factor 1 accounts for 34.019% of the variance; Factor 2 accounts for 9.341% of the variance; Factor 3 accounts for 6.622% of the variance; Factor 4 accounts for 5.799% of the variance; Factor 5 accounts for 5.690% of the variance; Factor 6 accounts for of the 4.771% variance respectively. All the 6 factors together explain for 66.241% of the variances.

Table 5. Table of Rotated Component Matrix

		1	2	3	4	5	6
VAR00015	Course is up to date with developments in the field	.640					
VAR00016	Course provides a personal experience similar to the classroom	.796					
VAR00017	Feel comfortable in conversing through online medium of course	.771					
VAR00018	Instructor explained how to use the website	.690					
VAR00022	Always get the answers of your queries easily	.607					
VAR00023	Satisfied with the online course	.701					
VAR00008	Easy to perform in online education courses		.620				
VAR00009	Helpful in your promotion and career growth		.548				
VAR00012	Website contained useful features		.725				
VAR00013	Website give timely feedback		.678				
VAR00019	Course material is easy to understand		.686				
VAR00020	Education course help in improving your teaching skills		.418				
VAR00004	Instructor having full knowledge of course			.594			
VAR00005	Language of instructor is understandable			.756			
VAR00006	Instructor handled web technology effectively			.603			
VAR00011	Information is well structure			.523			
VAR00001	Course is easy to understand				.594		
VAR00007	Instructor invited to ask questions and receive answers				.554		
VAR00014	Course is helpful in personalized learning				.820		
VAR00003	Instructor style of presentation held by interest					.781	
VAR00021	Given time is sufficient to complete the course					.579	
VAR00002	Course is economical						.845
VAR00010	Easy to access the website						.670

Source: Author's calculations based on primary data

All the factors have been given appropriate names according to the variables that have been loaded on each factor. Table 6 identifies six factors responsible for perception of academicians towards online education course.

Table 6. Factors Responsible for perception of academicians towards online education course

Factors	Statements	Factor Loading
Factor 1- Level of satisfaction	• Course is up to date with developments in the field	.640
	• Course provides a personal experience similar to the classroom	.796
	• Feel comfortable in conversing through online medium of course	.771
	• Instructor explained how to use the website	.690
	• Always get the answers of your queries easily	.607
	• Satisfied with the online course	.701
Factor 2- Performance with online mode	• Easy to perform in online education courses	.620
	• Helpful in your promotion and career growth	.548
	• Website contained useful features	.725
	• Website give timely feedback	.678
	• Course material is easy to understand	.686
	• Education course help in improving your teaching skills	.418
Factor 3- Abilities	• Instructor having full knowledge of course	.594

of instructor	<ul style="list-style-type: none"> Language of instructor is understandable Instructor handled web technology effectively Information is well structured 	.756 .603 .523
Factor 4- Learning from the course	<ul style="list-style-type: none"> Course is easy to understand Instructor invited to ask questions and receive answers Course is helpful in personalized learning 	.594 .554 .820
Factor 5- Time period of course	<ul style="list-style-type: none"> Instructor style of presentation held by interest Given time is sufficient to complete the course 	.781 .579
Factor 6- Economical	<ul style="list-style-type: none"> Course is economical Easy to access the website 	.845 .670

Source: Author's calculations based on primary data

Based on the results of Factor Analysis, 'Level of satisfaction', 'Performance with online mode', 'Abilities of instructor', 'learning from the course', 'Time period of course', 'Economical' emerged as the perception of academicians towards online education courses. These are the factors found to be responsible for perception of academicians towards online education courses.

Objective 2 To study the challenges faced by academicians during course.

Factors guiding the challenges faced by academicians during course. Again factor analysis is used for interpretation of data.

KMO and Bartlett's Test
Table 7. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.884
Bartlett's Test of Sphericity	Approx. Chi-Square	643.109
	Df	55
	Sig.	.000

Source: Author's calculations based on primary data

The value of the KMO statistic (.884) is also large (>.5) thus, factor analysis can be considered appropriate technique for analyzing the correlation matrix.

Eigen values (Select those components with Eigen Values >= 1)

The Eigen values are the variances of the factors. In the present research the first 2 factors explain 65.188% of variance. On the basis of varimax Rotation with Kaiser Normalization, 2 factors have been extracted. Each factor is constituted of all those variables that have factor loadings greater than 0.5. Two factors are extracted from the 11 variables used in the study

Table 8. Table of Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.075	55.229	55.229	6.075	55.229	55.229
2	1.096	9.959	65.188	1.096	9.959	65.188
3	.863	7.849	73.037			
4	.600	5.455	78.491			
5	.548	4.983	83.475			
6	.461	4.192	87.666			
7	.347	3.154	90.821			
8	.312	2.837	93.658			
9	.278	2.531	96.189			
10	.252	2.288	98.477			
11	.168	1.523	100.000			

Extraction Method: Principal Component Analysis.

Source: Author's calculations based on primary data

Identification of the Core Factors

The values have been highlighted in each of the rows to group the 11 variables into 2 core factors. Thus, after rotation, Factor 1 accounts for 55.229% of the variance; Factor 2 accounts for 9.959% of the variance respectively. All the two factors together explain for 65.188% of the variances.

Table 9. Table of Rotated Component Matrix

		1	2
VAR00001	Face problem while accessing the website	.696	
VAR00002	Face problem while using the features contained by website	.794	
VAR00003	Face problem while browsing	.670	
VAR00004	Face problem with the updating of course as the development in the field of course	.767	
VAR00005	Challenging to converse through online medium of course	.694	
VAR00006	Face problem in accessing the information of course	.827	
VAR00007	Face time management problem	.653	
VAR00008	Face technical issues	.700	
VAR00009	Face problem in doing assignments related to course	.804	
VAR00010	Face problem while performing	.881	
VAR00011	Challenging to understand the way of teaching of instructor	.568	

Source: Author's calculations based on primary data

All the factors have been given appropriate names according to the variables that have been loaded on each factor. Table 10. Identifies two factors considered to be the challenges for academicians towards online education courses.

Table 10. Factors Responsible for Challenges faced by academicians during course

FACTORS	STATEMENTS	FACTOR LOADING
Factor 1- Problem in accessing	• Face problem while accessing the website	.696
	• Face problem while using the features contained by website	.794
	• Face problem while browsing	.670
	• Face problem with the updating of course as the development in the field of course	.767
	• Challenging to converse through online medium of course	.694
	• Face problem in accessing the information of course	.827
Factor 2- Problem during performance	• Face time management problem	.653
	• Face technical issues	.700
	• Face problem in doing assignments related to course	.804
	• Face problem while performing	.881
	• Challenging to understand the way of teaching of instructor	.568

Source: Author's calculations based on primary data

Based on the results of Factor Analysis, 'Problem in accessing' and 'Problem during performance' emerged as the challenge for academicians during online education courses. These are the factors found to be responsible for being a challenge to the academicians during online education courses.

LIMITATIONS OF THE STUDY

- The sample size was limited.
- The sample was taken from the population residing in Jalandhar, Phagwara and Kapurthala only, so results are not applicable to whole of India.
- Non co-operation of some respondents has also affected the research results.

CONCLUSION

The online courses become a big platform for advancement and exploring. There are number of institutions and universities in all over world who are providing such courses and candidates can apply anywhere. The study is conducted on the perception of academicians towards online education courses which help us to know the mind

set up of academicians for such courses also to know how much academicians are enrolling for it. The present study has been explored with the two objectives based on perception of academicians and the challenges faced by academicians. For achieving these objectives, factor analysis has been used. From that, it is found that there are few factors which have significant impact on the perception and challenges.

RESEARCH IMPLICATIONS

As the present study focus on the perception and the challenges of academicians towards online education courses. In future, researchers can explore the attitude of academicians towards online education courses and they can also throw the light on the part of instructor as, they have a significant role in online courses.

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AN ACTION RESEARCH OF O2O BLENDED LEARNING IN THE INTEGRATED ENGLISH CLASS UNDER THE CONTEXT OF A CHINESE PRIVATE LANGUAGE UNIVERSITY

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ABSTRACT

Based on the framework of action learning, this study attempted to construct an online-to-offline (O2O) blended class of integrated English based on the flipped classroom, focusing on cultivating students' listening and speaking capability and critical thinking ability, improving students' competence to analyze and solve problems using English, and giving full play to students' personality characteristics. This action research spanned from February 2019 to June 2019. Taking the 130 students of integrated English class of College of International Business (CIB) of Zhejiang Yuexiu Foreign Languages University (ZYUFL) as samples, this paper adopted qualitative research methods, through the analysis of log observation and reflection reports, combining with comparisons of the quantitative online data. This paper drew the conclusion that the O2O blended learning based on flipped classroom in the integrated English class was the practice of innovative teaching mode and it created interactive classes of integrated English. It is suggested that if implemented from the beginning of freshman year, the continuation effect of this teaching mode should be better. In addition, if more teacher training opportunities were available, and if the teaching facilities and environment could be improved, the effect of this teaching mode should be more significant.

Key words: action learning, O2O blended learning, flipped classroom, interactive classes

INTRODUCTION

College foreign language strategy is an important part of Chinese national strategy in 2018. It is the duty of foreign language teachers in colleges and universities to actively cultivate students' ability to directly absorb international frontier information and exchange scientific research developments in their respective fields in foreign languages, and their ability to carry out work and research in foreign languages after graduation. Under the context of globalization 2.0 (Vielmetter, G., & Sell, Y., 2014), university English teachers in China should aim to cultivate the international compound talents urgently in alignment with the globalization trend; and it must cultivate the comprehensive ability and critical thinking ability of students to raise and solve problems; at the same time, it should adapt to the development of new technologies, reform teaching methods and make full use of various online resources.

Zhejiang Yuexiu University of Foreign Languages (ZYUFL) is a private language university in Zhejiang Province, North east of China (near Hangzhou and Shanghai). With more than 16,000 students and over 1,000 teachers and administrators in total. As the university with the largest number of foreign languages, ZYUFL stays in the forefront of various kinds of educational reforms and researches. The greatness of a university lies in the greatness of its teachers, and the excellence of a university lies in the excellence of its students. Classroom is the main way for students to acquire knowledge. Therefore, in order to maximize the growth and development of students, teachers must reform teaching methods and renew teaching concepts. Since 2018, ZYUFL calls on teachers carrying on online-to-offline blended learning reform to classroom teaching. The researcher applied for an online-to-offline blended learning project based on flipped classroom in 2019. The study was part of the research results (ZYUFL Online Database, 2019).

LITERATURE REVIEW

Action Learning: This study is based on the theory of action learning. Action learning is a comprehensive learning model, which integrates theoretical learning and behavioral cognition, and then carries out group learning and interactive sharing (Revans, 1982). It is mostly used in the field of medical and business training, and its practice in the field of education has gradually expanded in the past 20 years. In schools, especially in MBA teaching in business schools, action learning is an important method of teaching reform. Action learning method was first used by Reg Revans in 1940s to train and develop employees in the coal industry in Britain. Since the 1980s, action learning has been gradually applied in medicine, commerce and education. Nowadays, many universities in the United Kingdom and the United States offer courses based on action learning. There is a simple equation to explain the action learning method: AL (Action Learning) = P (Programmed Knowledge) + Q

(Questions) + R (Reflection) + I (Implementation), that is, action learning = structured knowledge + query + reflection + execution (Marquardt, 2004). In the MBA course of higher education, action learning method has achieved good practical results. Dutch Business School is one of the first business schools in the world to introduce "action learning" into management education. It enjoys a high reputation in both business and academic circles in Europe. Compared with the traditional teaching methods, the action learning method attaches more importance to the combination of learning and practice, and leads students to improve their problem-solving literacy and ability, with the growth and development of learners as the core, so as to stimulate students' internal learning motivation. The training goal of Applied Talents in ZYUFL coincides with the practice of action learning (ZYUFL Online Database, 2019). In English learning, action learning enables students to develop their practical application abilities such as cross-cultural communication.

Blended Learning: Blending learning is also called hybrid learning or flipped classroom in the literature. According to Graham (2006): "Blended learning systems combine face-to-face instruction with computer-mediated instruction" (p.5). The traditional education where face-to-face teaching mode was in dominant position now is being changed by the wide application of digital technology. The educational field is also adapting to the trend of integrating technology into education, so that students can survive in the world where technology is widely used (Lu, et al, 2018; Meyer et. Al., 2014). Combining online learning with face-to-face teaching can enhance students' interaction and learning enthusiasm, form a more open and communicative learning environment, and produce meaningful learning outcomes (Garrison & Kanuka, 2004). Several benefits can be listed out of O2O blended learning. On one hand, pre-class preparation can promote students' learner autonomy and help them develop self-directed learning habits; on the other hand, learning experiences in collaboration with peers can be motivating. Students form a learning community online and they can be much courageous to express their views, especially in high-context culture like China. There are researches showing students' positive attitudes towards O2O blended learning (López-Pérez et al., 2004; Paechter et al., 2010; Wang et al., 2009) and students' expansion in learning to the out-class environment (Kasraie & Alahmed, 2014; Shih, 2011; Zhu, 2012). Face-to-face teaching activities and network seminars offer students asynchronous content so that they can learn according to their own time and rhythm. It takes students' individual differences into full consideration. Subsequent classroom discussions help students better understand the topic and develop their cognitive and social skills. Sharp et al. (2006) conducted a research reviewing more than 300 blended learning studies, they summarized three main ways of blended learning. First, the most common way of blended learning is that mainly provides additional learning resources for institutions-supported courses on a virtual learning platform. Second, there is a few radical and transformative blended learning mode. It aims to promote interaction and communication through technological innovation, thus replacing other teaching modes. The third mode of change is no longer led by educators or educational institutions, but by students. Students nowadays use a wide range of technologies, such as mobile phones, laptops, e-mail, networking apps and online database. This current study, to a large extent, combines the first mode and the third mode, supplementing online learning materials and making full use of students' self-learning ability. Thanks to the flexibility and diversity of O2O blending learning, it's of great use to teachers and researchers to design appropriate programs in their own specific contexts. The study adopts the framework of action learning and designs the semester into three action learning cycles based on three main themes, which is going to be elaborated in details in the following sections.

PURPOSE OF THE STUDY

The primary objectives of the study are:

- To assess and analyze students' perception of O2O blended learning model in the integrated English class.
- To make comparative study of students' perception of O2O blended learning model in the integrated English class between the two classes (A5 & A6).
- To make comparative study of students' perception of O2O blended learning model in the integrated English class between the two classes (A5 & C7).
- To make comparative study of students' perception of O2O blended learning model in the integrated English class between the two classes (A6 & C7).

METHODS AND PROCEDURES

The focus of the research is to assess and analyze students' perception of O2O blended learning model in the integrated English class in the College of International Business (CIB), Zhejiang Yuexiu University of Foreign Languages (ZYUFL). This current research adopted a mixed-method approach combining qualitative with quantitative methods (Creswell, 1994). The observation logs of the researcher and reflection papers of students were used to assess and analyze students' perception of O2O blended learning model in the integrated English class. The quantitative data were collected from the online education integrated platform of ZYUFL (<http://umooc.yxc.cn/meol/index.do>). The online learning resources were based on the Chinese MOOC Online (<https://www.icourse163.org/>) and the excellent resources of teachers in ZYUFL.

The survey population of this research consists of students from CIB of ZYUFL. Convenience sampling method was used to draw 130 samples from three classes (A5=45, A6=51, C7=34) of CIB. The researcher made clear explanation about the purpose of the research to the participants before collecting data.

Since September 2018, stratified English teaching was applied in the sophomores of non-English major in ZYUFL. Table 1 shows the criteria of stratified English classes. CET 4 & 6, the abbreviation of College English Test Band 4 & 6, are conducted by the Department of Higher Education of the Ministry of Education. The junior college students, undergraduates and postgraduates have to complete CET-4 according to the syllabus (Zheng & Cheng, 2008).

Table 1: Standards of Stratified English Teaching in ZYUFL

Stratified English Classes	Criteria
A	Those who pass CET 6
B	Those who pass CET 4
C	Those who did not pass CET 4

The textbooks they used were the fourth volume of the New Target College English Textbook Series. There were compulsory seven units in this semester, namely, Unit 1, 3, 4, 5, 6, 7 and 8, which could be re-integrated into three categories, namely, "Self-awareness", "Green Technology" and "Emerging Science and Technology". At the beginning of the semester, three classes were grouped into several (A5=six groups, A6=seven groups, C7=six groups). Each group has its own unique group name and slogan, representing the core ideas and learning objectives of the group. It facilitates team building process and enables students to learn together.

Based on the researcher's previous study of action learning in the integrated English class and the concept of flipped classroom, the O2O blended learning model in the integrated English class mainly consists of three parts: "Preview Classroom" in pre-class phase -- students have to preview online before class. "Dialogue Classroom" in in-class phase -- teachers and students interact face-to-face, and answer questions, share, evaluate and expand what have been learned in class. "Reflective Classroom" in after-class phase -- both teachers and students have to reflect about the learning process after class. In the whole action learning circle, teachers constantly optimize teaching design and innovate teaching methods. Students try to improve their ability to understand, raise and solve problems. The two-way interactive evaluation method of peer evaluation and teacher evaluation, and the cross-teaching method of peer guidance and teachers' supervision can not only enable students to input and consolidate basic knowledge, but also give students space to innovate and play, so that they can learn to use. Such wisdom "classroom" combines the characteristics of knowledge indoctrination in low-level classroom and the integration of knowledge and practice in high-level classroom.

Preview Classroom: Before class, the teacher assigned the list of self-study tasks to the students before class, then tracked the students' learning situation and gave timely feedback. At the same time, the teacher sorted out the participation of students in platform learning and the common questions raised by students. Referring to the students' self-test feedback sheet, the teacher determined the main points of the objectives in class, and summarized the teaching objectives, knowledge points and problems, mainly focusing on the objectives, key points and problems for teaching design. Students studied online independently in the online education platform of ZYUFL, through watching videos and learning ppt slides and word files. Then students tested themselves on the online platform and summarized the knowledge points. After sorting out the relevant difficulties and unsolvable problems, students could discuss them with teachers and students online. Those difficulties that could not be solved would be left for discussion offline face-to-face.

Dialogue Classroom: During the course, the main activities of teachers and students include the following aspects: (1) Vocabulary contest (individual), which follows the design concept from easy to difficult, focusing on the detection of students' basic knowledge and re-examination of pre-class learning. (2) Intensive knowledge points (individual), intensive principles: complex knowledge would be summarized by the teacher and the general knowledge would be summarized by students. In each class, students may be picked out to summarize, thus promoting students' understanding of knowledge systematization and motivating them to make good preparations. (3) Group discussion, the topic of group discussion should be closely related to the unit theme and students' real life, encourage students to put forward learning topics, and teachers should give some guidance to deepen students' understanding and application of knowledge to solve practical problems. (4) Outward bound exercises (group/individual) are an important part of improving students' cross-cultural communication awareness and ability. It develops culture, art, customs and other aspects on the basis of the theme film of the unit, and actually completes the homework. Teachers give one-to-one guidance or group classified guidance. (5) Presentation (group/individual). Presentation emphasizes that students act to show themselves, improve their

English application ability, enhance their ability to think independently and try to explore, and develop their cross-cultural communication awareness and literacy.

Reflective Classroom: After class, the teacher made an evaluation and gave the feedback to the students in time. At the same time, the excellent works displayed in practice should be sorted out and shared with the classmates. In addition, the research team would collectively carry out critical teaching reflection, summarize the shortcomings of each classroom implementation, optimize the teaching program and micro-class design and production. Students would conduct timely self-examination after class, take a comprehensive view of their own learning situation in combination with peer review and teacher evaluation, make a good record of learning, conduct deep reflection on learning, strengthen the consolidation of existing knowledge, and realize the individualized application and expansion of learning.

DATA ANALYSIS AND DISCUSSION

The data for this current research was collected electronically through a Chinese popular website (www.wjx.cn). Students were very familiar with this website and could use it via their self-phones and laptops. Internet were everywhere and had a very easy access to students in the two campuses of ZYUFL. In addition, the researcher utilized the Microsoft Excel and Statistical package for Social Sciences (SPSS) to show statistical distributions if this research. Descriptive analyses, such as frequencies and percentages, were adopted in this study for comparative studies.

Data analysis of reflective reports of students are conducted through open source coding, and for its validity, the researcher and two assistant researchers did the coding independently at first and then adjourned an inter-coding session. After the several debates among the three coders, the finalized results of coding were listed as follows.

Table 2: Results of Coding -- Students' Perception of O2O Blended Learning

Category	Code	Example
Perception of O2O blended learning. There were several ways in which the students expressed their perception of the autonomous learning. The codes created within this category specify the students' reactions.	Positive	In short, through this semester's study, I clearly found that my self-learning ability has improved significantly, and I have made some progress in speaking on stage.
	Negative	However, as far as I can see, I think the new style was less helpful.
	Favorite part	I can get access to the reference materials easily online.
	Less favorite part	what I dislike most is that there are always some members who are unwilling to take part in activities but just enjoy the final results.

Most students of the two A classes thought positively of the O2O blended learning in the integrated English Class. However, seven students of C7 stayed negative towards the O2O blended learning. Six students remained neutral and made no further comments about it. As the periodical assessment was put online, it allowed automatic scoring and made it easier to save the file of scores. Students could also get in touch with their scores easily. Reference materials were also available to them in the online data, which engaged students out of class. Moreover, flexible access from home and campus made it easier for students to adjust study plans. The teacher's online office hour was also warmly welcomed by the students who used to be at a loss when confronting with problems in the middle of learning a certain theme. The goal-setting and coaching approaches adopted by the teacher extended the online guidance to out-class environment. Moreover, the email and messaging in WeChat group were maximized to extend the classroom experiences. Problems identified in the feedback of students included sudden technological breakdown in the online platform, delayed response and the gap between the teacher and the technological staff. Moreover, team learning was not easy for some students. Group dynamics varied greatly due to different personalities.

Table 3 Percentage of Students' Perception

	Positive	Negative
A5	94%	6%
A6	97%	3%
C7	62%	21%

The results were supplemented by the teacher's observation. The observation logs showed that A5 and A6 were very active in classroom activities. A5 was good at doing presentation and designing their own projects. A6 was adept in reading discussion and writing assignment. According to the mid-term exam results, the score of A6 stayed ahead. C7 was not so interactive as the other two classes. But three groups of C7 kept learning very hard. Based on their group's name, it's obvious that they were targeting CET-4 in June, 2019. The rest three groups stayed aloof towards various kinds of activities. One of the three groups felt excited at the very beginning of the semester, and then cooled down after one month. Their attitude was mostly passive and could not keep up with the study neither online nor offline. This partly was because of their past learning habits and partly was owing to the inconsistency in teaching between the freshman year and the sophomore year. Students needed time to adapt themselves to new teaching mode. It is suggested that if the O2O blending learning could be put into practice since the very beginning of the freshman year, the effect could be much better.

Table 4 Students' Reflection of Most Improved Areas

Category	Code	Example
Most improved areas	Speaking	Because of my teacher, I made progress on my oral English. One of my friends who come from America told me that my spoken English was getting better and better. He can understand me easier than one year ago.
	Listening	Online preview of classes and the micro-lecture help me a lot, and because we need to bring up questions towards other groups' presentation, we have to listen carefully. My listening ability has improved a lot out of my surprise.
	Adaptation	This semester, the new study mode, the new learning environment, let me felt a little uncomfortable. But in the end, more was new experiences, new gains, new friends. The flexible learning pattern, let me have a cleverer understanding of my own learning progress.
	Motivation	It opens up a new path for English learning and enables team members to get to know each other better in the process of communication. It also motivates us to learn from the excellent people around us and make progress together.
	Expansion	Passing CET6 was not the ultimate goal. I want to try other English translation certificates and challenge myself.

According to students' reflective reports, there were several distinctive areas: speaking ability, listening ability, learning adaptation, learning motivation and out-class expansion. Most students from A5 and A6 enjoyed the three-steps O2O blended learning in the integrated English class. They felt a great improvement in terms of self-confidence and motivation both in class and outside class. Presentation was a golden opportunity for them to practice their listening and speaking abilities. Three students mentioned life-long learning in their reflective reports, which demonstrated the usefulness of O2O blended learning in developing students' autonomy in learning. Nevertheless, things in C7 went in a different direction. Three teams tried to catch up with peer's progress, but they were comparatively in short of language proficiency. Due to a lack of English proficiency, they met obstacles from time to time. As for the rest three teams, they went their own ways without discipline, for example, more than ten students would be late for every class. Three students never brought the textbook or the notebook to class, not to mention take part in the activities.

Table 5 Students' Suggestions of O2O Blended Learning

Possible suggestions.	Technological Support	I hope that the Network Information Service Center could be more responsible and replied our puzzles in time.
	App Upgrade	Compared with other apps in the market, our university's app was out of date.
	Regulations	We should make regulations in this regard, which can prevent some people from being lazy.
	Richer ways of teaching	Different teaching methods can be adopted to lead the students into the classroom, such as playing some video related to the text in class.

