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Cover: The crest of St. Xavier's College Mumbai., Designed in 1929 by Fr. T. Molina. Shows an eagle teaching its young ones to fly. Above it, on the left, is the emblem of the Society of Jesus which consists of the Greek initials of the name of Jesus set in a sun; on the right is a chequered moon, taken from the arms of the house of Xavier. The motto in Latin is taken from the bible and refers to the eagle who encourages (its young ones) to soar aloft.

FOREWORD

The quest for knowledge is stimulated by the spirit of inquiry. Understanding existing practices and creating alternate pedagogical approaches to address the changing needs of the teaching-learning process, is the need of the hour. This issue of XPLORE aims to debate, discuss and deliberate on innovative quality-mechanisms incorporated by teachers in their classrooms.

DISHA 2020: International Conference on Evolving Trends in Higher Education provides a platform to engage in the critical evaluation of various aspects of teaching-learning such as - bridging the gap between academia and industry, addressing needs of students with disabilities, understanding the challenges faced by millennial learners and adopting an interdisciplinary approach in the classroom. Hence, the curriculum must be re-visited to accommodate the changing demands of the new generation especially concerning the employability of the youth. Interestingly, the point of convergence of these presentations was the emphasis on the shift from the teacher-centric to the learner-centric approach.

The contributions of educationists from various disciplines, who presented their research at this conference has been compiled in this special issue of XPLORE 2020, the research-journal of St. Xavier's College, Mumbai. I sincerely hope that this exposition on innovative trends would add value to the emerging trends in higher education.

Dr Rajendra Shinde
Editor-in-Chief
and
Principal
St. Xavier's College, Mumbai

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A Comparative Study of Personality Dimensions and Academic Achievement of NCC Male Cadets and Male Sportspersons of Mumbai University

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Abstract :

Personality refers to individual differences in characteristic patterns of thinking, feeling and behaving. Academic achievement refers to a student's success in meeting short- or long-term goals in education. The Indian Parliament passed the National Cadet Corps Act in 1948. Sports are all forms of usually competitive physical activity which, through casual or organized participation, aim to use, maintain or improve physical ability and skills while providing entertainment to participants, and in some cases, spectators. Samples were selected from colleges situated in greater Mumbai, south Mumbai, north Mumbai and central Mumbai using stratified random sampling. Eysenck's Personality Questionnaire (1985) was used for components of personality. Academic achievement of the students was taken from college records. The data was collected by distributing personality questionnaire revised which consist of 90 questions related to personality (psychological variable). The scoring of completed answers sheets was done according to the method described in the handbook. Neuroticism and Extroversion is not significant in personality traits among the male Sportsperson. Neuroticism and Lie are more prominent personality traits among NCC cadets male.

Keywords: Academic Achievement, Concept of Personality, Psychological Variable, Eysenck's Personality Questionnaire.

Aim and objectives of the study

The aim and objective of the study was to compare personality dimensions and academic achievement of male NCC cadets and male Sportspersons of Mumbai University affiliated colleges.

Concept of Personality

Personality is defined as the characteristic sets of behaviors, cognitions, and emotional patterns that evolve from biological and environmental factors.

Concept of academic achievement

Academic achievement or (academic) performance is the extent to which a student, teacher or institution has achieved their short or long-term educational goals.

Concept of NCC cadets

The Indian Parliament passed the National Cadet Corps Act in 1948, thus creating the National Cadet Corps (NCC). The motto of the NCC is unity and discipline.

Concept of Sportspersons

A sportsperson can be a man or a woman who is a person trained to compete or interested in sports involving physical strength, speed or endurance.

Selection of the sample

The study included about 100 students including NCC cadets and Sportspersons. Samples were selected from Colleges situated in greater Mumbai, south Mumbai, north Mumbai and central Mumbai using stratified random sampling. Students studying in second/third year of senior colleges courses of arts, science and commerce streams were selected where the stratifying factor is the faculty of students. Thus, senior college students studying in second/third year in colleges affiliated to Mumbai University and situated in greater Mumbai were selected as the sample of the study.