Given the full freedom of writing anonymously online, students were very active in giving their opinions and suggestions. As both a researcher and a teacher, it's really inspiring to hear students' voices. When designing the class activities and preparing for class materials, considering students' real needs and different requirements were of great help. As for the technological support and app upgrade, it was reflected the technological deficiencies in ZYUFL. On one hand, the educational online platform broke down from time to time, which made a great impact on students' motivation of study online; and sometimes students' online test scores were also influenced by that. On the other hand, whenever problems appeared, as the teacher was not familiar with the technological knowledge, the process went through the teacher to the technological service center and then went back to students, which cost a lot of time. More opportunities for teachers' training and the upgrade of facilities and networks should be taken into seriously consideration for the top administrative level. Another aspect that worthy of attention was that students of C7 suggested to play games, watch videos and listen to music more frequently in the class. The research team discussed about it and concluded that students of C7 was unable to overcome their study inertia and was in favor of entertaining learning methods more. To help them overcome their laziness in study, peer tutoring and team learning were more effective than didactic lectures. More importantly, they needed help for the development of their learning goals.

Table 6 Online Data

Class/Online data (average)	Number of participations in the course online seminar	Number of participations in the online questionnaire	Online time/hr.	Number of micro-lecturers learned	Number of submissions for online testing
A5	168.5	9.5	2052	114	20
A6	265	10.5	5996.5	114	16
C7	100	8	1309	60	10

The online education integrated platform of ZYUFL included data of students' performance from various aspects. The research team decided five most important ones in alignment with the research purpose. From table 6, it was safe to conclude that A5 and A6 excelled C7 in terms of all these five areas. Students in A class paid more attention to their own performance both online and offline. Students in C class focused more on entertainment and leisure. It was in great alignment with the researcher's observation that C7 showed higher motivation in "self-awareness" cycle instead of the other two.

Table 7 The Mid-term Exam and Final Exam Scores

Class/ Scores (average)	Mid-term Exam Scores	Final Exam Scores
A5	77	88.5
A6	81	93.5
C7	40.5	50.5

Exam scores were in alignment with the online performance of students. The data were also consistent with the observation logs. A6 was good at writing assignment and reading analysis, and reading and writing had the biggest proportion in the mid-term exam and final exam, that's explained why A6 gained higher marks in the two exams. On the other hand, A5 was creative. A good case in point was the design of an organic house by themselves. Several groups were very innovative and one group was outstanding with a hand-drawn model. C7 was interested in role playing related with the textbook. Though they were not good at English, they made interviews with some foreign friends in Unit 7 about self-image and cosmetic surgery. Their interpersonal skills and abilities were not hindered by their not-so-fluent English.

Based on the feedback from the students of the three classes in their reflective reports and online data, it was easily seen that the O2O blended learning based on flipped classroom in the integrated English class was more suitable for students of A5 and A6. A5 was good at creating something new while A6 was good at academic assignments. Moreover, the teachers of this research team analyzed the reasons for the short online time, the low number of submissions for online tests and the low participation rate of C7. The suggestions provided by the students show that the students in Class C like entertaining learning methods such as movies, games, and songs. They had a strong fear of systematic online and offline courses and could not control their learning inertia. This kind of students should be guided correctly, and their laziness and learning inertia should be controlled through goal setting and detailed tasks, teamwork and encouragement.

LIMITATIONS

The research attempts to assess and analyze the student's perception towards O2O blended learning in ZYUFL, China. The limitation of this study is that it adopts the convenient sampling method. However, this sampling

method is suitable for this study to fulfill the research objectives. Another limitation of this study is that the sample size is not enough to represent all students of CIB, ZYUFL.

CONCLUSIONS

Based on the framework of action learning, this study takes 130 students from three classes as samples and conducts an action research of O2O blended learning in the integrated English class. Most students can complete the tasks of pre-class preparation, in-class interaction and post-class reflection according to O2O blended learning requirements based on the flipped classroom. However, based on the quantitative data analysis of online learning and the qualitative analysis of observation logs and reflection reports, the researcher found that students in class A and class C were different in their perception towards O2O blended learning, such as the focus on topics, learning autonomy and learning styles. Therefore, students' differences should be put into consideration when in the preparation of materials. Yet, it can be concluded that the O2O blended learning based on flipped classroom in the integrated English class was the practice of innovative teaching mode and it created interactive classes of integrated English. Suggestions were more training opportunities should be provided to teachers, and technological and network environment upgrade should be kept up with the educational reform in ZYUFL. If the O2O blended learning could be put into practice at the very beginning of freshman year, the effect might be much more significant.

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BLENDED LEARNING IN HIGHER EDUCATION: A CRITICAL REVIEW

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ABSTRACT

Advancements in technology has brought both opportunities and challenges to education and training. With technological innovations over the year's reliance on the traditional face-to-face learning is being shifted on to other various means to support knowledge delivery and fostering an innovative learning environment. Instructional approaches such as Blended learning, which can combine face-to-face instruction with computer mediated instruction, has substituted a large portion of the traditional face-to-face instructional time. This paper aims to examine, and review of previous studies carried out based on the perceptions of students in blended learning environments and its effectiveness in enhancing the learning process. Desk Research technique was conducted for this study which basically involving collecting data from the existing online library. The main purpose of using desk research is to generate new insights from the previous studies. Reanalysing the previous literature may lead to unexpected new discoveries. Several case studies have been explored here which suggests blended learning has had positive impacts on improving student's exam marks, attendance rate among others but, there is a need to consider that being fully dependent on it may result in reverse effects. As in contrast to this, studies also reveal that not everyone might be able to cope with the blended learning and might prefer a more traditional learning environment. And thus, it is necessary for higher educational institutions to pay obvious attention to the students' individual learning needs and their views on blended learning. Higher Educational Institution may consider offering students a choice of whether to enrol in blended or fully face-to-face course sections where suitable. Educators should carefully design courses in ways with multiple means of expression and engagement, representation, to scaffold and support students in the creation of their own individualised blend. High degree of motivation, utility and satisfaction perceived from blended learning, which results in students to have a positive attitude towards learning.

Keywords: Blended learning, Learning styles, E-learning, Learning Management System, Higher Education

1. INTRODUCTION

The widespread use of the Internet has resulted in higher education institutions around the world going through rapid changes as they adapt to the new realities of the knowledge society (Macfadyen and Dawson, 2010) and hence, it is necessary for them to comply with the growing expectations to help students strive effectively in the technology based world. Higher education institutions (HEIs) Advancements in technology has brought both opportunities and challenges to education and training, particularly through online instruction and created new terminologies such as online learning, e-learning or web-based learning specifically (Akkoyunlu & Soyulu, 2008; Güzer & Caner, 2014). Instructional approaches such as Blended learning, which can combine face-to-face instruction with computer mediated instruction, has substituted a large portion of the traditional face-to-face instructional time (Owston, York & Murtha, 2013). Hence, computer-mediated instruction is often credited to encourage students' creative, analytical and critical thinking skills, creating social interaction and good relationships between writer and reader and supporting the learning community (Gyamfi & Gyaase, 2015). Blended learning provides learners with the opportunity to interact at anytime and anywhere as a result of the perks that computer-mediated educational tools have to offer and this contributes to greater quality and quantity of socially supported, constructive, learning experience. Many researches have been undertaken in relation to blended learning, their dimensions and variables and their impact, with the most important debates to whether students can truly learn better in a blended learning environment compared to traditional face-to-face classroom environment (Güzer & Caner, 2014).

2. LITERATURE – A CRITICAL REVIEW

2.1 Blended learning: what and why?

Blended learning is a familiar term now and practice in the higher education and there has been many definitions put forward in the literature. Over the years, factors such as twenty first century skills, information explosion and demands of workplaces has strengthened and encouraged moves to adopt technologies into classrooms and learning settings. The rapid growth in the use of learning technologies has led to a growing need to explore efficient program delivery methodologies and provided teachers and students with many more opportunities to mix of teaching and learning styles for a given task (Uğur, Akkoyunlu & Kurbanoglu, 2009).

In the same context, Thorne (2003) defines blended learning as “a way of meeting the challenges of customizing learning and development to the needs of individuals by incorporating the innovative and technological advances offered by online learning with the interaction and participation offered in the best of traditional learning”. Thorne (2003) states that blended learning is the most logical and natural evolution of our learning agenda and does indeed provide a real opportunity to create learning experiences that can deliver the “right learning at the right time and in the right place for each and every individual”, not only from an academic perspective but also from the workplace and home. Akyüz & Samsa (2009) states that blended learning has often been referred to as the “third generation” and characterized as maximizing the best advantages of face-to-face learning and a variety of technologies to deliver learning through combinations of learning delivery methods, such as face-to-face instruction with either synchronously or asynchronously computer technologies.

Singh (2003) proposed that “blended learning focuses on optimizing the achievement of learning objectives by applying the “right” personal learning technologies to watch the “right” personal learning style to transfer the “right” skills to the “right” person at the “right” time. Blended learning has been discovered to be a feasible and effective approach to deliver up-to-date, high-quality, on-demand learning solutions that combines various delivery methods, such as collaboration software, Web-based courses, EPSS, and knowledge management practices (Thorne, 2003; Bansal, 2014).

Bansal (2014) also enunciates blended learning to describe learning that combines various event-based activities such as face-to-face classrooms, self-paced instruction and live e-learning, which has resulted in the creation of new opportunities for students and learners alike to interact with their academic content both inside and outside the classroom, peers and faculty. Olitsky & Cosgrove (2014) state that blended learning should be regarded as a pedagogical approach that integrates the effectiveness and socialization opportunities of the technologically enhanced active learning possibilities of the online environment with the class room. Therefore, Blended learning should be approached as redesign of the instructional model with the following characteristics below:

- i) First, a shift from lecture to student-centered instruction, where students become active and interactive learners even during the face-to-face sessions
- ii) Second, an increase in the interaction between student-content, student-instructor, student-student and student-outside resources.
- iii) And lastly, an integrated summative and formative mechanisms for students and instructors (Olitsky & Cosgrove, 2014).

Studies revealed that students believed they received instructor feedback, their grades faster and the rated the quality of teaching assistants significantly better in blended courses in comparison with traditional face-to-face learning environment (Korr, Derwin, Greene, & Sokoloff, 2012). Given the flexibility in managing their blended courses, students are able to balance their study to achieve their educational goals, around the multiple commitments they face with in their daily lives such as juggling work with family obligations, commuting and financial challenges (Lin & Wang, 2012). It has reported that students appreciate the opportunity to be able to regulate their own study, such as work with course materials and participate in online discussions (Lin & Wang, 2012; Poon, 2012). As blended learning combines a mixture of face-to-face and online learning environments, students can benefit from increased time and spatial flexibility for their study, wider and easier access to learning resources, and a higher level of autonomy in regulating their learning (Poon, 2012).

Osguthorpe and Graham (2003) asserts that different student learning styles and learning experiences, the context of online resources and the experience of trainers play an important role in designing an efficient blended learning environment and to establish the balance between face to face and e – learning environment. They suggest a framework that is a particularly useful in illustrating the application of a systemic approach in determining what is blended learning and the goals of blending. They, recognizing three types of mixture in a blended course that is beyond the simple combination of face-to-face and online instruction, which are as following: (a) learning activities, (b) students, and (c) instructors. Also, they further suggest that blended learning environments may vary widely according to the following goals: pedagogical richness, social interaction, access to knowledge, personal agency, the ease of revision and cost effectiveness.

Blended learning inherently is about rethinking and redesigning the teaching and learning relationship’. However, previous studies have also shown that blended learning solutions often do not live up to the potential of the approach or could result in failure to produce the expected results because instructors, administrators and learners could lack the relevant technical, methodological or organisational knowledge and experience (Bansal, 2014). And hence, benefits of blended learning do not come without costs. Documented costs have surfaced such as students’ struggle with time management and responsibility for their own learning, difficulty in using new technology, inadequate professional development support and difficulties in establishing a supportive

culture for blended learning (Vaughan, 2007). The major stance here is designing a learning environment that ensures effective, efficient and flexible learning for all learners/students and thus, their views are essentially crucial in order to assess the efficiency and effectiveness of a learning environment. No single technology-mediated instruction is best for all learners which is why when planning the use of learning media to present the information they receive and process, the specific preferences and strengths of the learners should be considered.

2.2 Blended learning through LMS

As various types of electronic or Internet-mediated learning continue to thrive across all levels of higher education in order to supplement more traditional ways of teaching (Fathi and Wilson, 2009). Colleges and universities worldwide are employing a diverse form of electronic distance media to deliver educational courses to students without the limitations of location or time (Zacharis, 2015). The Learning Management Systems (LMS) are technological learning environments that provide online course delivery and support student learning by providing content online by allowing for additional components such as assignments, presentations and screencasts, quizzes and forums. (Filippidi, Tselios & Komis, 2010; Conijn et al., 2017).

Filippidi, Tselios & Komis, (2010) asserts that there are several objectives of a LMS system including (a) to bridge the distance between the learner and the learning material and (b) to embed social interactions within the same environment, as a result delivering learners the opportunity to become active participants and not mere receivers of information. Increasingly, the adoption of LMSs have further assisted online, onsite and hybrid courses through their functionalities for communication, content creation, assessment and administration (Piña, 2010). A majority of LMSs are web-based and employ synchronous and asynchronous technologies to promote anywhere, anytime access to the course learning content and administration (Black et al., 2007). Ceraulo (2005) argues that through the use of LMS there is an "...emphasis on learning management rather than course management, its ability to store educational content so that it can be referenced by many courses, and its ability to streamline a distance or e-learning, instructor's tasks".

The use of LMS platforms provide students with access to learning materials such as documents, spreadsheets PowerPoint presentations, audio or video of lectures, hyperlinks, submit assignments, track their progress and interact with tutors and peers (Zacharis, 2015). The collaborative and social characteristics of blended learning can be assisted by both the asynchronous and synchronous LMS tools (Zacharis, 2015). Asynchronous found in a typical LMS include email, threaded discussion boards, course announcements blogs, wikis, calendars, and file sharing (Zacharis, 2015). On the other hand, Synchronous tools include such as text chat, whiteboard, and web-conferencing tools and might be available only after installing additional plug-ins or integration packs (Zacharis, 2015). It is not surprising that students' satisfaction with blended learning course delivery is very high, given the ease, convenience and accessibility of online resources available through an LMS (So & Brush, 2008). In diverse blended learning environments, the integration of human interaction to online learning, the balanced combination of self-paced and team activities and a mix of spoken, written and interactive media have been proven to be effective in supporting learning for all personality types – visual, auditory and kinesthetic (Zacharis, 2015).

Since most blended learning courses today are combined with in-class activities with the support of an LMS, student activity can easily be tracked by processing the digital trails left by every online interaction in the system's log file (Zacharis, 2015). A pilot study conducted by Macfadyen and Dawson (2010) to assess the usefulness of LMSs in tracking data and predicting student success where the underpinning research question was to determine if the data collected from the LMS log file was enough to predict grades in a hybrid learning environment. Taking into account all LMS activities related to blended learning were treated equally in a search for significant correlations with student grade and from these activities/variables, 14 were found having significant relationship with final course grade and were included in a multiple regression analysis, in order to develop a predictive model of outcomes in blended learning settings (Macfadyen and Dawson, 2010). They also note that some integrated online activities are likely to translate into effective learning strategies but 'more time spent on online activities' does not simply predict higher achievement (Macfadyen and Dawson, 2010). An important finding, they state is that the instructor intentions and knowledge of actual course design is crucial in order to determine which LMS variables can meaningfully represent student effort or activity (Macfadyen and Dawson, 2010).

LMS allows students to interact with others, develop critical thinking skills, control their own learning and a sense of community with other learners (Al-Busaidi, 2012). Another study conducted by Al-Busaidi (2012) reveals that learners' characteristics (computer anxiety, personal innovativeness and technology experience) are significant factors for student's perceived ease of use of LMS. Instructors' attitude towards LMS and their

control over LMS have also been found to be significant factors for student's perceived ease of use along with system quality, information quality, and service quality are significant factors for student's perceived success of LMS in blended learning and its continuous use (Al-Busaidi, 2012). Al-Busaidi's (2012) study also illustrates that the success of adopting LMS in blended learning positively impacts learners' intention for continued use and that learner's perceived satisfaction and acceptance of LMS is an important element for its survival. Thus, all major entities of LMS adoption such as the learners, course, instructors, classmates, and organization are crucial to the success and survival of LMS (Al-Busaidi, 2012). Zacharis (2015) investigated the relationship of different LMS data variables with student achievement in the context of a blended learning programming course, where hit frequency, time spent online, and the number of discussion messages read or posted are some of the most often investigated components towards student success. The study reviewed the log files generated by the Moodle LMS that hosted a blended learning course to find significant correlations between LMS data usage variables and final course grade which revealed that "52% of the variance in the final student grade was envisaged by just four variables: Reading and posting messages, Content creation contribution, Quiz efforts and number of Files viewed" (Zacharis, 2015).

Other studies conducted such as by Gecer & Dag (2012) aimed to concentrate on the views of the students towards a course where blending of face to face and e-learning methods (which included LMS) were planned and applied. Their findings revealed that from a holistic perspective, students expressed that they found LMS as useful in several ways such as it provided an environment for students in terms of having necessary information about the situation of the course regardless of time and place, following the course content online and exchange of ideas and opinions between tutor-student and student-student (Gecer & Dag, 2012). Since the use of LMS is an important factor in a blended learning environment, greater attention should necessarily be given in designing academic courses with the use of LMS (Filippidi, Tselios & Komis, 2010) and the factors that affect students' expressed practices while interacting with a LMS, to facilitate system's usability and usefulness in order to further promote and motivate the learners to achieve deeper understanding (Filippidi, Tselios & Komis, 2010).

2.3 Blended learning in relation to student perceptions

In this section of the paper, four case studies are discussed. The case study approach sets out the development of four separate researches undertaken in order to investigate the success of information technologies in higher education from the learner's perspective, each employing blended learning to varying degrees. Owston, York & Murtha (2013) examined the relationship between student perceptions and achievement at a university where the university implemented blended learning as a way to increase enrolment by more efficiently utilizing existing classroom space, to improve student learning, to provide greater convenience to its commuter students and to engage students more in their courses. And four research questions related to these goals were constructed and a questionnaire was developed to evaluate student perceptions in each of the question areas. Their first research question dealing with the relationship between satisfaction with the blended course format and achievement were in alignment with the literature outlining that students showed greater satisfaction in blended courses than in traditional lectures but with the exception that the results of the study suggested that only the highest achievers were most satisfied with their blended course, would take one again, and preferred the blended format over fully face-to-face or online (Owston, York & Murtha, 2013). Conversely, the lowest achievers were found to be least satisfied, preferred face-to-face instruction and least likely to want to take another blended course (Owston, York & Murtha, 2013). The overall results of the research raised the question as to whether blended courses are fitting for both low achieving students and high achievers, leading to the study suggesting that low achievers may need the structure that comes from traditional regular face-to-face classes as they may lack the independent study skills that blended learning demands (Owston, York & Murtha, 2013). The study also raises the question as to whether academic subjects that are difficult for students to master are appropriate for delivering using the blended format or if other paths can be obtained in organizing and designing blended courses in ways that will better support these students (Owston, York & Murtha, 2013).

Another survey formulated by Akkoyunlu & Soyly (2008) to identify student's views on blended learning environment. A 50 item questionnaire was designed by the researchers, categorizing the statements in the questionnaire in two main parts, where the first 35 items were arranged to identify students' views on the process of implementation (such as ease of use in web environment, online environment, face-to-face sessions, evaluations concerning the content) and the remaining 15 questions were developed to ascertain their views on blended learning environment in general. The results revealed significant differences in students' views on blended learning regarding their learning styles when compared the means of those students categorized as assimilators (Akkoyunlu & Soyly, 2008). Assimilators focus on logic, ideas and concepts; prefer to work alone; are good at systematic planning and usually learn by thinking and watching (Kolb, as cited in Akkoyunlu & Soyly, 2008). Consequently, no significant difference on students' achievement was found regarding their learning styles, however online courses must be developed well in order to assist learning to occur (Akkoyunlu

& Soyly, 2008). Results of the findings further determine that face to face interaction is a must for students, student feedback revealed that the provision of the blended learning was highly appreciated and positively rated by them and also at the same time, students' reflective reports exhibited that blended learning was felt to have enhanced their learning opportunities (Akkoyunlu & Soyly, 2008). Akkoyunlu & Soyly (2008) state that when designing a blended learning environment, adequate support strategies must be committed to for students with various learning styles and adapt to online course designs to accommodate these styles, as catering to the different learning styles eventually could result in higher retention in blended learning environment.

So & Brush (2008) examined a graduate-level blended-format course in Health Education at a large state university, where in terms of technology, courseware CD-ROM and a learning management system were provided to deliver learning content and assist online learning activities. The study analysed students by asking them to complete the CLSS questionnaire at the end of the semester and student profiles were drawn up based on their responses. These profiles consisted of an individual student's average scores in three categories: (a) overall perception of collaborative learning, (b) overall perception of social presence, and (c) overall perception of satisfaction (So & Brush, 2008). Data regarding general characteristics of participants were examined on (a) age, (b) computer competency, (c) number of distance courses taken prior, (d) preference to individual learning, and (e) amount of collaboration in groups were related to the perceived levels of satisfaction, collaborative learning, and social presence (So & Brush, 2008). And three statistically significant relationships were discovered in the study. Firstly, the perceived levels of student satisfaction were positively related to student ages which indicated that older students were more likely to have higher satisfaction levels than the younger students. Secondly, the number of distance courses that students took prior to the Health Education course was positively linked with student perceptions of satisfaction, which revealed that students who had previously taken more distance courses were more likely to have higher satisfaction levels than those who had taken fewer distance courses. And lastly, a significant relationship was found between social presence and preference to individual learning where a negative correlation indicated that the participants who favoured to work individually rather than working in a group perceived lower levels of social presence than those who reported a preference for group learning.

Gyamfi & Gyaase (2015) carried out as a formative experiment at the Kumasi Campus of the University of Education (Winneba) with 75 students to determine the demographic characteristics of the students and their perceptions to use ICT tools in learning in order to aid the design of the instructional environment. The findings in their study are drawn from the students' perceptions in terms of the quality of the content, learning, communication and the level of engagement experienced by their using the blended learning environment in the University setting. The study states that from the classroom observation, informal conversational interviews with the students and the survey of the students endorse the findings of previous research that when learners are assigned with multiple formats of learning materials in blended learning environment it could sustain the students' interest and therefore aid their cognitive engagement. Referring to the activity logs on ABLECAT (A Blended Learning Environment for Collaborative and Active Learning model), it was revealed that most of the students logged in to view the course materials (lecturer's video explanations, lecture notes and comments, links to websites on the course) every week, indicated by more than 80% students perceived that the learning materials explained the concepts in course very well and thus were relevant to their needs. The activity logs on course materials were reported to be found higher when the students were asked to take course work or assignment on the topic for the week, which indicated that ease of access to the course materials. Gyamfi & Gyaase (2015) state that any adoption of the blended learning environment in a university-wide situation would require investment in Internet infrastructure to make it successful. Findings from both the qualitative and quantitative data suggested that when learners were provided with adequate and appropriate communication tools in blended learning environments it enhanced interaction and collaboration with their peers and tutors and thereby enhance their development of knowledge and skills in the course. Much of this interaction took place through e-mails and forums, which created an avenue for the students to frequently exhibit their knowledge and writing skills in the course, indicated by more than 70% of the students who agreed that the feedback/answers they received on the tasks and quizzes were very helpful in the course (Gyamfi & Gyaase, 2015).

3. RESEARCH DESIGN

Desk Research technique was conducted for this study which basically involving collecting data from the existing online library which covered several academic databases such as the EBSCO, Pro Quest, ScienceDirect, Academia, Wiley and Google Scholar. The important aspect of this online search is to refine the search technique in such a way that results are promising and relevant. The main purpose of using desk research is to generate new insights from the previous studies. Reanalysing the previous literature may lead to unexpected new discoveries. The keywords incorporating 'blended learning' as part of the search were used; some of the other key words used for collecting previous literature were blended, distance, computer assisted,

learning management system, education, higher education, students, tertiary education and undergraduate. The searches were then repeated, adding the other key words such as case study, perceptions and learning methods. Literature which met the inclusion criteria was reviewed in its entirety.

In all, the ensuing literature review covers only 43 articles that were relevant to the present study, resulting from a very wide search and analysis of approximately 75 papers. Manual searches based on the reference lists and bibliographies of articles, reports and books considered relevant to this study were also performed.

4. RECOMMENDATIONS

Correlations have been observed between blended learning variables and others that influenced student's performance, understanding of the course in question, enhancing and supporting the learning process, coinciding with the results of earlier studies that were undertaken.

Higher educational institutions must look beyond the traditional boundaries of classroom instruction and engage in augmenting their current best practices with new advances in learning and collaboration technologies in order to provide students with meaningful opportunities for learning development and social interaction. There is need to develop learning management systems in a strategic way results of this study suggest us to invest developing LMS in a strategic way that incorporates diverse activity items in the best possible way such as resources, lecture notes, group works, quiz, wikis, and discussion forums announcement and assignment submission.

Moreover, educators should carefully design courses in ways with multiple means of expression and engagement, representation, to scaffold and support students in the creation of their own individualised blend. Students can engage and develop their skills as reflective, self-directed, self-regulating and eventually self-determined learners (De George-Walker & Keeffe, 2010).

However, as mentioned before not all students may be able to function in this learning environment as well and hence, university implementation planers may want to consider offering students a choice of whether to enrol in blended or fully face-to-face course sections where suitable. Besides this assistance could be provided in developing blended courses in such a way that address those who are not able to cope well with the blended learning environment. Simply turning classroom turning courses into blended formats do not necessarily provide students with more interactive and flexible learning experiences and could result in increased the extraneous or ineffective cognitive load in learning processes.

5. CONCLUSION

The richness of the vast literature available has illustrated several implications at the end of this review. It has been repeatedly stated in the paper that students in the blended courses were motivated and satisfied with the instructor's support and course policies tend to perceive their learning outcomes higher. Previous researches discussed above have shown a high degree of motivation, utility and satisfaction perceived from blended learning, which results in students to have a positive attitude towards learning. As suggested by So & Brush (2008) a more careful analysis of learners, contexts, and technologies is required. Further research should be undertaken in order to compare blended learning environments from the perspective of student success and carrying out studies that considers individual differences and interaction types as the independent variable would be fruitful.

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EFFECTS OF WEB 2.0 TECHNOLOGY ASSISTED SLIDESHARE, YOUTUB AND WHATSAPP ON INDIVIDUAL AND COLLABORATIVE LEARNING PERFORMANCE AND RETENTION IN TISSUES SYSTEM

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ABSTRACT

Web 2.0 tools includes wikis, blogs, social networking sites, and web applications for community interaction, inputs, content sharing, and collaboration. The study aimed to assess the effects of Web 2.0 technology assisted Slideshare, YouTube, and WhatsApp on the individual and collaborative learning performance and retention in tissues system. In this quasi-experimental research, there are three groups assigned for treatment in tissue system. Experimental group1 was exposed to web2.0 technology assisted individual Slideshare, Wiki, YouTube and WhatsApp modes of learning whereas Experimental group2 was treated with web2.0 technology assisted collaborative Slideshare, Wiki, YouTube and WhatsApp modes of learning, but lecture cum discussion intervention was provided to participants of traditional group. It was resulted there was significant effect of collaborative and individual web2.0 technology on the learning performance and retention of secondary school students over traditional group.

Key words: Individual and collaborative learning; performance and retention in tissues system; Slide share, YouTube and WhatsApp; Web 2.0 technology

INTRODUCTION

The classroom lecture is no longer being the primary source of acquiring information rather World Wide Web (WWW) has huge space for getting information where many documents and several web-based learning recourses, we are getting. The Uniform Resource Locators (URL) in hypertext links accessed via internet (Jena & Barman, 2018) could identify the learning materials. In addition, WWW is becoming a primary tool using to interact with internet. However, in past few decades, teachers used constructivism approaches but now teaching learning process is going through various online teaching tools empowered by ICT in www is helping in acquisition of knowledge via individual and collaborative modes (Jena, 2012). Even, we all are realizing that the growth of social media and web 2.0 technologies is recently affecting the global communication system through which where peoples are sharing and constructing knowledge for long time retention (Okello-Obura & Sekitto, 2013). So, it's very urgent to get a clear understanding on web 2.0 technology that we could be apply in the field of education and communication system. Especially, these tools are offering pedagogical benefits in the smart classroom learning and in online mode of learning resulted maximum benefit over the face to face interaction (Jena, 2013). However, Web 2.0 is the second generation of the World Wide Web focuses mainly on sharing and collaborating information through online platforms (Jena, 2014), but in the earlier version and the first stage of World Wide Web evolution; Web 1.0 was a static page and that was a primitive and restricted type of content served from the servers file systems. Web 2.0 is the modern online technology characterized by greater user interactivity, invasive network connectivity, collaboration and improved communication processes (Jena, 2018). Not only is that but also, web 2.0 is the evolutionary dynamic web motivates and encourages the users to share the feeling to others. Boulos, Maramba & Wheeler (2006) found that in society, web 2.0 is providing the opportunities of learning for supporting the organizational, technological, pedagogical innovations in education, technology and evaluation (Redecker, Ala-Mutka, Bacigalupo, Ferrari & Punie, 2009). Overall, we say, web 2.0 tools includes wikis, blogs, social networking sites, presentation programs, and web applications those are mostly using for community based interaction, inputs, content sharing, and other collaborative activities can be performed. Out of these, various social media websites like micro blogging, social curation, forums, bookmarks, social networking, e-mail, and wikis people prefer to share information (Jena, 2019).

INDIVIDUAL AND COLLABORATIVE WEB 2.0-ASSISTED LEARNING

Out of several literatures, a few studies reviewed those were closely relevant to the present research work, specially the studies related to individual and collaborative learning through Web 2.0 technology (Huffaker, 2004). It has significant relation with the individual and collaborative learning process (Jena, 2015a). Most of the studies about to the effect of web2.0 technology were conducted in USA, UK, Australia, Africa and other western countries but very few researches were conducted on the individual and collaborative web2.0 technology in India (Jena 2015b). Among these literatures, one study in India showed a significant result of web2.0 technology in both the learning modes (Jena, Bhattacharjee, Gupta, Das, & Debnath, 2018; Bose, 2010). In addition, different descriptive studies have been conducted and found that web2.0 technology is an effective online platform allowed learners at different levels to learn effectively in individual and collaborative learning environment (Jena, Gogoi & Deka, 2016). And technology only could enhance the academic achievement of learners (Beldarrain, 2006; Exter, Rowe, Boyd & Lloyd, 2012; Grosbeck, 2009; Jena, & Pokhrel, 2017). One of the web based survey conducted by An, Aworuwa, Ballard & Williams in 2008 has been found the positive and significant effects of web 2.0 in communication, interaction, collaboration, reconstruction of knowledge, and in the skills of reading and writing in individual as well as collaborative platform (Jena, Deka, & Barman, 2017). Web2.0 technology could be used in individual and collaborative pedagogical practices those may be integrated in both formal and non-formal learning situation by using social media and other self-regulated learning modes (Dabbagh & Kitsantas, 2012). Two more research findings focused on the effect of wikis and blogs, and podcasting on learning and communication in the social constructivist environment found that wikis and blogs, and podcasting has significant effects on developing skills of communication and creativity (Cochrane & Bateman, 2008; Deka & Jena, 2017). Contrary to these studies, a few researchers (e.g. Bennett, Bishop, Dalgarno, Waycott & Kennedy, 2012; Cole, 2009; Grech, 2015) found there is no significant usage of web2.0 technology in individual and collaborative performance.

WEB 2.0 TECHNOLOGY EFFECTING THE PERFORMANCE AND RETENTION OF LEARNING

Web2.0 based learning instructions has a positive effect on the academic performance as well as retention of the learners (Jena, Bhattacharjee, Gupta, Das, & Debnath, 2018). In addition, a few researcher found that Web2.0 technology is a online platform where social networking tools are promoting and enhancing the academic performance of the learners (Alrahmi, Othman & Musa, 2014 ; Ajjan, Hartshorne & Buechler, 2012; Galy, Downey & Johnson, 2011 ; Huang, Hood & Yoo, 2014 ; Lambert, Kalyuga & Capan, 2009; Sejzi, Aris, Ahmad & Rosli, 2015; Yang, Guo & Yu, 2016). Moreover, some of the studies found that the web2.0 technology is online learning procedures being increased the retention level in among the learners (Abate, 2013; Sargent, Borthick & Lederberg, 2011). Contrary to these, a study found that web2.0 has no effect on the academic performance and retention level of the learners (Yildirim , Ozden & Aksu, 2010). The studies conducted by (Davis, 2012; Rashid & Asghar , 2016 ; Sana, Weston & Cepeda, 2012) found that the use of web2.0 technology had no effect on the academic performance and retention of the learners. We consider the findings of researchers and has been tried to assess the effects of web 2.0 technologies on learning performance and retention on the learners. However, the questions rose whether web 2.0 technology empowered slide share, YouTube and WhatsApp are effective over the traditional approaches? If it is then how individual and collaborative web2.0 technology would affect the learning performance and retention of the secondary school students over traditional approach?

OBJECTIVE

To study the effects of advanced Web 2.0 technology assisted slideshare, youtub and whatsapp on the individual and collaborative learning performance and retention in tissues system

HYPOTHESIS

- 1) The performance of individual and collaborative web2.0 technology assisted slide share, YouTube and WhatsApp training students in association with those in the comparison group will demonstrate better in tissue system.
- 2) The retention of individual and collaborative web2.0 technology assisted slide share, YouTube and WhatsApp training students in association with those in the comparison group will demonstrate better in tissue system.

METHODOLOGY

110 participants assigned for traditional (n=40), experimental group 1 (n=40) and experimental group2 (n=30). Out of 50 secondary schools, three schools and their respective students of class IX were randomly selected in Silchar town, Assam, India. In the traditional group (n=40, 14.5-15.5 age range & SD 0.41), experimental group1 (n=40, age ranged 14.5-15.3, SD 0.42) and in the experimental group 2 (n=30, age range 14.3-15.4, SD

0.44) were participate. Here non-randomization and selective manipulation principle used to conduct the experiment. Nonequivalent pretest posttest quasi-experimental design was used to conduct the experiment where sample units were not randomly selected rather the whole class students are the participants of the study. Individual and collaborative web2.0 technology assisted Slide share, Wiki, YouTube and WhatsApp applications used in experimental group1 and experimental group2 while traditional group was treated with traditional approach. During the intervention extraneous variables like history, maturation, regression, instrumentation and Hawthorne effect was minimized with ANCOVA techniques.

INSTRUMENTATION

Achievement Test on Tissue

The concept of Tissue test was developed for class IX students who were participated in the experiment. According to their biology course and contents, the pretest was developed by following all the standardized steps. The blueprint is prepared and accordingly domain and weightage was provided to the items. 25 multiple choice items with three strong distractors and one correct response was constructed for each item. Preliminary try out was conducted with six experts to find out the content validity ratio. The content validity ratio, test retest reliability, and Cronbach alpha reliability was estimated, and found 0.83, 0.85, and 0.89 respectively. Maximum 10 – 15 minutes needed to response whole items. An equivalent set of the posttest was developed on the tissues to assess their post intervention performance. During planning, a single blueprint was prepared for pretest and posttest for tissue but equivalent items with respect to the domains prepared to construct the equivalent set of test. 25 multiple choice items with three strong distractors and one correct response constructed for each item. Preliminary try out conducted with six experts to find out the content validity ratio. The content validity ratio, test retest reliability, and Cronbach alpha reliability found 0.83, 0.85, and 0.89 respectively. Maximum 10–15 minutes needed to response whole items. Delay test assess the retention of learning performance. After intervention, naturally posttest assigned to the students. However, minimum one month delayed of posttest if any test assigned to the student related to the intervention is retention test or delay test. The extraneous variable like maturation has significant role in this test and it could directly affect the response of the delay test. 25 multiple choice items with three strong distractors and one correct response constructed for each item. Preliminary try out conducted with six experts to find out the content validity ratio. The content validity ratio, test retest reliability, and Cronbach alpha reliability found 0.83, 0.85, and 0.89 respectively. Maximum 10 – 15 minutes needed to response whole items like pretest, posttest on tissue, delay test developed by following all the standardized steps. Content validity ratio established through Lawshe CVR 0.83, test retest and Cronbach alpha reliability 0.86 and 0.89 respectively. Maximum 10-12 minutes needed to response the whole items.

PROCEDURE OF EXPERIMENT

Activity 1: Individual web2.0 (Slideshare, Wiki, WhatsApp, YouTube)

Forty class IX student of school II was assigned for individual web 2.0 technology assisted Slide share, Wiki, YouTube and WhatsApp based learning A special training program was organized on how to operate the laptop, desktop, smart phone and how to browse materials for learning purpose. The researchers installed hundred rupees data package to continue the internet facility. During the training, the researchers faced difficulties because 25% students have no laptop or desktop in their home. That is why, the researchers requested the school headmasters to provide their computer lab. It is another interesting fact that parents were requested to take their laptops and desktops to the school for their children's better training in online mode. Accordingly, parents installed their laptops or desktops in school for training. In day1, the researchers taught through Wiki and WhatsApp applications and in day2, the software like YouTube application and Slide share was installed and followed by that demonstration was given on how to learn online through YouTube and Slide share. No frequent feedback was given to the students. After the training programme, participants practiced and learnt tissue system of animal through Slideshare, Wiki, WhatsApp, and YouTube for two weeks. However, it was advised that at any difficulty participants could contacts to the researcher only through WhatsApp application. In this way, the two directional online learning processes were continued and completed the learning task on concept on tissues(See fig 1&2).

Activity 2: Collaborative web2.0 (Slide share, Wiki, WhatsApp, YouTube)

Thirty class IX students of school III was assigned to collaborative web2.0 technology assisted Slide share, Wiki, WhatsApp, and YouTube learning intervention on animal tissue system. Similar to individual web2.0 technology based training, parents of collaborative participants were requested to install their smart phone, laptop, and desktop in their classroom. Next day the training was organized regarding the installation of software applications and training on how to learn through these applications. No frequent feedback was given to the students. After the training programme, participants practiced and learnt tissue system concept through

collaborative Slideshare, Wiki, WhatsApp, and YouTube for two weeks. However, it was advised that at any difficulty participants could contact the researcher only through WhatsApp application (see fig 3&4).

Activity 3: Traditional treatment

Class IX students of school I were treated with traditional intervention. Tissue concept was analyzed and classified into learning specifications and followed by these traditional question-answering methods were assigned for learning better understanding. This process was continued upto two weeks and no frequent feedback was given to the students.

Fig 1 Individual web2.0 (Slideshare, Wiki, WhatsApp, YouTube)



Fig 2 Individual web2.0 (Slideshare, Wiki, WhatsApp, YouTube)

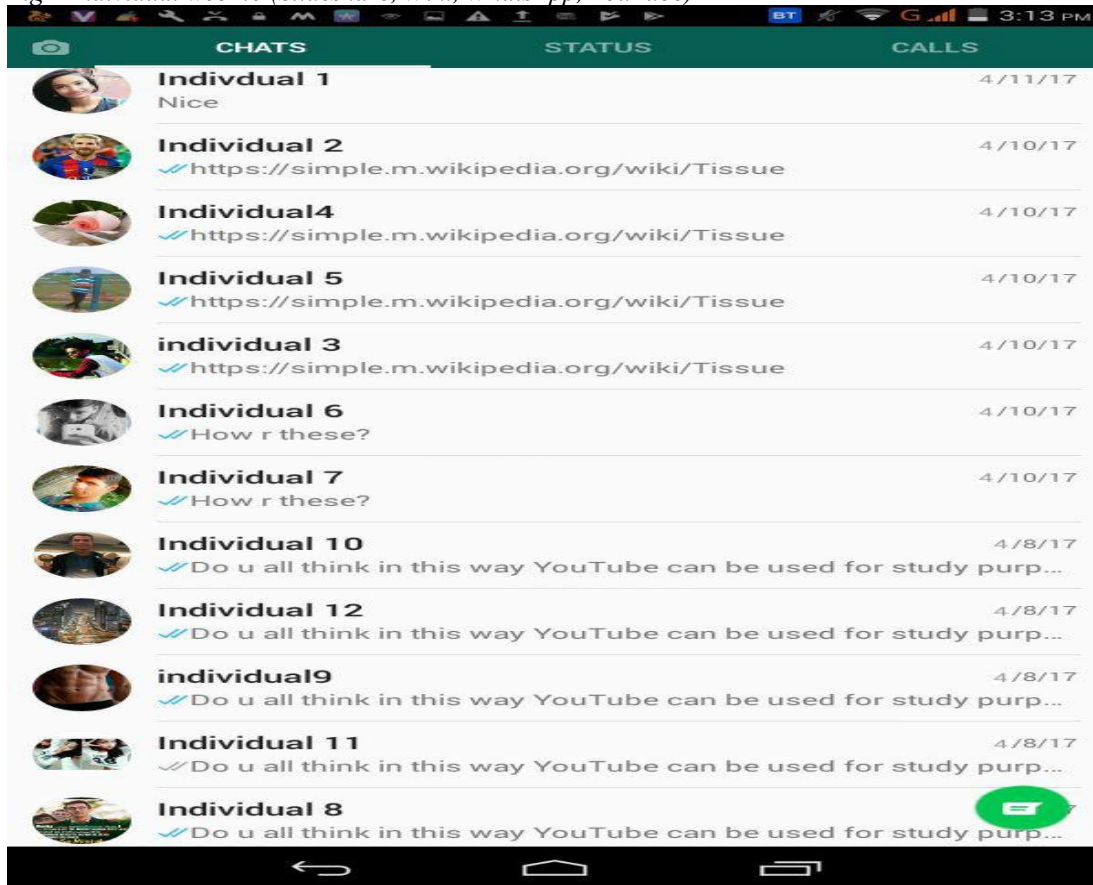


Fig 3 Interaction of the collaborative web2.0 based learning process

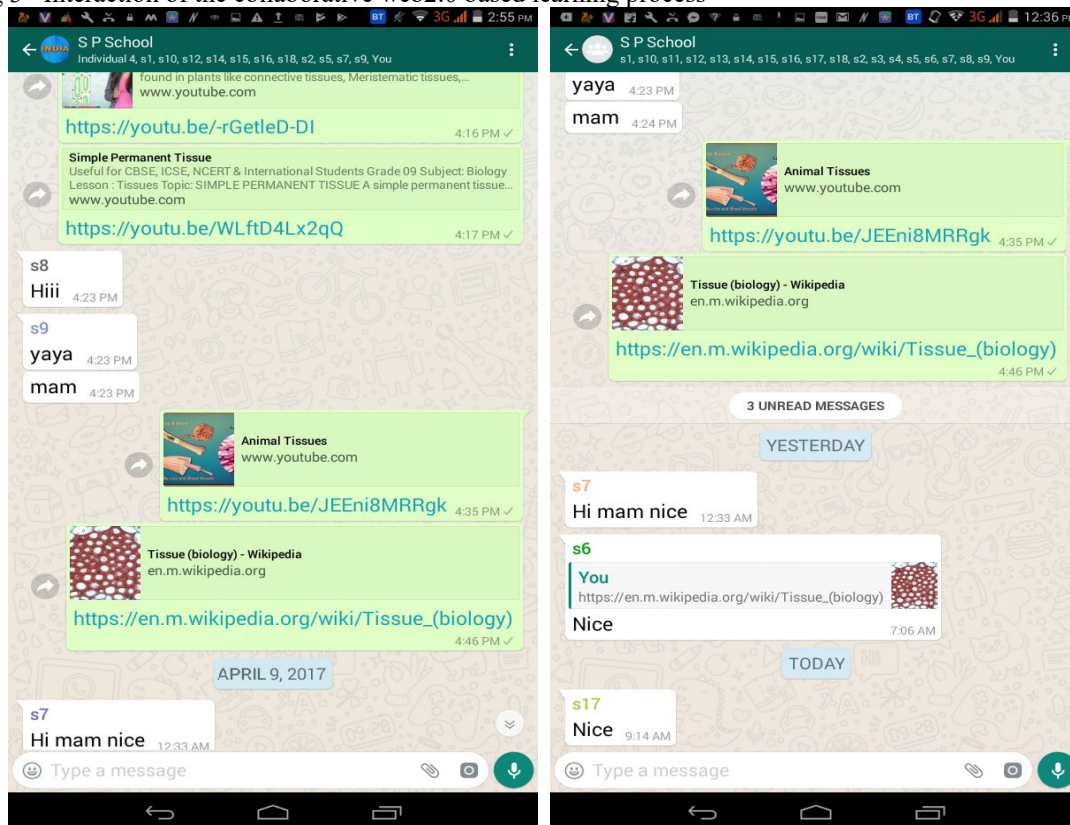
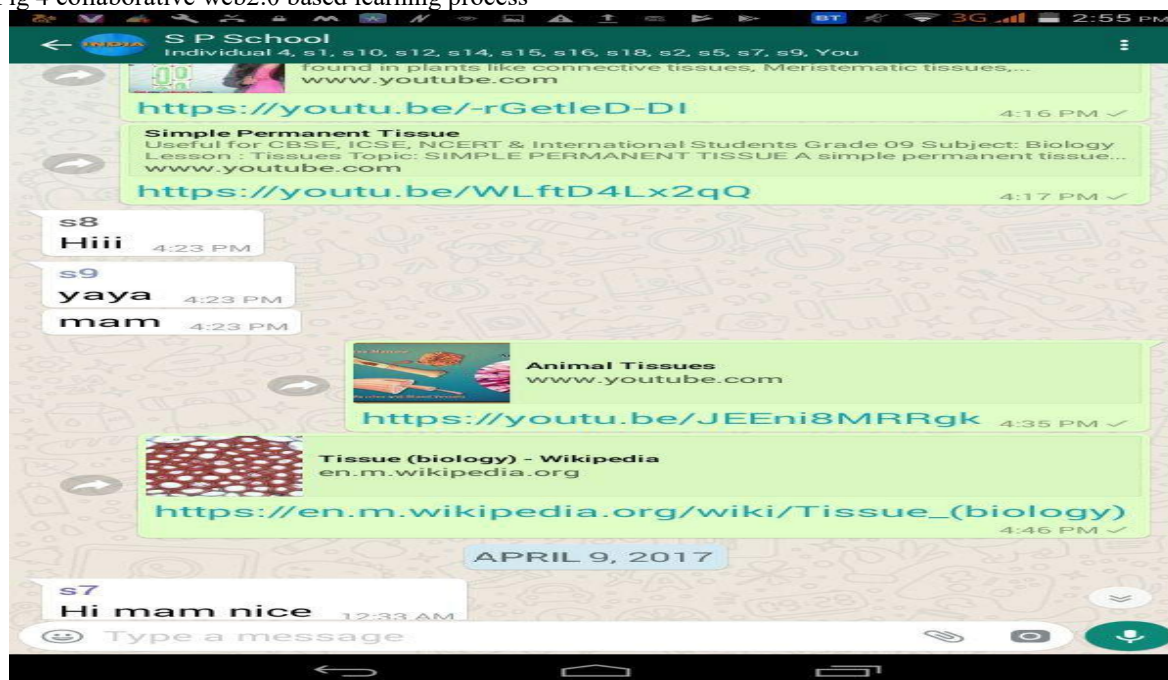


Fig 4 collaborative web2.0 based learning process



PROCEDURE OF DATA COLLECTION

The present study is quasi-experimental research where three groups were assigned to treatment 1, treatment 2 and traditional approach to learn tissue contents. Experimental group I was treated web2.0 technology assisted Slide share, Wiki, YouTube and WhatsApp. Experimental group II was treated through collaborative web2.0 technology assisted Slide share, Wiki, YouTube and WhatsApp learning but traditional group was treated with lecture cum discussion method. According to the purpose of the study, the researchers administered pretest to all the three groups and after instruction; posttest was assigned to assess their learning performance. After two weeks of posttest, a delay test was administered to assess the retention level and the effectiveness of web2.0 technology based learning over traditional approach. Here pretest, posttest, and delayed test data were collected for analysis and interpretation to draw the inferences.

ANALYSIS AND RESULTS

Hypothesis 1 : The performance of individual and collaborative web2.0 technology assisted slide share, YouTube and WhatsApp training students in association with those in the comparison group will demonstrate better in tissue system.

Table 1.1 mean and SD of posttest of traditional, individual web2.0 and collaborative web2.0 learning

Group	Mean	S.D	N
Traditional	33.40	3.241	40
Individual Web2.0	41.75	2.318	40
Collaborative Web2.0	45.00	2.505	30
Total	39.60	5.584	110

The above table 1.1 reveals means and standard deviation (SD) of posttest of traditional, individual web2.0 and collaborative web2.0 assisted learning performance where traditional group posttest ($m = 33.40$, $SD = 3.241$), individual web2.0 posttest ($m=41.75$, $SD= 2.318$) and collaborative web2.0 posttest ($m=45.00$, $SD=2.505$). Here the collaborative web2.0 technology assisted posttest mean performance was better than both traditional and individual web2.0 learning performance (see graph 1).