Tools

The following tools were used for data collection.

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1. Personal data sheet was developed by the researcher to collect data about the name, gender and faculty, age of the student and the name of the college. It also included data about student's participation in NCC and Sports.

2. Eysenck's Personality Questionnaire (1985) was used.

3. Academic achievement of the students was taken from college records.

Method :

1. Collection of data

The data was collected by distributing personality questionnaire revised which consist of 90 questions related to personality (psychological variable). Necessary instruction was given to all subjects before answering on the standardized questionnaire of Eysenck's. One and half hours was given for filling the standardized questionnaire.

2. Scoring

The scoring of completed answers sheets was done according to the method described in the handbook of Eysenck's personality questionnaire.

Factor analysis of Sportsperson male:

		Psychoticism	Neuroticism	Extroversion	Lie
Correlation	Psychoticism	1.000	.378	-.097	-.223
	Neuroticism	.378	1.000	-.025	-.098
	Extroversion	-.097	-.025	1.000	.166
	Lie	-.223	-.098	.166	1.000
Sig.(1-tailed)	Psychoticism		.000	.118	.003
	Neuroticism	.000		.380	.117
	Extroversion	.118	.380		.021
	Lie	.003	.117	.021	

Table 1: Correlation Matrix

Total Variance Explained

		Initial Eigen values		Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.531	38.270	38.270	1.531	38.270	38.270	1.399	34.969	34.969
2	1.053	26.315	64.585	1.053	26.315	64.585	1.185	29.616	64.585
3	.818	20.457	85.042						
4	.598	14.958	100.000						

Extraction Method: Principal Components Analysis
(SPSS Software was used)

Rotated Component Matrix

	Component	
	1	2
Psychoticism	.793	-.215
Neuroticism	.837	.058
Extroversion	.091	.821
Lie	-.246	.680

Extraction Method: Principal Components Analysis
(SPSS Software was used)
Rotation Method: Varimax with Kaiser Normalization.

Sportsperson male

Rotation converged in 3 iterations.

After taking best of two highest components i.e. Neuroticism and Extroversion was taken from rotated component table, the following table was formed.

		Initial Eigen values		Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.025	51.261	51.261	1.025	51.261	51.261
2	.975	48.739	100.000			

Extraction Method: Principal Components Analysis

Sportsperson Male

Tabulated value = .325
DF = 150
Level of Significant = 0.05

Factor Analysis of NCCCadets Male:

		Psychoticism	Neuroticism	Extroversion	Lie
Correlation	Psychoticism	1.000	.360	-.249	-.340
	Neuroticism	.360	1.000	-.148	-.416
	Extroversion	-.249	-.148	1.000	.230
	Lie	-.340	-.416	.230	1.000
Sig.(1-tailed)	Psychoticism		.000	.001	.000
	Neuroticism	.000		.035	.000
	Extroversion	.001	.035		.002
	Lie	.000	.000	.002	

Table-2 Correlation matrix

Total Variance Explained

		Initial Eigen values		Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.892	47.293	47.293	1.892	47.293	47.293
2	.878	21.949	69.242			
3	.663	16.576	85.818			
4	.567	14.182	100.000			

Rotated Component Matrix

	Component
	1
Psychoticism	.726
Neuroticism	.730
Extroversion	-.518
Lie	-.751

Extraction Method: Principal Components Analysis

After taking best of two highest components i.e. Neuroticism and Lie was taken from rotated component table the following table was formed.

		Initial Eigen values		Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1.416	70.796	70.796	1.416	70.796	70.796
2	.584	29.204	100.000			

Extraction Method: Principal Components Analysis

NCC cadets male

Tabulated value = .325
DF = 150
Level of Significant = 0.05

Findings:

From Table-1, it is evident that, Cumulative percentage of all four variables i.e. Psychoticism, Neuroticism, Extroversion and Lie is 34.969%, cumulative value of Neuroticism and Lie is respectively, Neuroticism is 0.837 and Extroversion is 0.821 which is more than the tabulated value. Hence Neuroticism and Lie have shown highest correlation amongst the four variables. After considering the two highest factors among the four factors the cumulative percentage has increased from34.969% to 51.261% .Hence the two factors i.e. Neuroticism and Extroversion are effective among four factors but correlation between Neuroticism and Extroversion does not show any significant difference in personality traits among the Male NCC cadets.

From Table-2, it is evident that, Cumulative percentage of all four variables i.e. Psychoticism, Neuroticism, Extroversion and Lie is 47.293%, cumulative value of Neuroticism and Lie is respectively, Neuroticism is 0.730 and Lie is 0.751 which is more than the tabulated value. Hence Neuroticism and Lie have shown highest correlation between the four variables. After considering the two highest factors among the four factors the cumulative percentage has increased from 47.293% to 70.796%. This shows that the factors under consideration viz., Neuroticism and Lie are more prominent personality traits among NCC cadets male.

Conclusion :

From the above tables, we can conclude that Neuroticism and Extroversion are effective among the four factors but correlation between Neuroticism and Extroversion is not significant in personality traits among the male Sportsperson and that the two factors i.e. Neuroticism and Lie are effective among four factors but correlation between Neuroticism and Lie is highest, this shows that the factors under consideration viz Neuroticism and Lie are more prominent personality traits among NCC cadets male.

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Learner Perceptions on the Use of YouTube Channel Created for a Chemistry Undergraduate Course

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Abstract :

The use of ICT has revolutionized the field of education. The teaching learning process has become more vibrant and dynamic with advances in ICT. YouTube is one such ICT tool used in the teaching learning process in the 21st Century. A YouTube channel named "Inorganic Chemistry with Dr. Chitra" was created by the author in the year 2017-18. This was done to supplement the teaching learning process of an undergraduate chemistry course at Royal College of Arts, Science and Commerce affiliated to University of Mumbai. The channel has inputs by way of course related e-content developed by the author. This study carried out an analysis of learner perspectives about the significance of the YouTube channel created for supplementing the teaching learning process. The paper also gives an analysis of the user pattern of the YouTube channel across the globe. An analysis of the feedback indicates that the learners in the classroom and across the globe have benefited immensely from the content posted on the YouTube channel.

Keywords: YouTube, Online Support, Online Videos, Chemistry Education.

Introduction:

The practice of lecturing in Universities derives from medieval times and dates back to the founding of Europe's earliest Universities. (Eilks & Byers 2017). Lecturing essentially involves the process of information transfer from the teacher to the learner. The extent of learning induced in the learner by the process of lecturing however remains ambiguous. Knowledge cannot be transferred intact from the mind of one person to the mind of another (Bodner 1986). The process of knowledge transfer by the method of lecturing in a subject like chemistry does become tedious for an average learner. There is need for innovation in the teaching learning process. Ten potential areas for innovation in teaching learning chemistry have been identified by ECTN (European Chemistry Thematic Network). A detailed discussion of the areas is available in the appropriate chapter by (Eilks and Byers 2009). One of these areas include incorporation of ICT in the teaching learning process of chemistry. Computers are now omnipresent in our daily lives. Technology has entered the classroom a long time ago in the form of computers, projectors etc. The emphasis today is now more on online support and online assessment. The current study focuses on the question of how information technology and online communication (Laurillard 2002) can best support learning and assessment in higher education using a blended learning approach. Online support can be in the form of Online videos, quizzes and an alternate virtual learning environment. These include improved skills for lifelong and self-directed learning (Sormunen 2006). Online support to aid the teaching learning process can be given in the form of videos made by the teacher and hosted on global platforms like YouTube.
Duffy (2008) in his article explores the significance of online tools like YouTube in the changing scenario of higher education. Duffy (2008) informs that the learner generation wants information at their fingertips at jet speed. This requirement can be satisfied by YouTube. The cost effectiveness of YouTube is another asset. Yagci (2014) in his article refers to this feature, and mentions that another advantage of YouTube is its accessibility. Thus, it is very easy and cheap for the students to access YouTube.