Graph 1 mean of posttest of traditional, individual web2.0 and collaborative web2.0 learning

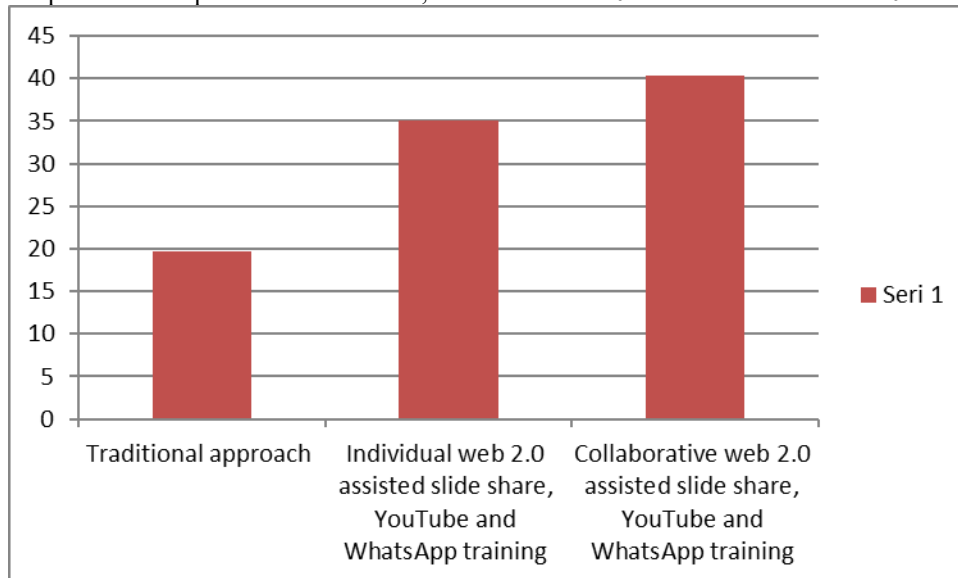


Table 1.2 ANCOVA among groups (traditional, individual web2.0 and collaborative web 2.0) and tests (pretests and posttests)

Source	Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	2613.292 ^a	3	871.097	117.610	.000
Intercept	44265.823	1	44265.823	5976.471	.000
Pretest	15.992	1	15.992	2.159	.145
Group	2607.668	2	1303.834	176.035	.000
Error	785.108	106	7.407		
Total	175896.000	110			
Corrected Total	3398.400	109			

a. R Squared = .769 (Adjusted R Squared = .762)

The univariate analysis was conducted by SPSS version 12 to find the ANCOVA among the posttest score of the students of traditional, individual web2.0 and collaborative web2.0 learning where pretest was the covariate. Here, posttest of the three methods of dependant variable. It was resulted that there were significant difference among the three methods ($F=2/106, 176.035 p<.05$) after the intervention of traditional, individual web2.0 and collaborative web2.0 learning.

Table 1.3 Estimated marginal mean of traditional, individual web2.0 and collaborative web2.0 learning.

Group	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Traditional	33.346 ^a	.432	32.490	34.202
Individual Web2.0	41.746 ^a	.430	40.892	42.599
Collaborative Web2.0	45.078 ^a	.500	44.087	46.068

a. Covariates appearing in the model are evaluated at the following values: Pretest = 13.48.

The effects of the covariates on the posttest mean are estimated in this model. Covariates appearing in the model was evaluated (pretest=13.48) while the traditional mean (33.346) , individual web2.0 mean (41.746) and collaborative web2.0 mean (45.078) .

Table 1.4 Bonferroni multiple comparisons among of traditional, individual web2.0 and collaborative web2.0 approaches

(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig. ^b
Traditional	Individual Web2.0	-8.399*	.609	.000
	Collaborative Web2.0	-11.732*	.663	.000
Individual Web2.0	Traditional	8.399*	.609	.000
	Collaborative Web2.0	-3.332*	.660	.000
Collaborative Web2.0	Traditional	11.732*	.663	.000
	Individual Web2.0	3.332*	.660	.000

Bonferroni multiple comparisons adjusted and estimated the marginal means. The mean difference between traditional and individual web2.0 ($m=8.399$, $p<.05$), traditional and collaborative web2.0 ($m=11.732$, $p<.05$) and individual web2.0 and collaborative web2.0 ($m=3.332$, $p<.05$) was significant.

Hypothesis 2 : The retention of individual and collaborative web2.0 technology assisted slide share, YouTube and WhatsApp training students in association with those in the comparison group will demonstrate better in tissue system.

Table 2.1 Mean and SD of retention or delay test of traditional, individual web2.0 and collaborative web2.0 learning.

Group	N	Mean	SD
Traditional	40	19.70	3.220
Individual Web2.0	40	35.00	2.265
Collaborative Web2.0	30	40.27	1.721
Total	110	30.87	9.093

Table 2.1 The above table 4.2.1 reveals means , standard deviation (SD) of retention test delay test of traditional , individual web2.0 and collaborative web2.0 assisted learning performance where traditional group delay test ($m=19.70$, $SD=3.220$), individual web2.0 delay test ($m=35.00$, $SD=2.265$) and collaborative web2.0 delay test ($m=40.27$, $SD=1.721$). Here the collaborative web2.0 technology assisted delay test mean performance was better than both traditional and individual web2.0 learning performance (see graph 2).

Graph 2 Mean of retention or delay test of traditional, individual web2.0 and collaborative web2.0 learning

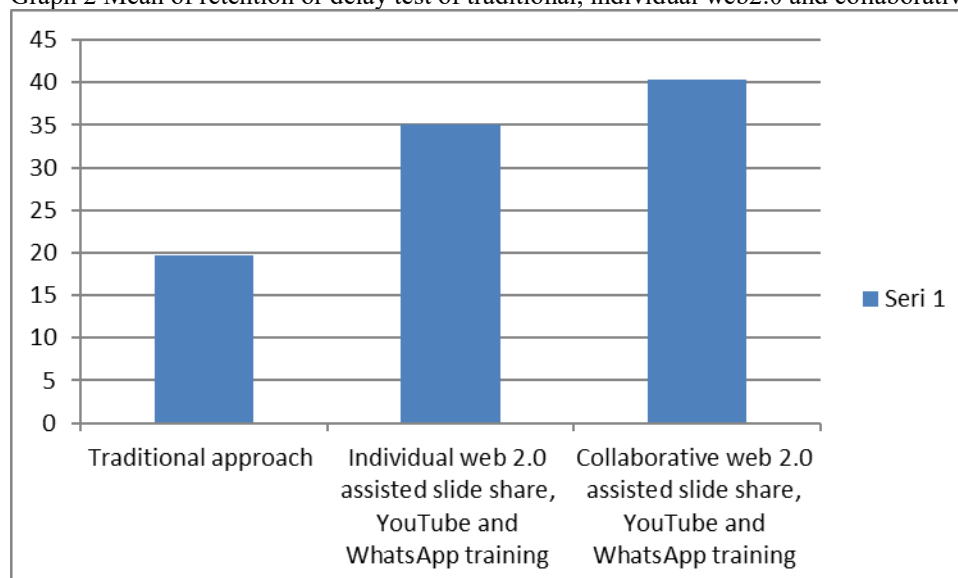


Table 2.2 ANCOVA among groups (traditional, individual web2.0 and collaborative web 2.0) and delay tests

Source	Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	8328.209 ^a	3	2776.070	430.204	.000
Intercept	392.993	1	392.993	60.902	.000
posttest	6.257	1	6.257	.970	.327
Group	1777.097	2	888.548	137.697	.000
Error	684.009	106	6.453		
Total	113856.000	110			
Corrected Total	9012.218	109			

a. R Squared = .924 (Adjusted R Squared = .922)

The univariate analysis was conducted by SPSS to find the ANCOVA among the delay test score of the students of traditional, individual web2.0 and collaborative web2.0 learning where posttest was the covariate. Here pretest of the three methods of dependant variable. It was resulted that there were significant difference among the three methods (F=df=2/106, 137.697 p<.05) after the intervention of traditional, individual web2.0 and collaborative web2.0 learning.

Table 2.3 Estimated marginal mean of traditional, individual web2.0 and collaborative web2.0 learning.

Group	Mean	Std. Error	95% Confidence Interval	
			Lower Bound	Upper Bound
Traditional	20.248 ^a	.686	18.887	21.609
Individual Web2.0	34.810 ^a	.446	33.927	35.693
Collaborative Web2.0	39.789 ^a	.671	38.459	41.119

a. Covariates appearing in the model are evaluated at the following values: posttest = 39.60.

The effects of the covariates on the posttest mean are estimated in this model. Covariates appearing in the model was evaluated (pretest=13.48) while the traditional mean (18.887), individual web2.0 mean (33.927) and collaborative web2.0 mean (38.459)

Table 2.4 Bonferroni multiple comparisons among of traditional, individual web2.0 and collaborative web2.0 approaches

(I) Group	(J) Group	Mean Difference (I-J)	Std. Error	Sig. ^b
Traditional	Individual Web2.0	-14.562*	.940	.000
	Collaborative Web2.0	-19.541*	1.208	.000
Individual Web2.0	Traditional	14.562*	.940	.000
	Collaborative Web2.0	-4.979*	.679	.000
Collaborative Web2.0	Traditional	19.541*	1.208	.000
	Individual Web2.0	4.979*	.679	.000

Bonferroni multiple comparisons adjusted and estimated the marginal means. The mean difference between traditional and individual web2.0 (m= -14.562, p<.05), collaborative web2.0 (m= -19.541, p<.05). Similarly, mean difference between individual web2.0 and traditional group in the retention test (m= 14.562, p<.05) , the collaborative web2.0 (m=-4.979 , p<.05). So far collaborative web2.0 is concerned traditional group mean difference (m=19.541, p<.05) and the mean difference between collaborative web 2.0 and individual web2.0 was (m= 4.979, p<.05). It showed that the mean difference between traditional and experimental group found significant, not only that there was significant difference between individual and collaborative web 2.0 in the retention of participants learning performance (Madar & Abdikadir, 2015; Mahmud & Hassanuzzaman, 2009; Parker & Chao,2007; Rahimi, Berj & Veen, 2012). .

Discussion

The study claimed that the impact of collaborative and individual web2.0 technology based learning on the performance of secondary school students in Silchar town was statistically significant. This was the first study in India where both collaborative and individual web2.0 technology used in learning biology especially in the learning of tissues to secondary school students who have no laptop or desktop for personal use. This result was corroborated with the earlier studies (eg. Redecker, Ala-Mutka, Bacigalupo, Ferrari, and Punie, 2009). The learning environment in the secondary school of Silchar, Assam, India was not fully technology assisted or the learners have no laptop, desktop, etc. However, the researcher undertook the study and applied web2.0 technology in two schools by collecting and requesting the parents to install their laptop, desktop in the concerned classroom. After all the instruction was provided through individual and collaborative modes, as a result the learning performance was found better than traditional approach. The effects of collaborative and individual web2.0 technology was statistical significant over traditional approach. This result was corroborated by the earlier studies conducted by Bennett, Bishop, Dalgarno, Waycott, and Kennedy, 2012. Contrast to these few researchers found web2.0 technology has no such influence over traditional approach rather it disturb the learning performance instead of better conceptualization of learning (Yildirim, Ozden, and Aksu, 2010). The retention was assessed after one month of intervention where maturation, mortality etc were the main extraneous variables minimized during statistical analysis. In this study, no participants drop out up to the retention test. In Assam, mostly in area of Silchar town learner has so many opportunities to continue their higher course at the end of their course. However, the participants responded the retention test and found collaborative web2.0 technology has the significant effect over the individual web2.0 and traditional approach.

Conclusion

Web2.0 technology is an internet-assisted software of World Wide Web based tool. It includes Wiki, Blog, Facebook, Podcasts, Slideshares, Whatsapp, Twitter, Journals, and Linked in, Powerpoint presentations, Youtube, Skype, and Videoconferencing. Nevertheless, in the recent study, Wiki, Youtube, Whatsapp and Slideshare were used both in individual and collaborative mode. It was concluded that collaborative web2.0 technology was better over individual web2.0 technology based learning. In India, still technology based learning, smart classrooms, internet assisted online platform inside institutional boundary or at least a well-equipped library we cannot find in secondary level. The researcher has put an effort, provided online instruction through web2.0 technology assisted software, and the learners perceived self-regulatory efficiency of web2.0 technology. The retention level also found satisfactory which was not possible in traditional mode of learning. Recently researchers, scholars, educators are emphasizing on self learning, self pacing and self-evaluation of learning performance before going to sit for summative evaluation. However, traditional mode of instruction is still going on with rote learning and it is encouraging students to learn through note, traditional exercise, and vocabulary practice. The literatures argued and the recent studies corroborated that web2.0 technology would be provided through individual smart phone, Ipad, tab, laptop and desktop. Out of these IT accessories mobile is a cost effective and available with learners' family member. Therefore, the family members should provide the learner to access the Smartphone for one to two hours. Teacher should encourage self-learning and should provide opportunity to use web2.0 technology based learning platform. The stakeholders should take the initiations to develop the curriculum, syllabus, and the mode of instruction by integrating web2.0 technology in them. Parents should provide at least one to two hours for using their Smartphone for web2.0 technology based learning to their children. The following recommendations, the researchers put in front of the scholars, researchers, educationists, and the world of colleagues: 1) individual and collaborative web2.0 technology has been used in the recent study but it needs further investigation to use mixed model to both individual, and collaborative modes for a particular group and to know its effects over traditional approach; and 2) the effect of individual and collaborative web2.0 technology on participants gender, socioeconomic status, home environmental status, IQ like variables should be undertaken in relation to their learning performances.

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FACTORS INFLUENCING E-LEARNING IMPLEMENTATION IN TANZANIAN UNIVERSITIES

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ABSTRACT

Website design and optimization has become natural extension on learning in many universities nowadays as it moves learning materials to online in the name of e-learning. The said website design and optimization enhances the e-learning for the purpose of facilitating and providing flexibility in teaching and learning activities. However, the progress of e-learning implementation is yet to be adequate in many universities in developing countries including Tanzania. This study, investigated factors influencing e-learning implementation from broader dimensions. This study employed cross section survey design with quantitative approach using questionnaire for data collection. The study finding revealed that technological characteristics, user characteristics, pedagogical characteristics, social attributes and environmental characteristics significantly influence e-learning implementation level. Thus, this study contributes to the understanding of the new factors such as social, pedagogical and environmental which were inadequately addressed in the existing similar e-learning implementation models. Further, both factors were collectively used to develop a model for improving implementation of e-learning in Tanzanian universities and other countries with similar characteristics.

Keywords: ICTs, E-learning, website, implementation, Tanzania, Universities

INTRODUCTION

Website design and optimization has become natural extension on learning in many universities nowadays as it moves learning materials to online in the name of e-learning. The website design and optimization is the practice of constantly improving the online experience through an understanding of learner's needs, to create increasing value for teaching and learning activities (Cook and Dupras, 2004). The said website design and optimization enhances the e-learning for the purpose of facilitating and providing flexibility in teaching and learning activities. By consistently employing principles of effective teaching and learning, educators will unlock the full potential of Web-based in educational context taking the advantages of the concept of e-learning.

E-learning is a complex concept and is characterized into various aspects in multi-dimensions. It is addressed, for instance, in relation to technological, pedagogical, institutional, environmental, social and human dimension. The concept of e-learning is defined differently in various disciplines; most focus mainly on technological back-ups and the way it facilitates teaching and learning process. Sangra and Vlachopoulos (2011) argue that e-learning cannot take place unless there is a simple rationale element of technology, pedagogy, social, environmental, users and administration. Thus, in this study, e-learning is defined as the application of computers with assistive software by both students within the class and for private study; the use of electronic devices for teaching purposes such as interactive whiteboards, data projectors, tablets and so forth; and the use of web based technologies including virtual learning environment (VLE) for communication between students and lecturer, and for storage and access to teaching and learning materials.

E-learning is changing the way in which teaching, learning, and administration of education activities are being conducted in universities (Tossy, 2012; Lwoga & Komba, 2015). For instance it is observed that e-learning cuts down instruction time by up to 60% (Pappas, 2013). In the same vein, it was estimated that about 46% college students are taking at least one course online in Middle East countries (Shivaraji *et al.*, 2013). In addition a recent study conducted by Britain's Open University has found that e-learning consumes 90% less work in teaching and learning than traditional courses (Zhu & Mugenyi, 2015). Further, Al-adwan & Smedley (2012) argue that e-learning offers flexibility in terms of space and time of delivering or receiving learning materials. For instance, Allen and Seaman (2008), in their 2007 survey of US universities, show a 12.9% growth rate for online enrollments compared with 1.2% for overall student population. According to a report released by IBM, utilization of e-learning tools and strategies in UK universities has potentially boosted productivity by up to 50% (Pappas, 2013).

In Africa context, the report by Bagarukayo and Kalema (2015) on the extent of uptake of e-learning in learning in HEIs in South Africa only 2.15% learners never or rarely used a computer to undertake any of the 18 computers based learning activities. In addition, Kasse and Balunywa (2013) in their study conducted in Uganda, the results indicated that e-learning had facilitated delivery of learning materials by 80% compared to

traditional method. However, this study further indicates that e-learning is not fully implemented and utilized effectively in developing countries.

Despite the use of e-learning is growing in universities and colleges globally but the successful e-learning implementation is still a challenge in developing countries, particularly Tanzanian universities (Kahiigi *et al.*, 2008). There is inadequate coverage of factors in various existing models for successful implementation of e-learning in developing countries (Bourlova and Bullen, 2018). Thus, there are still concerns however, regarding the way e-learning has been implemented as evident in universities, Tanzania in particular (Van der Klink and Jochems, 2004; Kahiigi *et al.*, 2008; Munguatosha *et al.*, 2011). Thus, understanding the role and benefits of e-learning, this study aims at investigating the factors influencing e-learning implementation taking on board factors from wide dimensions.

RELATED LITERATURE REVIEW

Several studies have been cited various factors that influence e-learning implementation within education context. These factors include technological characteristics (Njenga, 2011 and Munguatosha *et al.*, 2011), user characteristics (Taha, 2014; Ordonez, 2014), pedagogical attributes (Anderson & Groönlund 2009; Mtebe and Raisamo, 2014), institutional characteristics (Tarus and Gichayo, 2015; Madar and Wills, 2014; Khan, 2005; Dabbagh, 2005), social attributes (Fresen, 2010; Busaka *et al.*, 2016) and environmental characteristics (Teo, 2011; Zhu and Mugenyi, 2015; Yew and Jamblian, 2015). However the applicability and its influence on e-learning implementation vary depending on the potential adopters and their unique context of application and the type of innovation. These factors have been considered in terms of their basic characteristics as reviewed in the next subsections.

Technological characteristics

Njenga (2011) conducted a study on e-learning employing the theory of DOI and UTAUT. The findings revealed that factors such as perceived usefulness, self efficacy, demonstrability, perceived ease of use complexity, compatibility were factors influencing e-learning implementation positively. Munguatosha *et al.* (2011) studied social networked learning adoption in universities in Tanzania employing Vygotsky's social development theory. The findings indicated that those ICT infrastructures and system interactivity were among the technological characteristics found to affect the social networked learning adoption and implementation. However, there are no common technological characteristics in literature to influence e-learning implementation (Njenga, 2011). It is therefore that e-learning as one of educational technology need to be effectively implemented and not relatively complex to avoid users 'resistance to use.

Ndonje (2013) conducted a study on e-learning adoption in Tanzania pointed out that the technological characteristics includes complexity; compatibility and relative advantage. The study employed the theory of DOI to explain the causal chain of the constructs used. The findings were found to have very high significant influence on e-learning implementation. Contrary, Sanga (2010) did a study to evaluate e-learning for better implementation in HLLs using grounded theory. The findings shown that it is significantly to select the e-learning system with characteristics such usability, maintainability and deployability for boosting user satisfaction and acceptance of the e-learning system. However, it argued that evaluating the e-learning is a common problem and complex. This lead into a question about the quality e-learning characteristics should be considered for best e-learning implementation in a specific context.

User Characteristics

It is widely acknowledged that user characteristics can influence the way e-learning can be implemented, perceived, and used in educational context. Taha (2014) conducted a study to investigate the factors for e-learning implementation in secondary school in the Kingdom of Bahrain employing DOI theory. The findings reveal that student characteristics (computer skills, motivations, and self efficacy); teachers characteristics (attitudes, control of technology and pedagogy, and teaching style); technological (quality and effectiveness of infrastructure); design and content (perceived ease of use, quality content) influence significantly e-learning implementation. Ordonez (2014) on the study conducted for predicting international critical success of e-learning by comparing in four countries including China, Spain USA, and Mexico. The finding reveals that from learner point of view course design, learning content, prior knowledge are significant predictors in learner's success in using e-learning. On instructors' point of view he further argued that course design, instruction, learning platform, learning interaction, and learning content are factors affecting an effective online teaching and learning process. Park (2009) found user attitudes towards e-learning significantly influence e-learning adoption and implementation. Similarly, Zewayed (2012) studied users' adoption of e-learning among 926 secondary schools in Bahrain and found that self efficacy and motivation were critical factor of e-learning implementation.

Contrary to the above arguments, Dowling *et al.* (2003) pointed out that despite the claims that factors related to users improves e-learning implementation for education quality, but only for specific forms of collective assessment. Akkoyuklu and Soylu (2006) revealed that factors related to users can not simply support e-learning implementation in the absence of supporting social interactions. The most noticeable criticism of e-learning implementation and use is the complete absence of vital factor such as social interactions, not only between learners and instructors, but also among colleague learners (Al-adwan & Smedly, 2012). In general, for any technology to be valuable, it should be appropriated into particular user characteristics in relation to other supporting factors such as pedagogical and social attributes.

Pedagogical Attributes

Pedagogical attributes play crucial role in influencing implementation of e-learning to improve accessibility, efficiency and quality of teaching and learning. Tarus and Gichayo (2015) affirmed quite clearly users' skills on e-learning; adequate and quality e-learning content are important pedagogical attributes which significantly influence successful e-learning implementation. Mtebe and Raisamo (2014) indicated out that quality and appropriate course contents are determinants of the e-learning implementation. Providing pertinent training to e-learning users particularly lecturers, enables them develop quality e-learning content which has positive effect on students' satisfaction towards the e-learning system use. Similarly Khan (2005) postulates that pedagogical are one of the key factors that influence directly the e-learning implementation. However in practice, e-learning is used as add on functions in most universities in developing countries without integrating it with pedagogical features. The essence is that learning involves teaching by considering course curricular, contents and teaching strategies as these are pedagogical attributes.

Anderson & Gro'nlund (2009) argue that pedagogical attributes need to be clearly stated and considered in successfully implementing e-learning. Ndonje (2013) found that as e-learning is quite different from traditional settings; pedagogical attributes need to be designed specifically to fit the e-learning in order to influence significantly its implementation. The empirical studies indicate that one of the causes of failure of many e-learning projects in educational context is due to resistance to change among e-learning users (Njenga & Fourie, 2010). This attributed to inadequacy considering pedagogical issues when implementing e-learning. In this regard pedagogical attributes with their focus in teaching and learning, are inevitable when planning to integrate any technology in educational context.

Institutional Characteristics

Institutional characteristics often are major factors for successful implementation of e-learning implementations. It is thus widely acknowledged that clear defined institutional characteristics, may lead to effective e-learning implementation in education context. Studies (Tarus and Gichayo, 2015; Njenga, 2011; Madar and Wills, 2014; Khan, 2005; Dabbagh, 2005) have confirmed theoretical and empirical facts of a significant influence of institutional characteristics in the success of e-learning implementation. For example Tarus and Gichayo (2015) studied influence of pre-condition factors on e-learning implementation among 525 respondents in Kenya universities. The findings revealed that institutional characteristics had significant influence on e-learning implementation. (Njenga, 2011) investigated factors influencing e-learning adoption and use in Eastern and Western using exploratory design. The findings show that institutional characteristics had significant contribution to e-learning implementation. .

Khan (2005) found that institutional characteristics such as budget, commitment, constructive communication and management support have significant influence in e-learning implementation. Similarly, Rogers (2003) revealed that constructive communication between the various stakeholders within institutions, significantly influence on adoption and implementation of any innovation. Munguatosha *et al.* (2011) elaborated through their findings that self-efficacy, reliable technical and administrative support, infrastructure, system interactivity, adequate budget, accountability and flexible institutional structure were the factors found to affect the e-learning implementation. These findings demonstrates that in the absence of institutional characteristics, the e-learning implementation in education remain elusive. However, in practice institutional characteristics such as budget and commitment towards implementation of e-learning are inadequate in most universities. Thus, the institutional characteristics have the potential to improve formal and informal activities related to e-learning implementation to support education activities.

Social Attributes

E-learning through social attributes has a great potential to facilitate not only education activities but also social networks. In this case, social attributes in turn contributes not only motivation to users but also better quality of learning environment among students and lecturers. It has seen as a means to decrease the feeling of isolation and enable social inclusion among learners when effectively implemented. Findings from several researchers

explained the influence of social factors in e-learning implementation (Khan, 2005; Fresen, 2010; Busaka *et al.*, 2016). Khan (2005) argues that availability of that social interaction, cultural interaction and increase motivation influence the e-learning implementation particularly the use of e-learning in teaching and learning. Munguatosha *et al.* (2011) insists that the application of social networking sites like twitter, blogs and so on provides opportunities for user socialise, chatting and exchange their ideas while learning. This in turn increase positive attitude towards e-learning adoption and use. According to social constructivist learning theory (Vygotsky, 1978) applicability social networking sites enable universities to achieve social aspects of learning users to gain status or image. However, in most cases it happens that e-learning users lack appropriate training and awareness to understand the essence of using social e-learning platforms in teaching and learning context.