There are a few studies reported in literature focusing on the YouTube channel created by the course instructor. It has been reported by Kelsen (2009) that the supplementary online tools for an English course were beneficial to the learners. In his research paper Alwehaibi (2015) has concluded that the students when given instruction by way of online support showed better progress in their course.

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The present study seeks to measure the impact of a YouTube channel created by the teacher to supplement the learning process of an undergraduate Chemistry Course. The learner perception towards the usefulness of such online support is analyzed in this paper.

Material and Methods:

A YouTube channel named "Inorganic Chemistry with Dr. Chitra" was created by the author in the academic year 2017-18. The channel had e-content in the form of videos developed by the author to supplement the USCH502 and USCH602 course of T.Y.B.Sc Chemistry program of Mumbai University. The presentations, videos, were prepared by the course instructor and were uploaded to the channel. The URL of the YouTube channel "Inorganic Chemistry with Chitra" is https://www.youtube.com/c/InorganicChemistrywithDrChitra

The learner experiences and insights on the use of YouTube videos in an undergraduate Chemistry setting at Royal College of Arts, Science and Commerce was investigated in the current study. The research was conducted with 44 learners enrolled in T.Y.B.Sc Chemistry Paper II Course in the academic years 2017-18 and 2018-19. An online survey form was created by way of Google Forms. The learners were asked to fill out the google form to record their perceptions about the benefit of the above-mentioned YouTube channel as a course supportive tool. The questions included in the Google survey form are mentioned below in a tabular form (Table No 1).

Question	Response
Name, Class, Roll No.	Appropriate Response
Gender	M/F/Others
Have you watched e-content created by the faculty on the YouTube channel Inorganic Chemistry with Dr. Chitra?	Yes/No
How will you rate the content on the channel with respect to clarity of explanation?	(Rating) 1 for Poor 2 for fair, 3 for satisfactory. 4 for good 5 for excellent
Did the content on the channel help you understand the topic in a better manner in class?	Yes/No
Were the duration of the videos adequate enough for the topics covered?	Yes/No
Did you face any problem in accessing the videos online?	Yes/No
Did the videos help you in last minute revision before the exams?	Yes/No
Give your opinion about the significance of having such e-content access in your learning process.	

Results and Discussion :

1. Engagement with learners in the classroom

The results of the survey administered to the class room learners are summarized as follows:
97.7% of the learner population have watched the online videos uploaded on the YouTube channel. 44.2% and 41.9% population have given a rating of "excellent" and "good" to the clarity of explanation of content uploaded on YouTube channel. In some cases, the videos were uploaded prior to the topic being taken up in the classroom. 88.4 % of the learner population have mentioned that watching the videos prior to the actual class room teaching have helped them to understand the topic in a better manner. 76.7% of the student population felt that the online videos available on YouTube have helped them in the last-minute revision before the exams. A question was also incorporated in the study with regard to the accessibility of the YouTube channel. 99% of the learner population have not faced any problem in accessing the channel online. The results of the analysis have been graphically represented in Figure 1 and Figure 2.

The learners were also asked to give extra comments by way of suggestions or any other feedback. Of the participants, only 24 students gave extra comments. The absence of suggestions from the remaining twenty students could indicate a general apprehension towards new learning methodologies. It could also indicate that these learners require more time to get used to such methodologies. All 24 comments with regard to the effectiveness of the YouTube channel were positive. Some learners asked for more videos to be uploaded on different topics. A learner also commented on the importance of having the e-contentaccessible online to them 24x7 in case of having missed lectures in the classroom. Some learners felt it was a good way to understand any topic at their own pace in case of their inability to understand the topic in the classroom. All the learners who have given extra comments have mentioned that the channel has been very useful to them.A disadvantage of the study is the small sample size of the learner population in the class. The engagement of the global community with the YouTube channel is discussed in the second part of the discussion.