The findings from the study conducted by Sridharan *et al.* (2008) discovered that among the critical success factors on implementation of e-learning in HLIs is social attributes as this factor provides productive relationship among users, discussion groups and collaborations. Khan (2005) and Ghinea (2013) argue that lack of consideration of social factors leads to a great challenge that influence negatively e-learning implementation. Taha (2014) conducted a research on investigating the success of e-learning in Secondary Schools: the Case of the Kingdom of Bahrain using quantitative method. The findings indicated that social presence in terms of subjective norm was found influential factor either directly or indirectly on e-learning implementation. Similarly the analysis of the survey from several findings indicates that users such as students and lectures are fully aware of the significance of social interaction in supporting successful e-learning implementation (Malik, 2010; Mbarek and Zaddem, 2013). It is argued that e-learning implementation in relation to social attributes have two perceptions, student's interaction with learning materials and technologies is one view and the social activity of exchanging and generating ideas is another view (Nunes & McPherson, 2007). Thus, these views necessitate attentions and they required to be considered prior to implementation of e-learning through e-learning training and workshops.

Environmental Characteristics

Environmental contributes significantly in e-learning implementation. It is seen to influence e-learning implementation differently, as general factor as well as specific factor. For instance, Yew and Jumbigan (2015) conducted a review of studies and discussed critical factors on e-learning implementation in Malaysia. They argue that environmental factor includes e-learning characteristics such as hardware and software necessary required for the operationalisation of e-learning implementation. In addition, Zhu and Mugenyi (2015) conducted a study employing SWOT analysis methodology on the integration of e-learning in Ugandan and Tanzanian universities. The findings revealed other factors beyond the above mentioned and found that internet connectivity, bandwidth, sustainable electricity are general environmental characteristics significantly influence e-learning implementation.

However, Teo (2011) argue further that inadequacy of technical support contributes significantly to failure of e-learning implementation; the findings revealed that training skills and administrative support are specific important factors in influencing e-learning implementation by surpassing lecturers to use the technology effectively. Yew and Jambulingan (2015) explain that support from ICT units or department such as the IT specialist to design are specific factors significantly helps the lectures to effectively use the e-learning as it might be very difficult for them to catch-up through only training. For that case computer hardware and software (IT gadgets) are necessary available to e-learning users for success e-learning implementation. This argument shows that in absence of sufficient ICT infrastructure as the basic and pre-requisite characteristics absolutely dishearten e-learning implementation in educational activities.

Thus, factors influencing e-learning implementation are not unified globally as each study has conducted in different contexts, using different methodologies to investigate the e-learning implementation. This makes the level of e-learning uptake definitely differ from one context to another. Njenga (2011), Painter-Marland *et al.* (2003) and Rogers (2003) conclude that although studies on implementation of e-learning explain various factors, it is revealed that these factors vary depending on the type of innovation, the potential adopters and users and their unique context of implementation. Besides, these factors are mainly limited on technological and institutional dimensions. Social, environmental and pedagogical issues are inadequately addressed in most of studies reviewed. Further, there are still unnoticeable empirical evidences in most recent studies in Tanzanian universities regarding factors influencing e-learning implementation level (Nagunwa & Lwoga 2012; Sanga *et al.*, 2013; Kisanga & Ireson, 2015). To cover this empirical knowledge gap, this study determined factors influencing e-learning implementation level from wide dimensions (technological, institutional, pedagogical, environmental, social and users) specifically in the context of Tanzanian universities.

CONCEPTUAL FRAMEWORK DEVELOPMENT

Technology adoption and implementation theories are commonly used in many studies that investigate factors influencing e-learning implementation. Several theories have been developed to explain adoption and use of technology. This study used the UTAUT (Venkatesh et al., 2003) over other models and theories to better explain the e-learning implementation and usage in Tanzanian universities context. UTAUT was employed among other theories because of its comprehensiveness and higher degree of explanatory compared to other similar theories and models in technology acceptance and use (Venkatesh et al., 2003). Further, UTAUT has rarely been applied in the e-learning implementation and use, especially in the context of developing country including Tanzania. UTAUT, therefore, seemed an applicable theory to determine factors influencing e-learning implementation and usage level in Tanzanian universities.

The comprehensiveness of UTAUT presents a unified view to better explain the e-learning implementation level in terms of user acceptance and use .due to the following technology acceptance models and theories: Theory of Reasoned Action (TRA); Motivational Model (MM); Theory of Planned Behaviour (TPB); Technology Acceptance Model (TAM); Combined TAM and TPB (C-TAM-TPB); Model of PC Utilization (MPCU); Innovation Diffusion Theory (IDT); and Social Cognitive Theory (SCT) (Venkatesh et al., 2003). UTAUT comprises four core constructs that play a significant role as direct determines user technology acceptance and usage behavior: performance expectancy, effort expectancy, social influence, and facilitating conditions which follow under technological and user characteristics, as well as Social attributes. The conceptual framework for this study was formulated based on UTAUT, and it is comprised of six latent variables (factors or construct) with their observed variables as illustrated in Figure 1. The original UTAUT was modified by adding other three construct (i.e. pedagogical attributes, institutional and environmental characteristics). Various studies found that institutional, pedagogical and environmental as important factors to better explain the e-learning implementation and use (Tarus and Gichayo, 2015; Zhu and Mugenyi, 2015; Khan, 2005). However, these factors vary depending on the type of innovation, the potential adopters and users and their unique context of implementation (Njenga, 2011).

This study provides an input to stakeholders and researchers in the areas of e-learning. Research works are embarked upon with a view to extending the frontier of knowledge. The present study was therefore carried out with this same purpose, especially in the field of e-learning. It has, therefore, contributed to the extension of the frontier of knowledge as follows. The study has shown the predictive power of extending the variables and methodologies employed as empirical evidence based on the factors influencing e-learning implementation. Thus, this study determined the factors influencing e-learning implementation in Tanzanian universities. The following were the specific research questions of the study:

1. To what extent do technological characteristics influence implementation of e-learning?
2. To what extent do user characteristics influence implementation of e-learning?
3. To what extent do pedagogical characteristics influence implementation of e-learning?
4. To what extent do institutional characteristics influence implementation of e-learning?
5. To what extent do social characteristics influence implementation of e-learning?
6. To what extent do environmental characteristics influence implementation of e-learning?

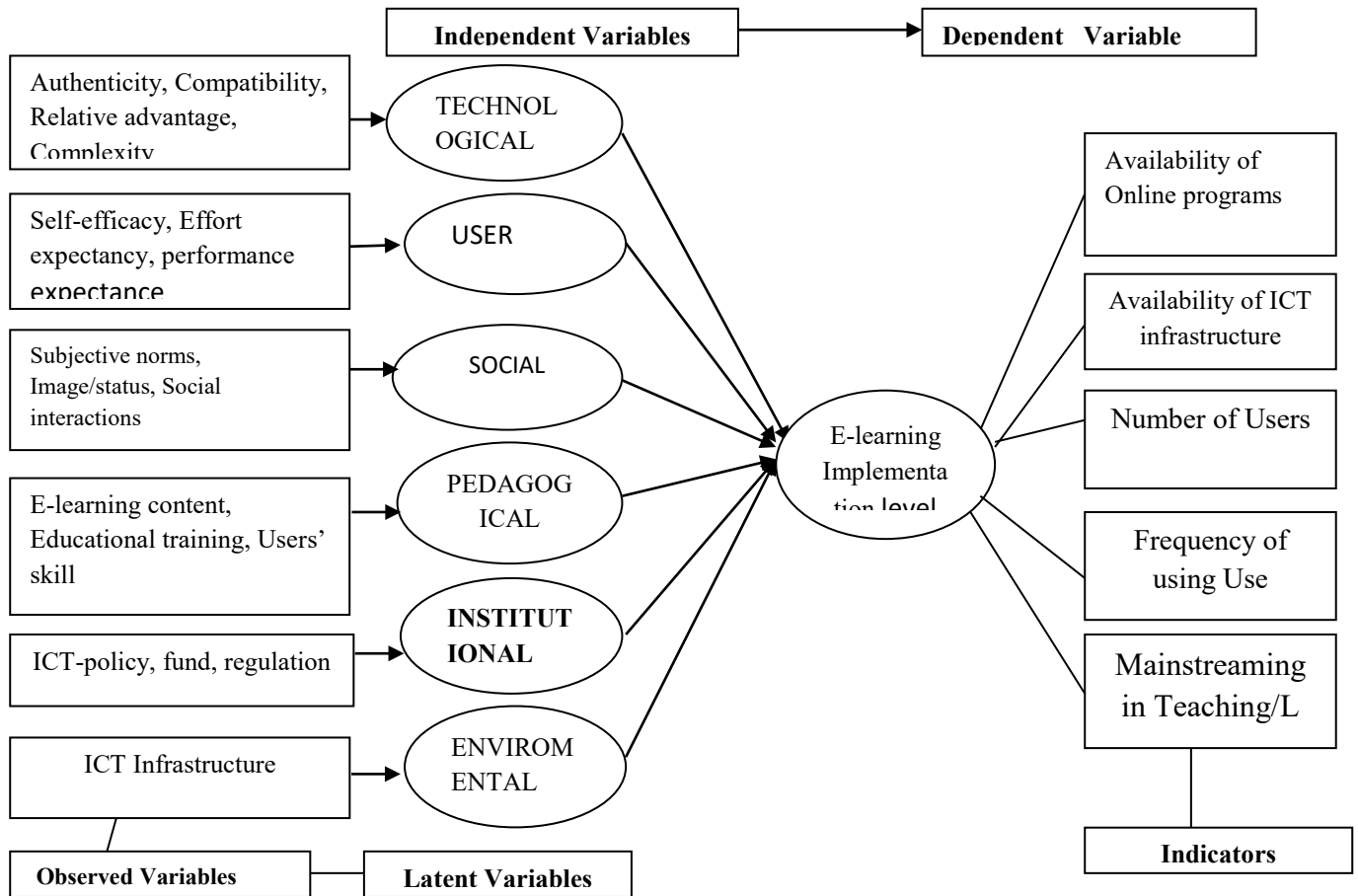


Figure 1: A conceptual Framework

METHODOLOGY

Study Area and Participants

This study was carried out in eight public and private universities purposively selected from among 30 universities in Tanzania. These were the University of Dar-es Salaam, Sokoine University of Agriculture, State University of Zanzibar, University of Zanzibar, University of Iringa, the Open University of Tanzania, St. Joseph University of Tanzania and Mbeya university of Science and Technology. These are the Universities which have been invested in ICT infrastructure and have implemented e-learning platforms and facilities to enhance its teaching and learning activities. The use of purposive sampling techniques was to ensure selection of sample of universities with characteristics based on the nature of this study and gather large amounts of information enabled a researcher to generalize the findings. Such characteristics include; nature of the university (such as biological sciences, social sciences, technology and comprehensive). Other characteristics include mode of delivery (campus based and distance learning), geographical location (urban and rural), age (old and new) and ownership (private and public). These eight universities had a total population of 58,000 and 6,896 students and academic staff respectively.

Sampling procedure and Sample size

Proportional stratification sampling technique was used to stratify a sample of 400 of students and academic staff to their subgroups as indicated in Table 1. This study also employed simple random sampling technique to obtain students and academic staff differently from their subgroups randomly with specific size using lottery method. Each member of their subgroups was assigned a number using small piece of paper. These pieces of papers were folded and mixed into a box. Lastly, samples were taken randomly from the box by choosing folded pieces of papers in a random manner. The simple random sampling particularly the lottery method was employed in this study in order to minimize bias from selection procedure and resulted into representative sample. In addition, the population was divided into subgroups in which the lottery method is reliable compared to computer-generated process (random number generator software) (Saunders *et al.*, 2012)

The sample size of each sub-group is proportionate to the population size of the disjoint groups. The sample size of each subgroup was determined by the equation: $n_h = (N_h / N) * n$. Where n_h is the sample size of the sub-group h , N_h is the population size for the sub-group h , N is the total population size and n is the total sample size adopted from similar existing studies (Trochim, 2006).

Table 1: Show study population and Sample size

CATEGORY						
UNIVERSITY	STUDENTS		ACADEMIC STAFF		Total Population	Total Sample Size
	Population	Sample Size	Population	Sample Size		
UDSM	17,500	103	2350	18	19,850	121
SUA	8,988	53	1500	13	10,488	69
OUT	10,684	63	663	5	11,347	68
SJUT	4,883	29	400	3	5,283	31
UOI	5786	34	850	7	6,636	41
SUZA	2,704	16	330	3	3034	19
ZU	2,544	15	300	3	2,844	18
MUST	4,909	29	503	4	5,412	33
TOTAL	58,000	342	6,896	58	64,896	400

Data collection Instruments

Data were collected using a structured questionnaire that contained scales to measure e-learning uptake with items ranging from 1 (Strongly disagree) to 5 (Strongly agree). A total of 342 (291 for students and 58 for academic staff) questionnaires were received back which is a response rate of 85.5%.

Validity and Reliability of instrument and data

To determine the reliability and validity of the study instrument, a pilot study was undertaken at Mzumbe University in Morogoro using a sample of 30 respondents. The reliability of each variable was determined using Cronbach's Alpha and the score was found to be 0.949 which is acceptable (Krishnan and Ramasamy, 2011). In ensuring validity of the variables, the items of the questionnaire were ranked against a review of related literature (theoretical and empirical). Similarly the validity of findings was achieved through CFA which was used to establish the co-variation among observed variable and latent variable. In addition to that, operationalization of variable was done in order to confirm the variables into original sources including concepts from theories and empirical evidence.

Data Analysis

The collected data was processed and analyzed using the Predictive Analytic Software (PASW). Descriptive analysis was done to obtain the demographic characteristics of respondents as well as means and standard deviations. The data were cleaned and screened to remove some coding errors. Various tests such as, reliability and validity of the data were performed before conducting descriptive and inferential analysis in order to attain the internal consistency of data. The data analysis techniques including factor analysis Structural Equation Modeling (SEM) particularly confirmatory factor analysis (CFA) in this study were employed to perform analysis based on the requirements and the nature of this study as presented as follows:

Factor analysis (FA) is a statistical approach that is used to analyse interrelationships among a large number of variables and confirm these variables in terms of their common underlying dimensions (Hair *et al.* 2006). The reason for employing FA are follows: First, this study have employed variables that are subjected to factor analysis (FA), each has 5 observations, as recommended to be at least 5-10 observations (Comrey & Lee, 1992). Second, the study was used the sample size of 400 in which the recommended sample size for CFA is at least 300. Third, it was employed to reduce the number of variables by creating new composite variables for each factor (Isaga, 2012).

Confirmatory factor analysis (CFA) is a measurement model which determines the correlations among observed variables as well as latent variables. Being part of Structural Equation Modeling (SEM), the confirmatory Factor Analysis establishes the Measurement Model which specifies the number of observed variables. It confirms how each latent variables (Factors) relate to its observed variables (indicators) and confirm their relationship by explaining to how much observed variables contributes to their respective latent variables. The main focus was to ascertain the number and nature of latent variables that describe for variation and co-variation within a couple numbers of observed variables. In this study, confirmatory factor analysis (CFA) is used to determine the factors that influence the e-learning implementation in Tanzanian universities.

Structural Equation Modeling: Based on the established relationships of independent and dependent variables in this study, the study also aimed at developing and validating e-learning and implementation model. This modeling process was including the factors influencing e-learning implementation from various dimensions. The latent variables and their observed variables were validated, this include: technological, pedagogical, institutional, users, social and environmental. Structural Equation Modeling (SEM) particularly path diagram was used to build the model with six different structural models based on technological, institutional, pedagogical, user, social as well as environmental factors

RESULTS PRESENTATION

This section presents the summary of analysis results using confirmatory factor (CFA) analysis and structural equation modeling (SEM).

The measurement Model developed using CFA

The section presents the measurement model as depicted in Figure 2 below. The results show how much observed variables contribute to latent variables confirmed by CFA to make model fit by examining extent of interrelationship and co-variation among the latent constructs. The latent constructs (factors) confirmed include; Technological, Pedagogical, User, Institutional, Social and Environmental as indicated by oval while observed variables are those represented by rectangles.

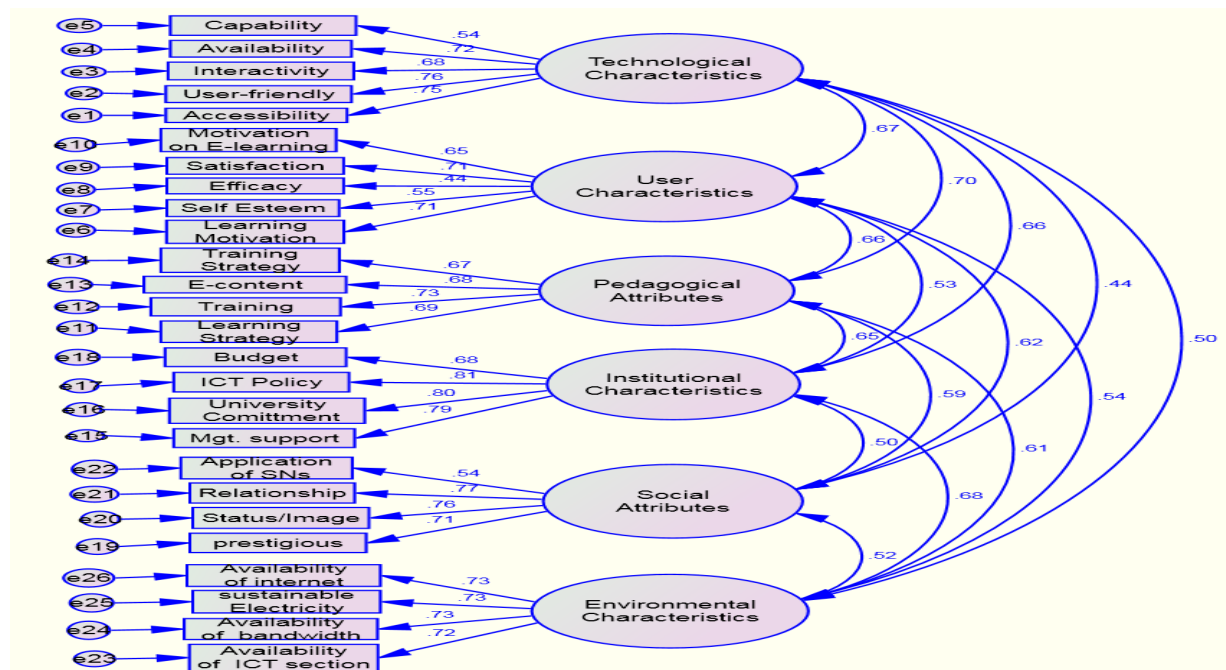


Figure 2: Measurement Model using CFA (Analysis of field data, 2017)

The findings in Figure 2 above shows that all observed variables have loaded above 0.6 which indicate high contribution to unobserved variables with acceptable level of convergence validity. This has been supported by (Barclay *et al*, 1995) that, the standardized factor loading for reflective indicator is 0.7 but 0.5 is considered to be acceptable. Looking further the model it was deduced that there is good relationship among latent variables as all covariance were above 50% except that of between social attributes and Technological characteristics which was 44%. As supported by Fornell and Larker (1981) that the covariance above 50% is acceptable for convergence validity of a model. Table 2 below complements the results in Figure 2 above.

From Table 2, it is revealed that the model of fit as the RMSEA is in between 0.6 to 0.8 as suggested by Hu and Bentler (1999) and Yu (2002) for continue and categorical data. Further the GFI, AGFI were 0.9 and 0.83 respectively which are acceptable. The P-value is significance with 0.000 as recommended. However, the PCLOSE is not acceptable as it is too small compared to 0.5 recommended. Therefore the rest indices indicate that the model is better to explain the interrelationship between latent variables and measurable indicators as well as the correlations among the latent variables. In this case there is no need of modification of indices.

Table 5.29: Show Model of fit Summary

Model	NPAR	CMIN	DF	P	CMIN/DF	RMSEA	PCLOSE	GFI	AGFI
Default model	67	587.085	284	.000	2.067	.061	.006	.866	.834
Saturated model	351	.000	0					1.000	
Independence model	26	3509.838	325	.000	10.800	.184	.000	.269	.211
Recommended value for model fit: GFI, AGFI, NFI, RFI, IFI, TLI and CFI close to 1, $0 \leq$ RMSEA \leq 0.1 (Hooper, Cooughlan & Nullen, 2008; Kline, 2005)									

The E-learning Implementation Model developed using SEM

This section presents the result of the overall model in path diagram built by SEM to indicate the relationship between the latent variables as independent variables and e-learning implementation level as dependent variable. The model developed has two parts; the measurement model and structural model. The results show exactly the extent to which each factor significantly influences positively the e-learning implementation level among Tanzanian universities. The determined factors and their relationships in a model were considered as a best way of implementing e-learning among Tanzanian university. Based on the findings from section above, the overall model is built as shown in Figure 3.

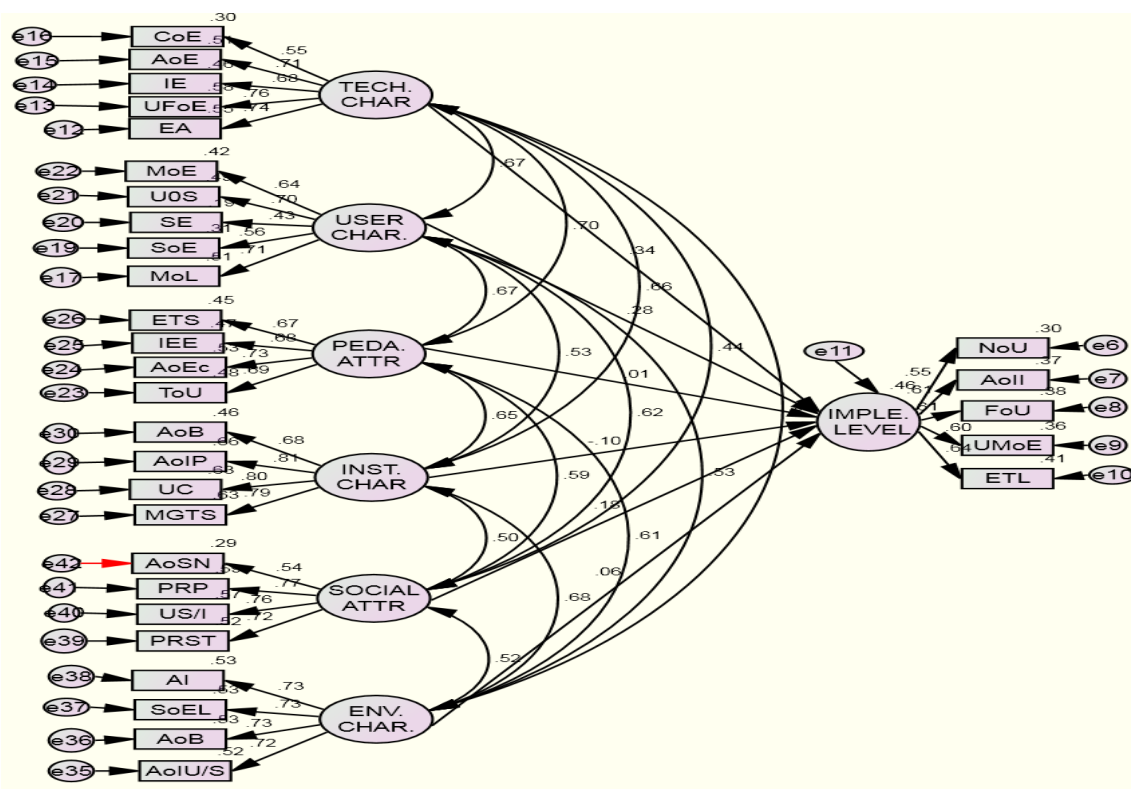


Figure 3: E-learning Implementation Model: Analysis of field data (2018)

Keywords: CoE – Capability of E-learning; AoE – Availability of E-learning platforms and facilities; IoE - User interaction on E-learning; UoE - User friendly on using E-learning; EA – E-learning Accessibility; MoE – Motivation of users to use E-learning; UoS – User satisfactions towards using e-learning; SE – Self efficacy of users towards e-learning; SoE – Self esteem on using e-learning; MoL – User motivation on learning/teaching using e-learning; ETS - Availability of e-learning training strategies; IEE - Integrations of E-learning and E-content; AoEc – Availability of e-contents; ToU - Availability of user training on using E-learning; AoB - Availability of budget for e-learning; AoIP – Availability of ICT policy; UC – University commitment towards e-learning; MGTs – Management supports e-learning; AoSNs – Availability of Social Networking sites; PR – Productivity relationships among users; US/I – Status/Image of users; PRST – Prestigious of users towards using e-learning; AI - Availability of Internet connectivity; SoEL – Sustainability of electricity; BA – Bandwidth availability; AU/S – Availability of ICT units/sections

The findings from the model presented in Figure 3 above suggest that all observed variables contribute in each of unobserved variables (factors) as they have loading weight above 0.4. According to Hair et al. (2014), the recommended factor loading for a good relationship between observed and an observed variable is at least 0.3. For this case all observed variables are good measure of unobserved variable as shown in Figure 3. It has been deduced further from the findings that all unobserved (Latent variables) have acceptable correlation among them. According to Anderson & Gerbing (1988), Bagozz and Yi (1988) and Coromina (2014) suggest that correlation between each item and its construct is at least 0.5 while that among items from the same construct is at least 0.3. This is an evidence of reliability among construct used to influence the e-learning implementation level as the correlations among each other are at least 0.4.

Moreover, based on the information from the left part (measurement model) of the developed and tested model in figure 3, the findings suggest that all independent variables have relationship with the dependent variable (E-learning Implementation level). This has been attributed to the fact that the standardized regression weight for (independent variables) Technological, User, Pedagogical, Institutional, Social and Environmental constructs were considered. Since loading weights represent the amount of change of the dependent variable (e-learning implementation level) per single unit of change of each independent construct. These results suggest that, for every single standard deviation of increase in technological, user, pedagogical, social and environmental construct, e-learning implementation level is increased by 0.34, 0.28, 0.01, 0.18 and 0.06 respectively. Surprisingly, the result further revealed that for every single standard deviation of increase in institutional construct, e-learning implementation level is decreased by -0.1. It is acknowledged therefore that the results

evidence the existence of model of fitness. Table 3 supplement to the above presentation of results by explaining the model fit summary.

Table 3: the E-learning Implementation Model fit summary

Model	CMIN	DF	P-VALUE	CMIN/DF	GFI	AGFI	RFI	NFI	IFI	RMSEA
Default model	803.839	413	.000	1.946	.900	.820	0.780	.804	.890	.057
Saturated model	.000	.000								0.164
Independence model	4097.104	465	.000	8.811	.264	.264			0.00	
Recommended value for model fit: GFI, AGFI, NFI, RFI, IFI, TLI and CFI close to 1, $0 \leq$ RMSEA \leq 0.1 (Hooper, Cooughlan & Nullen, 2008; Kline, 2005)										

Source: field data (2018)

From the results presented in Table 3, the findings indicates that all values such as GFI, AGFI, RFI, NFI, RMSEA and P-values qualify to explain the model fit based on the reasonable sample size used for SEM analysis in this study which is 291 and the criterion of various indices. For instance Ho and McDonald (2002) suggest that if the sample size is in the range of 237 -330 then the acceptable root mean square estimate approximation (RMSEA) should be in the range of 0.05 - 0.08 and the recommended P-values for significance are .000. On the same vein the value of indices such as GFI, AGFI, NFI, RFI and IFI should be close to 1 (Hooper *et al.*, 2008; Kline, 2005). The findings therefore show that the mode of fit as all indices are acceptable and the p-values indicate significance at 0.00.

DISCUSSION AND RECOMMENDATION

Ideally, one of the issues in recent years that universities should consider as part of education reform is e-learning implementations. Various studies argued that e-learning implementation need (see in Njenga, 2014; Tarus *et al.*, 2015; Tarus and Gichayo, 2015) careful attention and a great effort as preconditions for efficient and effective implementation. Cox (2010) argues that, e-learning is to be successfully adopted in universities if and only if students, academic staff, ICT experts and management must be considered in the process of implementation. Notwithstanding the notable importance of e-learning implementation, factors to guarantee successful and effective implementation process are non-uniform. The available factors influencing e-learning implementation depend on the type of technology, potential adopters and their unique context (Rogers, 2003). In this case, the study findings addressed the objective of the chapter and the discussion of the study findings are based on the following determined factors and its observed variables.

Technological Characteristics

The findings in Figure 5.2 show further that: Technological characteristics influence the number of e-learning users (as 1 standard deviation of technological characteristics causes 0.72 of standard deviation to increase the number of e-learning users). Technological characteristics influence the frequency of using e-learning (as 1 standard deviation of technological characteristics causes 0.44 standard deviation to increase frequency of using e-learning). Technological characteristics influence availability of ICT infrastructure (as 1 standard deviation of technological characteristics causes 0.69 standard deviation to increase the availability of ICT infrastructure). Technological characteristics influence motivation of e-learning users (as 1 standard deviation of technological characteristics causes 0.41 standard deviation by increasing motivation of e-learning users). Availability of e-learning is one thing, but should be easy and user friendly as well as useful in their learning and teaching. After all these characteristics, then e-learning would be accessible at a great rate and this finding is similar to (ESIB, 2003; Tarus and Gichayo, 2015). Tarus and Gichayo (op.cit) found that, for example lecture halls and halls of residence should have network and Internet connectivity to facilitate accessibility to e-learning. Further

example, availability and capability of LMS platform as an imperative tool for student administration, tracking, and delivery of e-learning education courses should be user friendly and interactive. While ESIB (2003) who also established the same that the institution providing e-learning must make sure that all facilities and platforms required are available and adequate, capable and interactive, including internet connectivity and computers.

Institutional Characteristics

Findings of this study indicate that the factor loadings for e-learning budget, availability of ICT policy, university commitment and management support on e-learning activities were above 0.3. This implies that the items were very good measures of institutional construct. The results in Figure 5.12 show further that: Institutional characteristics influence the number of e-learning users (as 1 standard deviation of user causes 0.73 standard deviation to decreasing the number of e-learning users). On the other hand, institutional characteristics influence the frequency of using e-learning (as 1 standard deviation of institutional construct lowers the frequency of using e-learning by 0.48 of standard deviation). Also institutional characteristics influence the availability of ICT infrastructure (as 1 standard deviation of institutional construct causes 0.65 standard deviation by decreasing the availability of ICT infrastructure). Institutional characteristics influence motivation of e-learning users (as 1 standard deviation of institutional characteristics causes 0.44 of standard deviation by lowering motivation of e-learning users).

These findings are contradicting with the findings of Awidi (2008), Mapuva (2009), Munguatosha *et al.* (2011) and Tarus and Gichayo (2015) who found that there is significant influence of institutional characteristics on e-learning implementation level. For instance, the findings by Tarus and Gichayo (2015) show that ICT Policy provides a guideline and direction for the e-learning implementation in universities. Their findings insist that sufficient budgetary distribution was critically required to support implementation activities such deployment and maintenance of the e-learning platform and facilities and training of users on how to use e-learning. Awidi (2008) points out the same that the institution must have evidently defined strategic plans that speak out ICT policies that support e-learning implementation strategies. In line with prior research findings, Mapuva (2009) also argue that commitment from institutional management is also found to be influential factor, due to their decision based on facilitating implementation within their universities. The difference of the current findings to previous findings is in the due that the current study use heterogeneity samples to gather as much as insight information regarding e-learning implementation in the eight universities in Tanzania. However the previous similar studies employed homogeneous sample which led to biasness and inadequate information based on implementation of e-learning.

Pedagogical characteristics

The findings in Figure 5.4 show that the factor loading for e-learning and learning strategy, e-learning training, and integration of e-learning and e-content, training on e-learning strategies were above 0.5 and that the items are very good measure the construct of pedagogical characteristics. The results in Figure 5.4 show further that pedagogical characteristics influence the number of e-learning users (as 1 standard deviation of pedagogical attribute cause 0.72 of standard deviation by increasing the number of e-learning users). Pedagogical characteristics influence the frequency of using e-learning (as 1 standard deviation of pedagogical characteristics cause 0.50 of standard deviation by increasing the frequencies of using e-learning). Pedagogical characteristics influence the availability of ICT infrastructure (as 1 standard deviation of pedagogical characteristics cause 0.63 standard deviation by increasing the availability of ICT infrastructure). Pedagogical characteristics influence the motivation of e-learning users (as 1 standard deviation of pedagogical characteristics cause 0.45 of standard deviation by increasing motivation of e-learning users). Similarly, it is suggested that, in order for user training on e-learning usage to be efficient and effective there should be an e-learning training strategy for guidance. In literature this finding is considered important in e-learning implementation (Mtebe and Raisamo, 2014: Taha, 2014; and Zhu and Mugenyi, 2015).

The findings from the study by MoE in Bahrain (2007) indicated that students prefer e-contents and e-lessons developed by multimedia, which enhance the importance of e-learning in the knowledge acquisition. Mtebe and Raisamo (2014) also found that academic staff should establish excellence course contents that convene planned educational benefits; relevant to learners' knowledge; skills and capability in order to exploit e-learning use, and raise learners' satisfaction with the e-learning. Tarus and Gichayo (2015) cement the same that course quality has positive influence on learners' satisfaction towards the e-learning as well as having positive influence on e-learning use. Taha (2014) indicated that 73.3% of the students in the sample responded out that the integration of e-learning with e-lessons and e-content influenced positively the student's interaction as well as exchange of ideas and skills.

User Characteristics

The findings of this study show that the factor loading for user confidence, self efficacy, motivation on using e-learning (user experience), motivation on learning, and self esteem on e-learning were above 0.3. The results show that the items are good measures of user characteristics construct. The results in Figure 5.3 show further that user characteristics influence the number of e-learning users (as 1 standard deviation of user causes 0.63 standard deviation to increase number of e-learning users). User characteristics influence the frequency of using e-learning (such that, 1 standard deviation of user construct causes 0.52 of standard deviation by increasing frequency of using e-learning). User characteristics influence availability of ICT infrastructure (as 1 standard deviation of user causes 0.68 standard deviation to increase the availability of ICT infrastructure). User characteristics influence motivation of e-learning users (as 1 standard deviation of technological causes 0.49 standard deviation by increasing motivation of e-learning users).

The findings of this study complement the preponderance of previous researches (Selim 2007; Taha, 2014, Iskander, 2013). Engelbrecht (2005) agrees and goes on to say that user characteristics play vital role in e-learning implementation models, however many models become unsuccessful and ineffective due to lack of appropriate user characteristics in universities. Specifically, findings confirm that users' attitudes (self efficacy, self esteem, motivation on learning and confidence), user motivation (experience) were found to influence significantly success of e-learning implementation (Taha, 2014). The findings by Luskin and Hirsen (2010) reiterate on the finding of this study that there is interrelationship among user characteristics. For instance self-efficacy and motivation towards e-learning usage are two of the mainly relevant characteristics related to user experience, motivation to learn, satisfaction, enjoyment and confidence as an outcome of successful e-learning implementation.

Social Attributes

Findings of this study indicate that the factor loadings for the application of social networks, productive relationships, status/image and prestige towards e-learning activities were above 0.5. And that the items were good measures of social construct. Findings in Figure 5.6 show further that social characteristics influence the number of e-learning users (as 1 standard deviation of users causes 0.64 of standard deviation by increasing the number of e-learning users). Social characteristics influence the frequency of using e-learning (as 1 standard deviation of social characteristics increase the frequency of using of e-learning by 0.56 of standard deviation). Also social characteristics influence the availability of ICT infrastructure (as 1 standard deviation of users causes 0.61 standard deviation by increasing the availability of ICT infrastructure). Social characteristics influence the motivation of e-learning users (as 1 standard deviation of social characteristics causes 0.54 of standard deviation by raising the motivation of e-learning users).

Previous findings including Munguatocha *et al.*(2011), agree and go on to say that, one variable of social factor such as applicability social networking sites enables universities to achieve social aspects of learning in line with social constructivist learning theory (Vygotsky,1978). For example social software tools facilitate teaching and learning in collaboratively, participative in an online forum, chatting and share relevant contents (Awodele *et al.*, 2009; Alexander, 2008; Ryan *et al.*, 2011). In the same vein, the seventh dimension in Khan's (2001) model addressed the social assortment taking into account different characteristics of variety of users of e-learning such as online learners.

Contrary to the above findings, the findings from the study conducted by Al-adwan and Smedley (2012) indicated that working independently from the lecturer was unpopular. 62% of the students indicated that face-to-face contact with lecturer was a vital part of their learning and improve their status and prestige. Schwartzman (2001) agree and goes further by supporting the findings from the study by Al-adwan and Smedley (2012) that students who continually use e-learning in their learning might face difficulties in creating social productive relationship, their social skills as well as behaviors. Thus, it is reasonable to conclude that social factors were inadequately considered in e-learning implementation in many studies. Likewise there are unavailable empirical studies conducted in e-learning implementation in the context of Tanzanian universities addressing social issues. This study fills this knowledge gap by including social factors as a contribution in the developed model for implementing e-learning in Tanzania context

Environmental Characteristics

Findings of this study indicate that the factor loadings for availability of ICT sections/directorate, availability bandwidth, sustainability of electricity, availability of internet connectivity were above 0.5. And that the items were very good measures of environmental construct. The findings in this study show further that environmental characteristics influence the number of e-learning users (as 1 standard deviation of environmental causes 0.68 of

standard deviation by increasing the number of e-learning users). Environmental characteristics influence the frequency of using e-learning (as 1 standard deviation of environmental characteristics increases the frequency of using of e-learning by 0.53 of standard deviation). Also environmental characteristics influence the availability of ICT infrastructure (as 1 standard deviation of environmental causes 0.63 standard deviation by increasing the availability of ICT infrastructure). Environmental characteristics influence motivation of e-learning users (as 1 standard deviation of environmental characteristics causes 0.49 of standard deviation by raising motivation of e-learning users).

The previous researches and studies conducted on e-learning implementation supported these findings (Henderson, 2005; Kavaliauskierie, 2011; Othman & Musa, 2012; Amandu *et al.*, 2013; Zhu and Mugenyi, 2015). Zhu and Mugenyi (2015) insist on top of the findings above that implementation of e-learning relies on many factors including computer and Internet availability and accessibility as well as cross-cutting issues like electricity. Berhanu (2010) agrees and goes on to caution that implementation of e-learning without recognizing cross cutting issues and providing a conducive environment of ICT infrastructure and efficient support jeopardize e-learning implementation level. Othman & Musa (2012) support by saying that availability of high bandwidth leads to reliable access of e-learning platforms and facilities in place and accounts to be crucial factor in e-learning implementation. Despite the important contributions from environmental issues in e-learning implementation still environmental factors were inadequately exhausted in various e-learning implementation studies. Further there are limited researches conducted with empirical evidence which have pointed out the influence of environmental characteristics particularly the ICT infrastructure on e-learning implementation level in developing countries, Tanzania in particular. This study therefore addressed environmental characteristics to fill this gap by contributing to the body of knowledge.

FUTURE RESEARCH DIRECTION

In this study we attempted to establish the model for its implementation in Tanzanian universities. The research design, therefore, was specifically focused to address this specific Tanzanian universities problem. Thus, the findings in this paper may not apply to other universities in other countries or even to apply to other institutions such as colleges and secondary schools in Tanzania context. The areas that are not at the center of this study's design are good avenues for future research. These are, among other: first, the applicability of the findings in this study to teachers training colleges. Second, in this study it was revealed that e-learning implementation level in Tanzanian universities has been influenced by factors such as technological, users, institutional, environmental characteristics, social and pedagogical characteristics. Thus, future studies may focus on comparing e-learning implementation levels among Tanzanian universities to reveal the reasons of their differences. Fifth, in this study theoretical model was developed to explain the implementation of e-learning in Tanzanian universities. However, this model was not tested empirically. Future study should test the model using different data from other areas which are not part of the focus of this study.

CONCLUSION

The chapter has addressed the potential of applying a model in Figure 7.1 in improving the e-learning implementation in Tanzanian universities. It has addressed the critical factors from wide dimensions towards successfully e-learning implementation. E-learning implementation in Tanzania is done in ad-hoc basis thereby lacking adequate factors described in a model in Figure 7.1 as a base for supporting e-learning implementation. Similarly, the paper has demonstrated how these interrelated factors significantly influence e-learning implementation level. On the critical factors which revealed significantly to influence e-learning implementation are from Technological characteristics, Users characteristics, Pedagogical attributes, Institutional characteristics, Social attributes and Environmental characteristics.

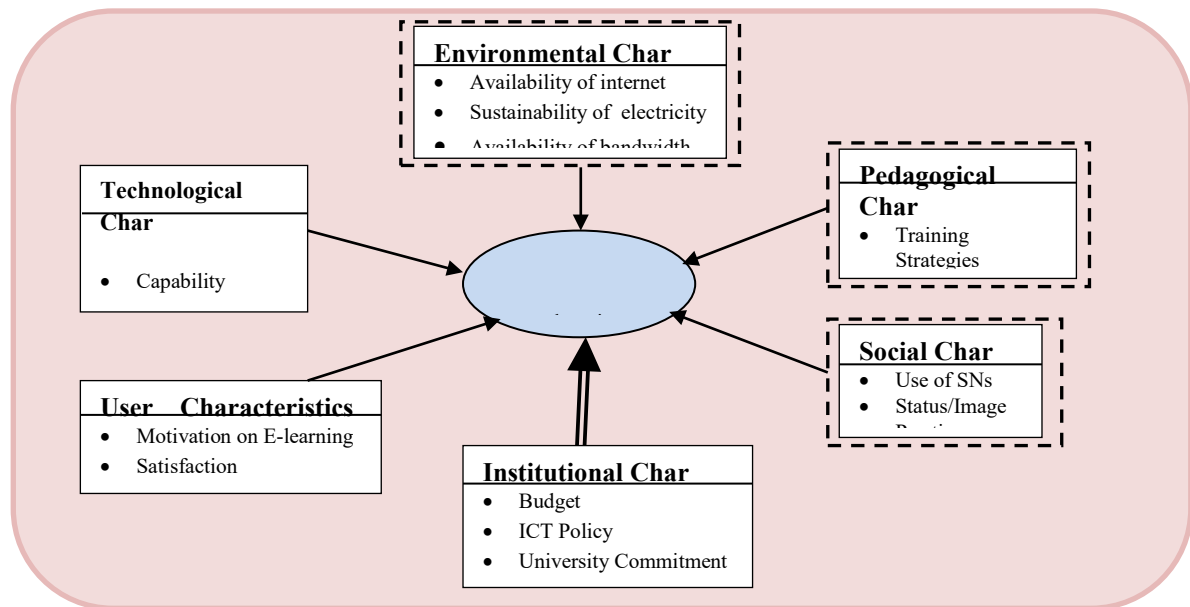


Figure 7.1: A model for E-learning Implementation

Descriptions: In the model presented in figure 7.1, direct single arrows show positive influence of factors on e-learning implementation. Double arrow shows negative influence of institutional factor on e-learning implementation. The dotted rectangle boxes indicate the new factors contributed by this study which found to influence significantly e-learning implementation. However, these factors were not considered in previous existing similar e-learning implementation model reviewed in chapter three. This study also observed that there is inadequate comprehensive theory which conceptualizes the phenomena (e-learning implementation) and lack of adequate institutional characteristics to support e-learning implementation in Tanzanian universities. Therefore, the interrelated influential factors presented in a developed model will support and improve e-learning implementation in Tanzanian universities and other universities from countries with similar characteristics.

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QUALITY ASSURANCE TOOLKIT FOR ODL INSTITUTION: A REVIEW STUDY OF UTTARAKHAND OPEN UNIVERSITY

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ABSTRACT

Accessible quality higher education system can have a multifaceted positive impacts at national as well as global level. In India, higher education is provided to the students through various ways including regular, distance and open learning modes. The Gross Enrolment Ratio (GER) in higher education in India is likely to increase in the coming years due to expansion of youth population in India. In such case, the Open and Distance Learning (ODL) Institutions has to play major role to ensure quality in teaching, learning, research and community participation. The purpose of the present paper is to assess, analyse and promote plans for further improvements and quality assurance of an ODL institute. One of the ODL institute, Uttarakhand Open University (UoU) was selected as sample for the present study. The data was collected through atoolkit developed by Commonwealth Educational Media Centre for Asia (CEMCA) for commonwealth Asia to engage ODL institutions to reflect on various aspects. The present review study includes leadership, governance, programme/course design, courseware/material development, learner admission and enrolment, academic and administrative support to learners, evaluation process, infrastructure facilities including ICT facilities, output/outcome quality, human resource and ambience of research.

Introduction

In recent years, the increased numbers of Indian students in higher education search for the opportunity of completing degree / diploma / certificate courses linked with employment prospects. They explore the flexible mode of learning. The expansion of higher education has increased the role of Open and Distance Learning (ODL) Institutions in India. It has been recognised that the modern distance education with use of technology started in 1969 with the establishment of Open University of UK (OUUK)(Jung, Wong, & Belawati, 2013).

According to the sixth report of All India Survey on Higher Education (2015-16), 799 Universities, 39071 colleges and 11923 Stand Alone Institutions are situated in India for providing higher education to the youth of India(MHRD, 2016). Notably, distance education mode of teaching and learning has become useful for large number of students. It has more relevancein remote areas which are untouched to the mainstream. In the above mentioned AISHE report, it is presented that 34.6 million with 18.6 million boys and 16 million girls has been estimated to be enrolled in higher education institutions, comprising of 11.05% enrolments in distance mode. The Gross Enrolment Ratio (GER) in Higher education in India is reported 24.5% that likely to be increase in the coming years due to expansion of youth population in India. In such case, the main challenge of ODL institutions are to ensure quality in teaching, learning, research and community participation.

For the purpose, there is urgent need to adapt mechanisms to check quality of higher education. More emphasis is on ODL institutions with respect to various criteria. These criteria are widely covered in a Quality Assurance Toolkit for Open and Distance Learning (ODL) Institution developed by Commonwealth Educational Media

Centre for Asia (CEMCA)(Saxena & Panigrahi, Quality Assurance Toolkit for Open and Distance Learning (ODL) Institutions, 2019).

Before applying the above-mentioned quality assurance toolkit to review quality status of Uttarakhand Open University, it is important to express the brief background of the university. In the year of 2005, Uttarakhand Open University (UoU) was established by an Act of Uttarakhand Legislative Assembly (vide Act No. 23 of the Uttarakhand Government) based on the philosophical values of Open and Distance Learning (ODL). The focus of the UoU is to provide easy access of quality education to different sections of society. The main objective of the University is to develop trained and skilled human resource for sustainable development and progress. Similarly, the university aimed to disseminate knowledge and skills through distance learning, using the flexible and innovative methods of education to ensure 'independent learning'. Following the ODL approach, the university caters to the development of schedule tribes, women, and those who have been left out of mainstream education. At the same time, the University has evolved considerably and has been successful in reaching out to the unreached.

Quality Assurance in Distance Education

Traditionally, quality of a Distance Education Institution (DEI) is perceived to be inferior to that of in-person formal education system. Quality is highly subjective therefore it is an abstract concept. The quality of service system is difficult to be managed as the customer(learner in this case) expectations are very high. In fact, quality is the key which if managed properly can sustain the ODL institutions in the long run. Many educational institutions are going for Quality Management System (QMS) certification ISO 9000 which helps them in better documentation of educational activities in that organization. Quality management is that aspect of the overall management function that determines and implements quality policy(Saxena, Quality Centered Strategic Planning in IGNOU,, 1997).

Quality cannot be thrust upon any system; it has to be built into the process. Hence Quality Assurance (QA), which is based on prevention paradigm, is the assurance that a certain level of quality will result from the system. Such an approach prevents inferior quality to be generated by the system(Saxena & Panigrahi, Quality Assurance Toolkit for Open and Distance Learning (ODL) Institutions, 2019).

Quality management is that aspect of the overall management function that determines and implements quality policy (Saxena, Quality Management Practices in Indian Manufacturing Organizations, 1997).

The objective of the paper is to use the quality assurance toolkit proposed by (Saxena & Panigrahi, Quality Assurance Toolkit for Open and Distance Learning (ODL) Institutions, 2019) to check and review the quality of Uttarakhand Open University in terms of various criteria covered in the toolkit. It shall pave the way to the institution to work better in future and take valuable initiatives for the development of community.

Research Methodology

Quality Assurance Toolkit for Open and Distance Learning (ODL) Institutions

The purpose of the toolkit is to prepare ODL institution to self-assess and analyse themselves and promotes plans for further improvements for quality assurance. The toolkit was developed by Commonwealth Educational Media Centre for Asia for commonwealth Asia to engage ODL institutions to reflect on their leadership, governance, programme/course design, courseware/material development, learner admission and enrolment, academic and administrative support to learners, evaluation process, infrastructure facilities including ICT facilities, output/outcome quality, human resource and ambience of research. The main objective of the toolkit is for quality assurance to make it a community of practice.

Data Collection and Analysis

The Quality Assurance Toolkit for Open and Distance Learning (ODL) Institution was used to collect the data from the participants. The data was collected during a workshop on 'Quality Assurance Toolkit for ODL Institutions' held from 27 to 28 March, 2019 organised by UoU in collaboration with CEMCA. The glimpses of the workshop presented below. The participants included academic, technical, administrative and other non-teaching staff working in Uttarakhand Open University. The data was tabulated, analysed and interpreted quantitatively using average, range and standard deviation.

Demographic Profile of the Respondents

There were 14 assistant professors comprising 34 % of the sample participated in the study. However, 7 academic associates (17%), 7 non-teaching staff (17%), and 4 academic counsellors (9.8%) were also involved. Among others (2.4%), professors, regional directors, ICT staff, associate professors etc were representing the

sample. Notably, majority of sample was designated as assistant professor in the present study followed by academic associates and non-teaching staff of the university.

Table 1: Designation wise distribution of participants

Designation	Frequency	Percentage (%)
Assistant Professor	14	34.1
Non-Academic Staff	7	17.1
Academic Associate	7	17.1
Academic Counsellor	4	9.8
Others	9	2.4
Total	41	100.0

The below Table 2 and Figure 1 represent the gender wise distribution of the sample participated in the study. Among 41 university staff, majority of them were male with 82.9% participated in the present study. On the other hand, only 17.1 % were female. This shows the actual classification of male and female staff in Indian university system.

Table 2: Gender wise distribution of participants

Gender	Frequency	Percentage
Male	34	82.9
Female	7	17.1
Total	41	100.0

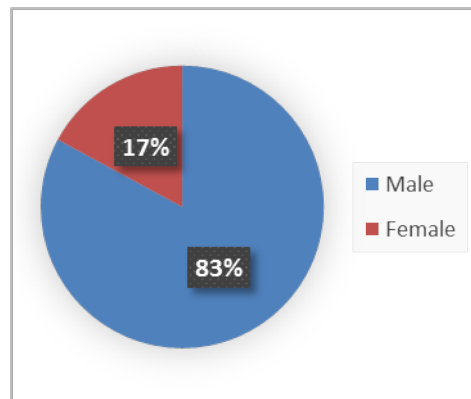


Figure 1: Graphical presentation of Gender-wise distribution

Findings of the Study

Overall Responses on Quality Assurance Toolkit

There were 10 criteria which was tested in quality assurance toolkit for ODL institutions with statements on 4-point scale. The scale comprised never (0), rarely (1), sometimes (2) and always (3).

Table 3 and Figure 2 present the overall response of participants on quality assurance toolkit. As discussed before, there were ten key criteria for improving and assuring quality of teaching and learning in an ODL institution. These criteria are leadership and governance, program or course design, courseware or material development, learner admission and enrolment, learner support, evaluation process, infrastructural facilities, output or outcome quality, human resource and ambience of research in the institution.

During the workshop, the participants' responses on above separate criteria were analysed to have a complete representation. Interestingly, overall they marked UoU's quality improvement and assurance statements between 'sometimes' and 'always'. Program or course design represents the highest mean with 2.48 showcasing high quality course designing and presenting to learners. As the quality of program or course design is effective, learner admission and enrolment also get impacted (Mean = 2.45). Similarly, evaluation process also shows average to high quality with 2.41 mean value. In terms of courseware on material development for various programs of the university, the mean was reported to be 2.39. It correspondingly embodies better quality of learning materials. On the other hand, the technical and other infrastructure facilities (Mean = 2.33), leadership and governance system (Mean = 2.30), human resources (Mean = 2.29) and learner support system (Mean = 2.25) at the university presented adequate quality but with possibility of improvement in future. The ambience of research (Mean = 2.17) and overall outcome quality (Mean = 2.04) of UoU are required to be improved as it

is reported sometimes adequate, not always. Thus, the university have scope for providing and engaging in quality research and other academic inputs to get best output quality. Finally, it was found that there can be opportunities in improving and assuring quality of above ten criteria with core focus on human resources, learners support, ambience of research and the overall output quality of the university. The figure 2 displays the graphical presentation of all ten criteria in descending order based on quality assurance toolkit.

Table 3: Overall Participants' responses on Quality Assurance Toolkit

Sr. No.	Criteria of Quality Assurance Toolkit	Mean
1.	Programme / Course Design	2.48
2.	Learners Admission and Enrolment	2.45
3.	Evaluation Process	2.41
4.	Courseware / Material Development	2.39
5.	Infrastructure	2.33
6.	Leadership & Governance	2.30
7.	Human Resources	2.29
8.	LearnerSupport	2.25
9.	Ambience of Research	2.17
10.	Output/Outcome Quality	2.04

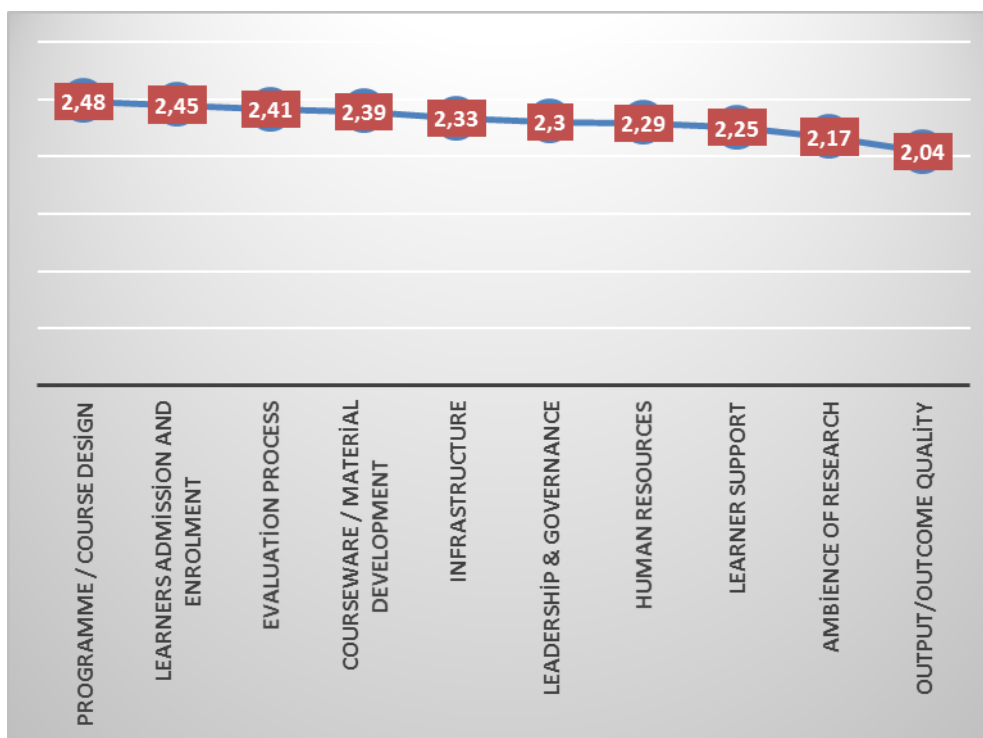


Figure 2: Criteria-wise distribution of Mean on Quality Assurance toolkit criteria

Leadership and Governance

As shown in Table 4, one of the standards to explore quality in any higher education institution specially ODL institutions functioning, leadership and governance play a significant role. It was reported that most of the participants accepted the continuous availability of a separate Internal Quality Assurance Cell (IQAC)/ Quality Management Department in Uttarakhand Open University for monitoring the overall quality of institutional operations (Mean = 2.902; SD = 1.98). They agreed that the top management and academic leaders of the university are accountable for quality assurance and improvement (Mean = 2.463; SD = 0.67) and workout to promote the quality culture in the university (Mean = 2.415; SD = 0.77). Therefore, the set goals of the university are demarcated within the arena of vision and mission of the university (Mean = 2.439; SD = 0.54) to integrate quality issues with the overall strategic planning of the university (Mean = 2.317; SD = 0.60). Notably, they reported that sometimes, the administrative and academic authority of UoU practice eGovernance measures to monitor overall performance (Mean = 2.171; SD = 0.73) and communicate with different stakeholders to get instant feedback on quality of facilities (Mean = 2.146; SD = 0.79). Further, it was found that appropriate physical and financial resources are occasionally provided for quality assurance and improvement (Mean = 2.073; SD = 0.78). Moreover, Quality manual with checklist, troubleshooting list, Standard Operating

Procedures (SOP) are infrequently developed and communicated to internal stakeholders (Mean = 1.805; SD = 0.95).

Table 4: Participants' responses on Leadership & Governance

S.No.	Items related to Leadership & Governance	N	Range	Mean	Std. Deviation
1.	There exists a separate Internal Quality Assurance Cell (IQAC)/ Quality Management Department in the institution which monitors the overall quality of operations.	41	10.0	2.902	1.9850
2.	Top Management and Academic Leaders of institution own responsibility for quality assurance and quality improvement.	41	3.0	2.463	.6744
3.	Institutional goals are specifically delineated and are in conformance with vision and mission of organization.	41	2.0	2.439	.5499
4.	Top management promotes quality culture in the institution.	41	3.0	2.415	.7738
5.	Quality issues are integrated with the overall strategic planning of the institution.	41	2.0	2.317	.6099
6.	E-Governance measures are used to monitor overall performance including quality related issues.	41	2.0	2.171	.7383
7.	Top management and Academic Leaders communicate on a regular basis with different stakeholders of the institution to get instant feedback on the quality of services.	41	3.0	2.146	.7925
8.	Adequate resources (Physical and Financial) are made available for Quality Assurance and Improvement.	41	2.0	2.073	.7871
9.	Quality manual with checklist, troubleshooting list, Standard Operating Procedures (SOP) is developed and properly communicated to internal stakeholders.	41	3.0	1.805	.9545

Program/Course Design

The Table 5 shown below represent the perspective of UoU staff towards their program and course design. They reported that the courses and programmes offered in the university are designed with well coordination and collaboration within the system and with external academic and industry experts (Mean = 2.634; SD = 0.69) with sound rationale and justification for offering various courses in distance blended and e-Learning mode (Mean = 2.659; SD = 1.45). The courses' objectives, outcome activities, assignments etc. are properly articulated and well aligned with each other (Mean = 2.610; SD = 0.58) to meet the needs of learners for gaining knowledge developing skills and make them better citizens (Mean = 2.488; SD = 0.59). The respondents found that the courses identify its need and prepare assessment exercise before contemplating to launch any new program. (Mean = 2.463; SD = 0.59). From time to time, it was found that the external stakeholders such a society, industry, alumni and parents are involved in program design to make it more systematic and sequential approach (Mean = 2.317; SD = 0.68). With well-designed courses or programmes, the UoU staff also reported that national skill qualification framework of India is followed occasionally while designing the learning outcomes of the programs (Mean = 2.268; SD = 0.63).

Table 5: Participants' responses on Programme / Course Design

S. No.	Items related to Programme / Course Design	N	Range	Mean	Std. Deviation
1.	There is a sound rationale and justification for offering distance/ blended/eLearning programmes.	41	10.0	2.659	1.4596
2.	The programme design process is well coordinated within the system with co-option of some external academic and industry experts.	41	3.0	2.634	.6984
3.	Programme/Course objectives, outcome, activities and assignments are properly articulated and well aligned with each other.	41	2.0	2.610	.5864
4.	The programme is capable of meeting the needs of learners to gain knowledge, develop skills and make them better citizens.	41	2.0	2.488	.5967
5.	Need identification and assessment exercise has taken place before contemplating to launch any new programme.	41	2.0	2.463	.5957
6.	The programme/ courses are periodically updated to	41	3.0	2.439	.6726

	keep pace with dynamically changing environment.				
7.	Programme design is done following a systematic and sequential approach in which views of external stakeholders such as society, industry, alumni and parents are collected and collated.	41	2.0	2.317	.6870
8.	Learning outcomes of programme are well designed and are in conformance with National Skill Qualification Framework of respective country of origin of programme.	41	2.0	2.268	.6334

Courseware/Material Development

After designing courses and programmes, courseware as well as material development is essential as shown in Table 6. It is supported by the respondents that teaching staff of UoU continuously gets trainings for designing and documenting self-Instructional Materials, Self-Learning Material and eContents (Mean = 2.756; SD = 1.44). With the training, sometimes, detailed material development manuals are used to develop the courseware and materials (Mean = 2.488; SD = 0.59) with continuous support of outside experts (Mean = 2.634; SD = 0.48) ensuring the quality with reviewing the content, format and language before delivering the course (Mean = 2.561; SD = 0.59). The courses are digitalised and available on website most of the times (Mean = 2.512; SD = 0.63). As the courses are developed with the support of trained UoU staff and external experts, appropriate instructional design is safeguarded to achieve the intended learning outcomes (Mean = 2.463; SD = 0.59). The respondents found that some of the courseware are packaged with adequate mix of print, audio and video, Open Educational resources (OERs) and Massive Open Online Courses (MOOCs) to make it more dynamic (Mean = 2.341; SD = 0.72). However, it was reported that anti plagiarism test was applied only occasionally (Mean = 2.171; SD = 0.70). On the other hand, it is to be noted that OERs and MOOCs are occasionally integrated in some of the selected courseware with encouraging the learners to use the same (Mean = 2; SD = 0.77). However, the academic courses are sometimes launched before developing the entire duration of the program (Mean = 2.049; SD = 0.77).

Table 6: Participants' responses on Courseware / Material Development

S. No.	Items related to Courseware / Material Development	N	Range	Mean	Std. Deviation
1.	Teaching staff is given training for designing and documenting Self- Instructional Material (SIM), Self-Learning Material (SLM) and E-Contents.	41	10.0	2.756	1.4453
2.	Services of outside expert are utilized for Courseware/Material Development	41	1.0	2.634	.4877
3.	Quality of study material is properly reviewed before delivering it to the learner by the content, format and language editor.	41	2.0	2.561	.5937
4.	The Institution has digitized the course material which is available on its website.	41	2.0	2.512	.6373
5.	The detailed material development manual is prepared which is strictly followed by the experts.	41	2.0	2.488	.5967
6.	The development of learning material is based on sound instructional designs and is fully capable of achieving the intended learning outcomes.	41	2.0	2.463	.5957
7.	The courseware is adequately packaged with right mix of study material (Print, Audio & Video), E-contents, Open Education Resources (OER) and MOOCs.	41	3.0	2.341	.7283
8.	Anti-Plagiarism test on the material is carried out to avoid giving substandard material to the learner.	41	2.0	2.171	.7036
9.	Academic programs are implemented only after all materials (print and online) have been developed for the entire duration of the programme.	41	3.0	2.049	.7730

10.	Open Education Resources (OER) and Massive Open Online Courses (MOOC) are properly integrated in Courseware/Material Development and learners are encouraged to use the same.	41	3.0	2.000	.7746
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Learner Admission and Enrolment

When the courses are designed and study & related materials are prepared, the programmes are open for admissions and enrolment for the learners. In Table 7, the respondents reported their perspectives on learner admission and enrolment in various courses offered inUoU. it was found that the students can enrol themselves online, and facilities such as lateral entry, vertical mobility and flexibility in choice of courses are available to them at all times (Mean = 2.585; SD = 0.70). Generally, the learners are enrolled from diverse background (Mean = 2.512; SD = 0.63) as the university undertakes various promotional activities (Mean = 2.415; SD = 0.77)and provide adequate information about the course to the prospective group of learners (Mean = 2.390; SD = 0.77). Notably, it was reported that the quality policy of UoUoccasionally provides objectivity and transparency in students' admissions (Mean = 2.390; SD = 0.77).

Table 7: Participants' responses on Learners Admission and Enrolment

S. No.	Items related to Learner Admission and Enrolment	N	Range	Mean	Std. Deviation
1.	The Institution has provision for Online admission/ Lateral Entry/ Vertical mobility/ Flexibility in choice of courses.	41	3.0	2.585	.7062
2.	The Institution reaches out to the diversified learner groups viz. Women/Disabled/Disadvantaged/Minority/Jail inmates.	41	3.0	2.512	.6373
3.	Promotional activities are undertaken by the institution to reach the target groups.	41	3.0	2.415	.7738
4.	Information about the programmes offered is provided to the prospective group of learners.	41	3.0	2.390	.7707
5.	Full objectivity and transparency in students' admission which is guided by Quality Policy.	41	3.0	2.390	.7707

Learner Support

After enrolment of the students in the university, learners support is an important task. Table 8 reveals the respondents' observation towards the learners' support provided in UoU. It was reported that academic calendar, time table, and exam schedule are always properly communicated to the learners in timely manner (Mean = 2.610; SD = 0.62) using well prepared database of learners which helps in facilitating the learner's progression in the respective course (Mean = 2.585; SD = 0.66). In addition, different geographical locations and far-off places are most of the time covered by efficient and convenient registration system for the learners (Mean = 2.366; SD = 0.69). Sometimes, the guidance and counselling sessions are also conducted for disseminating information to the dispersed learners of the University (Mean = 2.366; SD = 0.66). Notably, the students' handbook or program guide are made available most of the time to all enrolled learners (Mean = 2.341; SD = 0.76). This was not possible for the university to always strictly adhere their schedule (Mean = 2.268; SD = 0.70), keep the learner tracking system (Mean = 2.268; SD = 0.67), use ICT tools and techniques to connect the learner and offer helpline services (Mean = 2.195; SD = 0.67), offer comprehensive and timely feedback on assignments through counselling and problem solving sessions (Mean = 2.171; SD = 0.77), improve learners support services to enrol a large number of students (Mean = 2.146; SD = 1.68), train study centre staff for better learner support (Mean = 2.073; SD = 1.66), conduct induction programs for new learners (Mean = 1.976; SD = 0.72), use learner satisfaction service survey for quality enhancement based on recommendations of students of the university (Mean = 1.951; SD = 0.89).

Table 8: Participants' responses on Learner Support

S. No.	Items related to Learner Support	N	Range	Mean	Std. Deviation
1.	Proper communication takes place with learners regarding academic calendar, time table, exam schedule well in time.	41	2.0	2.610	.6276
2.	Database of learners and their profile has been prepared which is used to provide appropriate support and facilitate his/her progression in the programme.	41	3.0	2.585	.6699
3.	The registration system is efficient and convenient for learners	41	3.0	2.366	.6984

	located in different geographic locations.				
4.	The Institution has provisions for informing, advising; counselling for its dispersed learners.	41	3.0	2.366	.6617
5.	Student Hand Book/ Programme Guide is made available to all the enrolled learners.	41	3.0	2.341	.7619
6.	The Institution strictly adheres to their schedule to minimize distress among learners.	41	3.0	2.268	.7080
7.	Learner tracking system is in place to help the learner complete the course in time and also to reduce dropout rate.	41	2.0	2.268	.6717
8.	Information technology tools and techniques are used to connect with learners (MOODLE/ MOOC platforms) and to offer helpline services to them.	41	2.0	2.195	.6790
9.	Teaching staff provide comprehensive and timely feedback on assignment to student and are available for counselling and problem solving.	41	3.0	2.171	.7714
10.	Learner support services are improved/increased with increasing numbers of students enrolled.	41	11.0	2.146	1.6817
11.	Study center staff is given proper training to make them more proficient in learner support.	41	11.0	2.073	1.6642
12.	The Institution organises Induction Programme for its new learners.	41	3.0	1.976	.7241
13.	Learner satisfaction survey is conducted on a regular basis and amendments in the system are made based on unanimous recommendations of learner / students' community.	41	3.0	1.951	.8931

Evaluation Process

Table 9 reported the UoU staff responses on evaluation process practiced in the university. They reported that objectivity and authenticity are always practiced in evaluation process (Mean = 2.732; SD = 1.44) moderating all forms of assessment with the approval of competent authority (Mean = 2.537; SD = 0.63). To ensure aptevaluation, the model question papers with answers are provided to the learners on institutional website (Mean = 2.537; SD = 1.55). It was found that the evaluation process is based on to test knowledge and skills as per particular course objective and intended learning outcome in which the learners are enrolled (Mean = 2.512; SD = 0.77). Most of the time, the suitable weightage is given to continuous assessment and term end exam (Mean = 2.463; SD = 0.74) and exam process is completed on time without any error (Mean = 2.439; SD = 0.67). Sometimes, the systematic examination process is applied for preparation of question paper and evaluation of answer books (Mean = 2.341; SD = 0.91). The respondents observed that it is difficult for the university to always integrate latest technological development to regularly update evaluation process (2.317; SD = 0.75), use anti-plagiarism software for evaluating project reports dissertation and assignments (Mean = 2.220; SD = 0.82) and give proper feedback to learners' internal assignment paper (Mean = 2.073; SD = 0.90) all the time.

Table 9: Participants' responses on Evaluation Process

S. No.	Items related to Evaluation Process	N	Range	Mean	Std. Deviation
1.	There is provision for full objectivity and authenticity in the evaluation process.	41	10.0	2.732	1.4496
2.	Moderation of all forms of assessment is done by the institution with the approval of competent authority.	41	2.0	2.537	.6363
3.	Model question papers and answers are made available to the learners through institutional website.	41	11.0	2.537	1.5508
4.	The evaluation mechanism is properly developed to test the student knowledge and skills as per the programme/course objective and intended learning outcomes.	41	3.0	2.512	.7785
5.	There is a proper mix of continuous assessment and Term End Exam (TEE) in the evaluation progress with appropriate weightage.	41	3.0	2.463	.7449
6.	The evaluation is done in a timely manner and is error free i.e. the result is published within the time frame through website.	41	3.0	2.439	.6726
7.	A systematic pre examination process is followed for preparation	41	3.0	2.341	.9113

	of question papers and evaluation of answer books.				
8.	The evaluation process is regularly updated and latest technological development is integrated with it.	41	3.0	2.317	.7563
9.	Institution uses anti plagiarism software for project reports, dissertations etc.	41	3.0	2.220	.8220
10.	Learner is given proper feedback in terms of their internal assignments paper.	41	3.0	2.073	.9053

Infrastructural Facilities

As shown in Table 10, the respondents revealed that UoU has proper plans to invest in infra structural facilities to keep pace with the growth in student enrolment (Mean = 2.634; SD = 1.49). The University has appropriate technology based infrastructural facilities to support learners to conduct examination, keep record of the students (Mean = 2.585; SD = 0.70), and provide overall academic programs through distance mode (Mean = 2.537; SD = 0.71). Therefore, they are capable to co-ordinate and monitor the rolling out of academic programs (Mean = 2.366; SD = 0.79). Due to diverse geographical locations, the communication between head office and distance Education centre cannot be managed always (Mean = 2.366; SD = 0.73). The University provide adequate learning resources through stocked and virtual library facilities including e journals and e resources (Mean = 2.268; SD = 1.58). Sometimes, students at remote areas gets connected through teleconferencing and videoconferencing (Mean = 2.244; SD = 0.73). Some of the study centres under university has management and maintenance system of equipment (Mean = 2.220; SD = 0.82), facilities for recording studios photography equipment, editing facilities etc to enable learning management system (Mean = 2.171; SD = 0.80), and a system to assess the usability of infrastructure resources (Mean = 2.146; SD = 0.57). The university headquarter and some study centres provide facilities of counselling room and library occasionally (Mean = 2.098; SD = 0.83).

Table 10: Participants' responses on Infrastructure

S. No.	Items related to Infrastructure	N	Range	Mean	Std. Deviation
1.	The Institution has plans to invest in Infrastructural facilities to keep pace with the growth in student enrolment.	41	10.0	2.634	1.4959
2.	The institution uses appropriate technology for effective institutional functioning like learner support, examination processing and student records.	41	3.0	2.585	.7062
3.	The Institution has adequate and appropriate infrastructure facilities to conduct academics programme through open end distance learning.	41	2.0	2.537	.7105
4.	Distance education centres have capacity to coordinate and monitor the rolling out of academic programmes.	41	3.0	2.366	.7986
5.	There is an efficient communication system between head office and distance education centre located in different locations.	41	2.0	2.366	.7334
6.	The institution has well stocked and virtual library with adequate learning resource to offer access to eJournals and eResources through different repositories.	41	11.0	2.268	1.5815
7.	There is a provision of tele-conferencing and video conferencing of distance learners located in the remote areas.	41	2.0	2.244	.7342
8.	The institution has an effective system for the management and maintenance of equipments.	41	3.0	2.220	.8220
9.	The institution has state of art infrastructure for developing eContents such as recording studios, photography equipment, editing facilities etc. to enable the Learning Management System (LMS) of the Institute.	41	3.0	2.171	.8032
10.	The institution has a system to assess the usability of infrastructure resources/facilities by the learner.	41	2.0	2.146	.5728
11.	There are proper infrastructure facilities for counselling rooms, library etc. at study center and headquarter.	41	3.0	2.098	.8308

Output / Outcome Quality

Apart from leadership to infrastructure the final outcome quality remains important for the success of any institution. Therefore, table 11 represents the responses of participants on output and outcome quality of the

university. It is reported that the graduates from UoU are always employable and skilled enough to meet the expectation of the industry and society (Mean = 2.610; SD = 2.01). The sample reported that one of the aspects to ensure quality of UoU is to assess its graduates in terms of accomplished expected learning outcomes (Mean = 2.220; SD = 0.65). The alumni meet is organised occasionally to support existing learners (Mean = 2.146; SD = 0.65). In addition, the university conduct placement (Mean = 1.659; SD = 0.79) and entrepreneurship development programs infrequently to provide employment to the students including start-ups (Mean = 1.610; SD = 0.77).

Table 11: Participants' responses on Output/Outcome Quality

S. No.	Items related to Output/Outcome quality	N	Range	Mean	Std. Deviation
1.	The graduates of Open and Distance Learning (ODL) institution are employable; capable of meeting the expectations of the industry, society and their country.	41	11.0	2.610	2.0109
2.	Quality of Graduates of an open and distance learning (ODL) institution is assessed in terms of accomplishment of expected learning outcomes.	41	2.0	2.220	.6524
3.	Alumni meet are organized to realize the full potential of alumni support for existing learners and ODL institutions.	41	2.0	2.146	.6543
4.	Placement support is provided to the learners who are in the final stages of their academic programs.	41	3.0	1.659	.7940
5.	Entrepreneurship development camps/programmes are organized to sensitize those learners who want to establish their start up projects.	41	3.0	1.610	.7707

Human Resources

Table 12 shows the responses related to human resources. It was found that most of the time the academic and support staff at UoU are selected in an objective and transparent way (Mean = 2.537; SD = 0.71) having appropriate qualification and exposure in the field of distance education with M.Phil. or PhD (Mean = 2.463; SD = 0.63) for an effective distance mode delivery of services. The training to use latest technological resources including learning management system are provided occasionally to the staff members (Mean = 2.390; SD = 0.73). Sometimes, they are promoted on the basis of better performance appraisal with experience of independent learning and research in the field of ODL including publication and community outreach activities (Mean = 2.317; SD = 0.64). In UoU, optimal mix of youth and experience in both teaching and non-teaching staff is sporadically found (Mean = 2.220; SD = 0.75). Occasionally, staff members are motivated (Mean = 2.171; SD = 0.62) as appropriate ratio of teaching and non-teaching staff are not found always (Mean = 1.976; SD = 1.69).

Table 12: Participants' responses on Human Resources

S. No.	Items related to Human Resource	N	Range	Mean	Std. Deviation
1.	The recruitment and selection policy procedures ensure that the most qualified, experienced and high caliber academic and support staff members are recruited in an objective and transparent way for an open, flexible and distance mode of delivery.	41	3.0	2.537	.7105
2.	The staff members are recruited who are having qualification/exposure in the field of distance education and are having M.Phil/PhD qualification.]	41	2.0	2.463	.6363
3.	Staff is given training to use the latest technological resources including Learning Management System.]	41	3.0	2.390	.7375
4.	The promotion criteria for academic staff are based on a performance appraisal system, and are focused on a wide range of factors, including materials development to enhance independent learning, research that is linked to ODL practice as well as publications and community outreach activities.	41	2.0	2.317	.6496
5.	There is an optimal mix of youth and experience in both teaching and non-teaching staff.	41	2.0	2.220	.7587
6.	Staff is well motivated. Provision exists for career progression and staff development.	41	3.0	2.171	.6286
7.	The ratio of teaching and Non-teaching staff is proper and well maintained so that lop-sidedness does not occur.	41	11.0	1.976	1.6954

Ambience of Research

Besides teaching and learning, research is an important criterion for quality insurance of an ODL institution. As presented in table 13, the university frequently organises seminars and conferences on recent technological developments such as OER MOOCs MOODLE etc (Mean = 2.512; SD = 0.71). On the other hand, the faculty members are regularly encouraged to publish research papers and books (Mean = 2.488; SD = 0.84). Sometimes, the university collaborates with national and international organisations for promoting research and faculty exchange programs (Mean = 2.195; SD = 0.71) where the faculty members mobilise their research resources and participate in sponsored research projects (Mean = 2.049; SD = 0.83). Some of the faculty members infrequently carry out research activities with sufficient resources provided by the university (Mean = 2; SD = 0.77) and motivated to undertake consultancy projects as well (Mean = 1.780; SD = 1.12).

Table 13: Participants' responses on Ambience of Research

S. No.	Items related to Ambience for Research	N	Range	Mean	Std. Deviation
1.	The institution organises seminars/conferences on contemporary issues like OER, MOOCs, MOODLE etc.	41	3.0	2.512	.7114
2.	Faculty members are encouraged to publish research papers and books having ISSN and ISBN respectively.	41	3.0	2.488	.8403
3.	The institution collaborates with national and international institutions for promoting research and faculty exchange programme.	41	3.0	2.195	.7148
4.	Faculty members are encouraged to mobilize the resources for research through participation in sponsored research projects.	41	3.0	2.049	.8352
5.	Sufficient resources are made available for faculty members to carry out research activities.	41	3.0	2.000	.7746
6.	Faculty members are encouraged to undertake consultancy projects.	41	3.0	1.780	1.1294

Other Quality Assurance Factors

Apart from above ten key factors, there were other factors related to quality improvement and assurance responded by the participants with 'yes' or 'no'. There is a separate IQAC or quality management department in UoU as reported by 82.9 % of the respondents. On the other hand, 17% refused the same (Figure 3). Furthermore among 41 respondents, 78% found that quality management team has direct access to the top management while 22% respondents declined the same (See Figure 4).

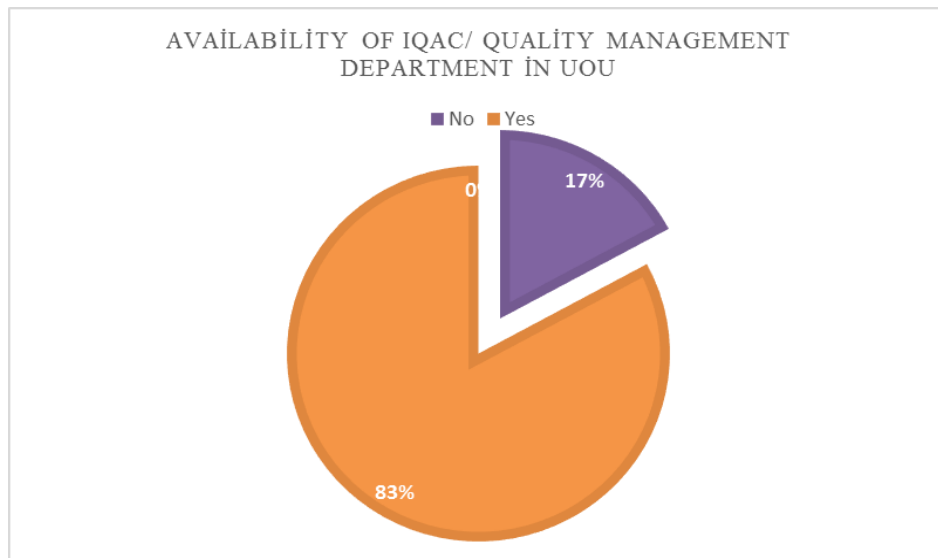


Figure 3: Responses on Availability of IQAC/Quality Management Department in UoU

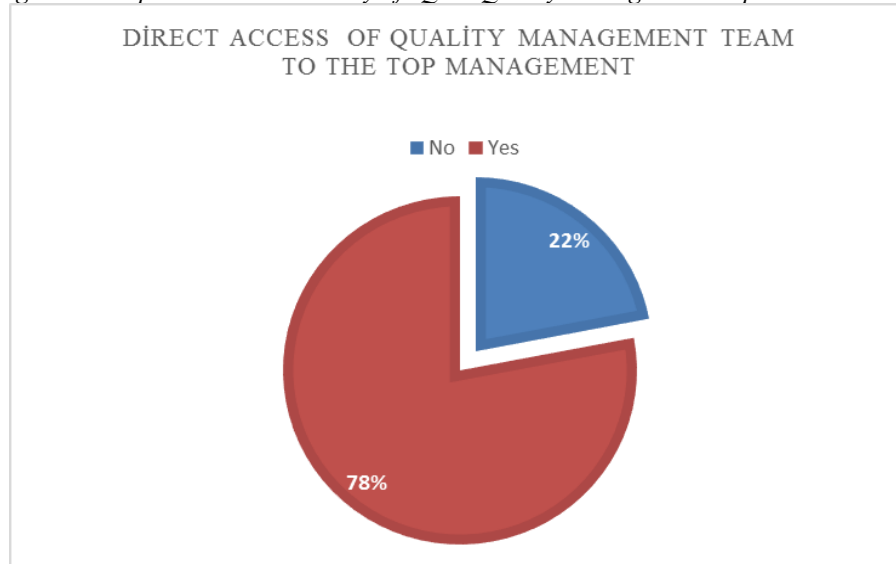


Figure 4: Responses on Quality Management team's Direct Access to the Top Management

As shown in Figure 5, more than 85% of the respondents reported that the recommendations by quality management team of UOU are seriously considered and implemented by academic council / executive council / board of management of the University.

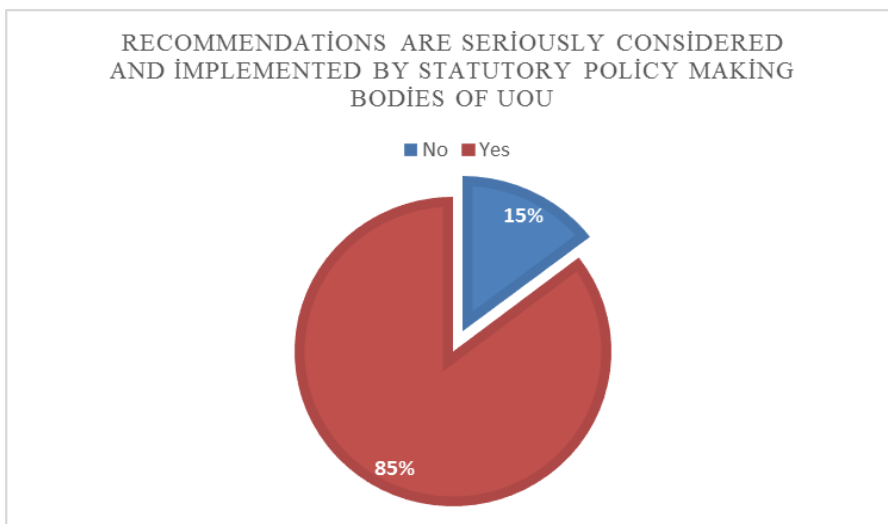


Figure 5: Responses on Implementation of Recommendations by Statutory Policy Making Bodies of UoU

Figure 6 refer that about two third of the respondents (63.4 %)rejected that the university prepare quality assurance policies and processes in the form of quality manual and 61 % said ‘no’ to its circulation to the relevant staff (Figure 7). On the other hand, more than one third of them (36.6 % and 39% respectively) accepted the above (Figure 6 & 7).

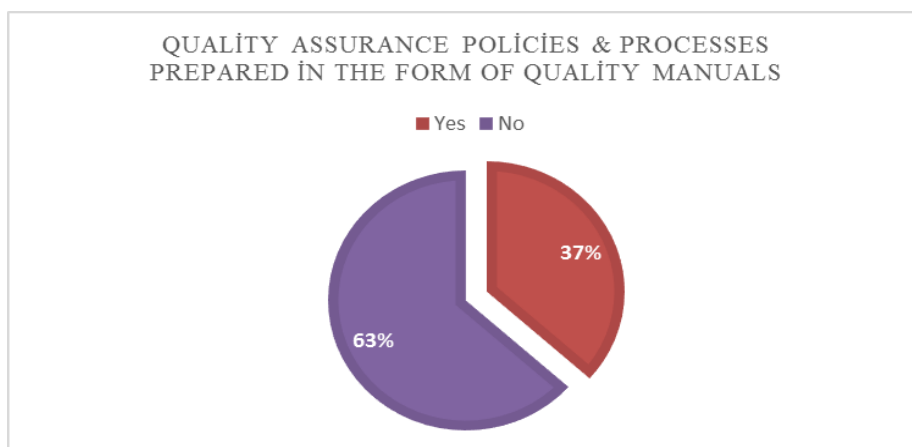


Figure 6: Responses on Preparation of Quality Assurance Policies & Processes

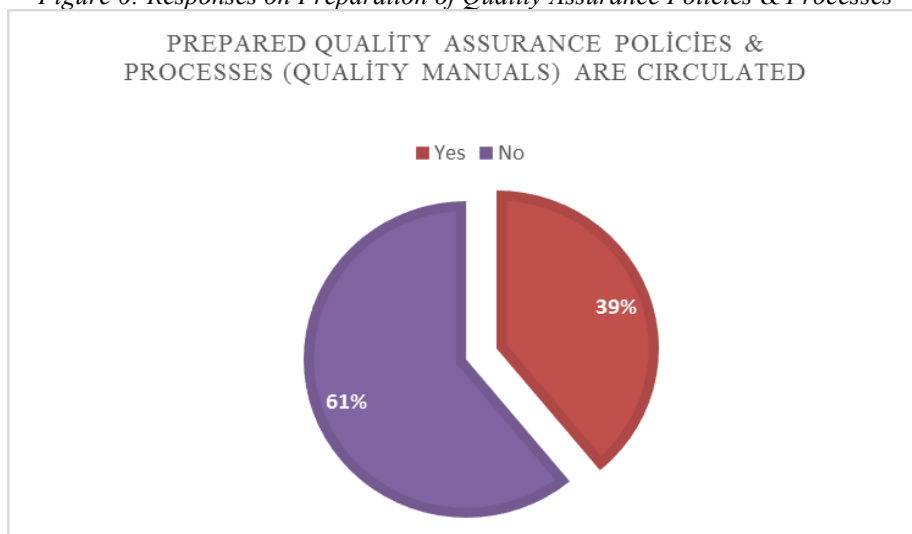


Figure 7: Responses on Circulation of prepared Quality Assurance Policies & Processes

Figure 8 presents that majority of the respondents with 78% revealed that their institution ‘UOU’ is not certified and accredited by external agencies such as NAAC or international accreditations agencies.

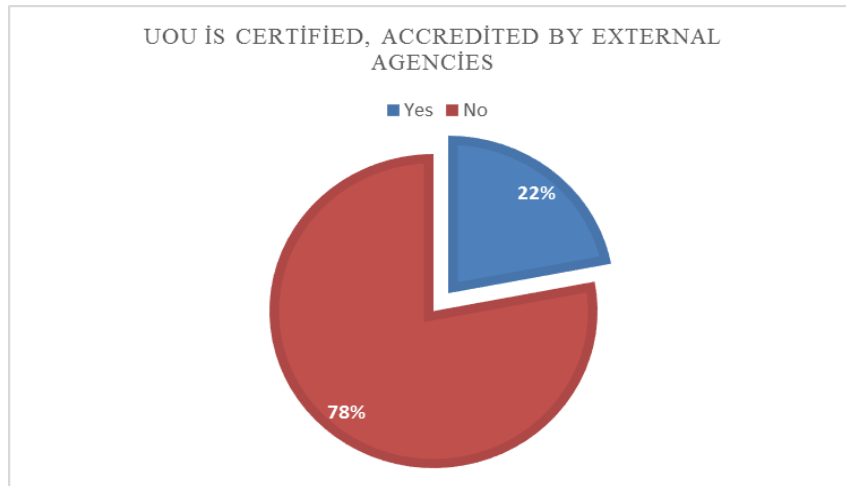


Figure 8: Responses on Certification, Accreditation of UoU by External Agencies

Moreover, they accepted with majority of 90% that they have an appropriate student helpline for grievance redressal mechanism and proper students feedback mechanism for helping students in their institution as shown in figure 9 and 10.

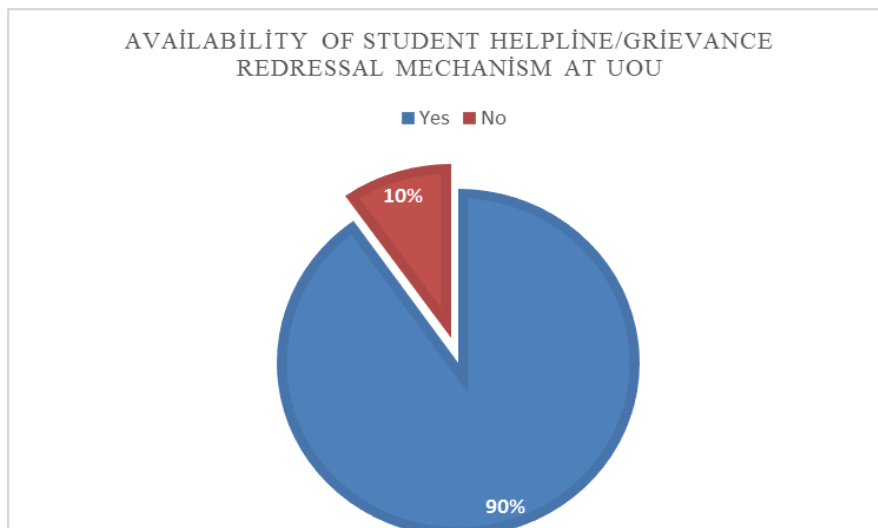


Figure 9: Responses on Availability of Student Helpline/Grievance Redressal Mechanism at UoU

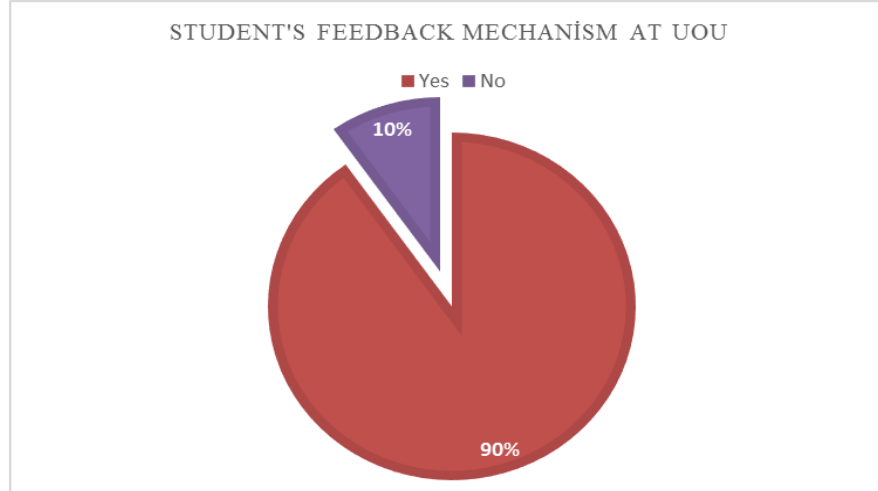


Figure 10: Responses on Availability of Student's Feedback Mechanism at UoU

Figure 11 shows that third fourth of the respondents with 73.2 %were satisfied with the overall quality of their institution and its academic programs as an ODL institution, while rest of the respondents (26.8%) were not satisfied with the same.

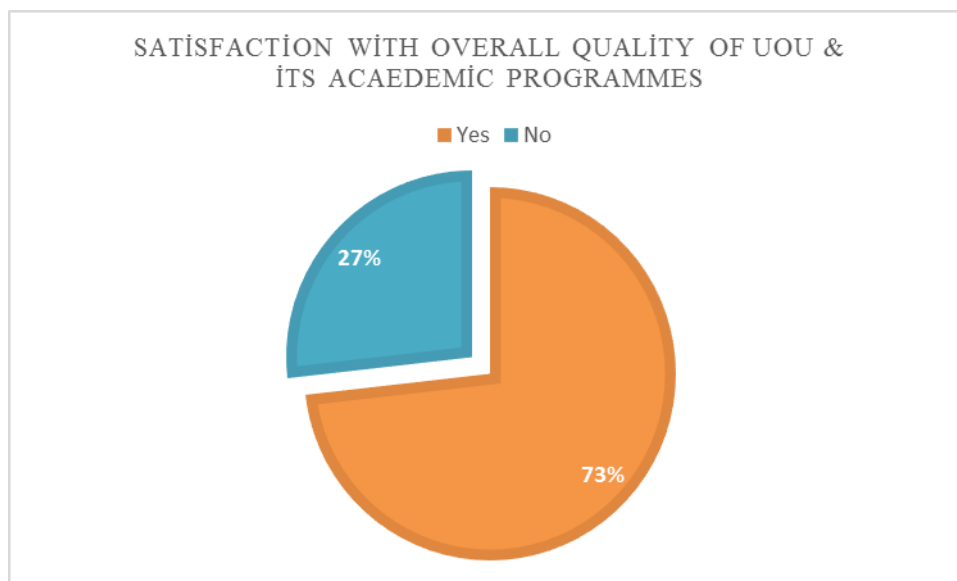


Figure 11: Respondent's Satisfaction with overall Quality of UoU & its Academic Programmes

Conclusion

Overall, the in-house respondents of UoU marked the statements related to quality improvement and assurance of their university largely between 'sometimes' and 'always'. According to the findings, program or course design represents the highest quality. As a result, learner admissions, enrolments, evaluation process, and courseware development are revealed to be positively impacted. In spite of better course design, high enrolments, adequate evaluation process and effective material development, the technical and other infrastructure facilities, leadership and governance system, human resources and learner support system at the university presented high possibility of improvement in future. In addition, the ambience of research is not always appropriate. Consequently, the factors above affect the overall outcome quality of the university.

Majority of the respondents supported the measures taken by top management for overall quality assurance and enhancement of UoU. They found that the courses offered by UoU are based on proper rationale and justification incorporating well framed objectives, learning outcome, activities, assignments, and assessment with coordinated expertise of internal as well as external professionals.

Overall, it was reported that the university is making efforts to train their staff continuously for maintaining the quality of courseware, utilising support of external experts, digitising the courses, integrating technology to present study materials, and offering the courseware with intended learning outcomes. At the same time, the university provides opportunity and practise promotional activities for students from diverse backgrounds to get enrolled online in various courses with anytime, anywhere flexibility.

Overall, the university support the learners with easy and flexible registration system, timely communicating time table, academic calendar, exam schedule etc. In terms of evaluation process, UoU has objective, transparent and authentic system. It supports the learners with appropriate model test papers online before the exam. On the other hand, the technology use and continuous feedback to the learners are reported to remain unmanageable at all times.

UoU has proper plans to invest in infrastructural facilities to keep pace with the growth in student enrolment. It has apt technology to support learners to conduct examination, keep record of the students, and provide its programs through distance mode.

It is reported that the pass outs from UoU are always adequately employable and skilled. For the same, the university conducts irregular placement and entrepreneurship development programs. It has to ensure quality in terms of accomplishing expected learning outcomes.

In terms of human resources, it was found that most of the time, the academic and support staff at UoU are selected in an objective and transparent way. They have appropriate qualification and exposure in the field of

distance education. Nevertheless, the university provide occasional training to them on latest technological resources.

Although, UoU frequently organises seminars and conferences on recent technological developments and the faculty members are encouraged to publish research papers and books, the overall ambience of research at the university is not apt.

Interestingly, there is a separate quality management department in UoU and it has direct access to the top management. It is noted that the recommendations by above-mentioned quality management team are seriously considered and implemented by academic council / executive council / board of management of the University. On the other hand, the university has to prepare and circulate the quality assurance policies and processes as it is not certified and accredited by external agencies such as NAAC or international accreditations agencies. Moreover, they have an appropriate student helpline for grievance redressal mechanism and proper students feedback mechanism for helping students in their institution. It is stimulating to find that academic and other staff of UoU were satisfied with the overall quality of their institution and its academic programs as an ODL institution.

Recommendations

Based on findings of the present study, the following points are recommended for quality improvement and assurance in UoU:

- There can be opportunities for quality assurance with core focus on improving and ensure valuable human resources, learners support, ambience of research and the overall output quality of the university.
- The university has scope for providing facilities to engage in quality research.
- Academic and administrative inputs can be employed to get best output quality.
- Appropriate physical and financial resources need to be allocated.
- It is the need of hour to develop specific quality manuals and procedures with checklist, troubleshooting list, Standard Operating Procedures (SOP) and communicate it to staff members of the university.
- The university should involve internal stakeholders in the process of quality enhancement.
- Adequate services should be provided to all the learners in spite of diverse geographical and other limitations. Technological advancement may be useful in this regard.
- The university should frequently collaborate with national and international organisations for promoting research and faculty exchange programs.
- The university should provide opportunities to its faculty members to mobilise their research resources and participate in sponsored research projects.
- The faculty members should be motivated to carry out research activities more frequently with sufficient resources provided by the university. In addition, they should be encouraged to undertake consultancy projects as well.
- Learning outcomes of the offered programmes should be properly designed in validation with National Skill Qualification Framework of India.
- Programme design should be completed following a systematic and sequential approach. The views of external stakeholders such as society, industry, alumni and parents can be collected and collated.
- Anti-Plagiarism test on the material, project reports, dissertations etc. should be carried out to avoid substandard quality.
- The innovative approach of teaching and learning such as Open Education Resources (OER) and Massive Open Online Courses (MOOC) should be properly integrated in Courseware/Material Development and learners should be encouraged to use the same.
- Study center staff should be trained properly to make them more proficient in learner support.
- The Institution should organise Induction Programme for its new learners as a regular practise.
- The learners should be involved in quality assurance of the university. In this way, learner satisfaction survey should be conducted on a regular basis and amendments in the system are to be made based on unanimous recommendations of learner / students' community.
- The evaluation process should be regularly updated and latest technological development are to be integrated with it.
- As a consistent practice, Learner should be given proper feedback in terms of their internal assignments paper.
- The institution should have proper infrastructure for developing eContents such as recording studios, photography equipment, editing facilities etc. to enable the Learning Management System (LMS) of the Institute.

- The counselling rooms, library etc. at study centres and headquarter should be made available and updated regularly.
- Alumni meet should be organized annually to realize the full potential of alumni support for existing learners and ODL institutions.
- Placement support should be provided to the learners who are in the final stages of their academic programs.
- Entrepreneurship development camps/programmes should be organized to sensitize those learners who want to establish their start up projects.

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