2. Engagement with the Global Community

The presence of YouTube as a global platform has helped the author interact with the global community. A brief report is given below of the engagement of the global community with the above-mentioned YouTube Channel. The reports and comments from the global learners have been very positive. The YouTube channel has 600 subscribers as of date (4/1/2020). The channel has around 14 videos on its play list. The total watch time of the videos has been calculated to 60653 minutes. The videos have been shared 348 time. The viewer population are in the age group of 18-24 years. The majority of videos have received 100% likes. Comments from the global learners have also been positive. The e-content on the channel is essentially of the undergraduate level in chemistry. There have been suggestions from the global audience to include videos on post-graduate level topics on the channel.

Conclusion :

The author concludes with the view that the learners will benefit immensely from online support in the teaching learning process. For the above-mentioned chemistry course students have definitely benefitted from the videos. The author has also observed that the class room teaching became more interactive because of increased level of discussion in class. This was evident as a larger number of learners participated in flipped classrooms. An increased amount of classroom discussion among the learners was observed during flipped classrooms. This observation also indicates the motivational benefits of these online videos. An important finding was that the presence of online videos was making the students more autonomous. They were able to use this technology outside the classroom. The presence of online support thus signals the changing role of a teacher in a virtual learning environment.

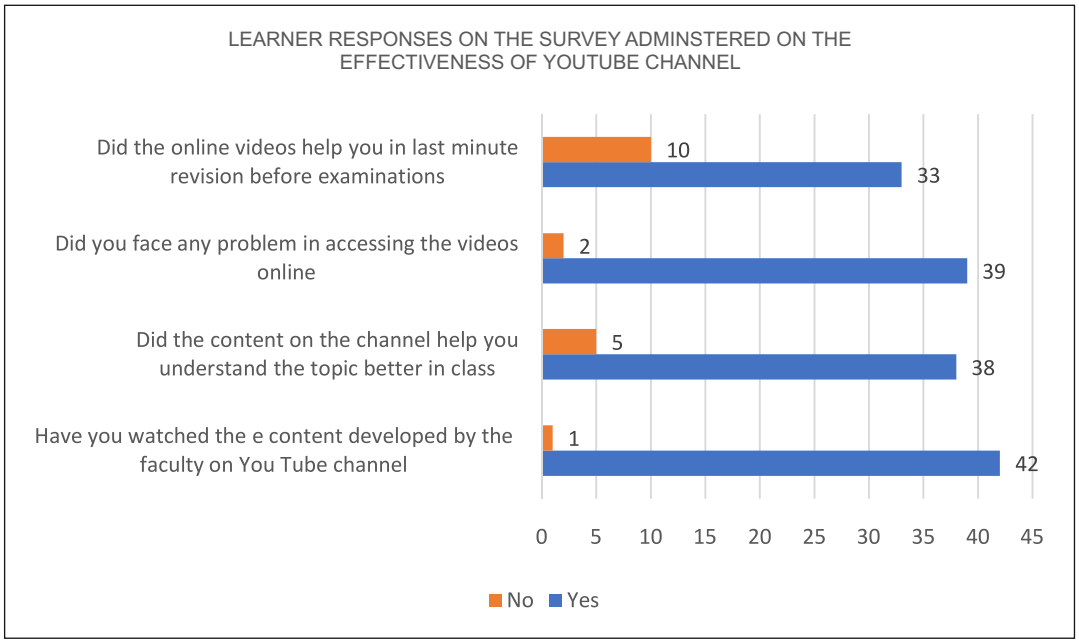
LEARNER RESPONSES ON THE SURVEY ADMINSTERED ON THE EFFECTIVENESS OF YOUTUBE CHANNEL
Did the online videos help you in last minute revision before examinations
10
33
Did you face any problem in accessing the videos online
2
39
Did the content on the channel help you understand the topic better in class
5
38
Have you watched the e content developed by the faculty on You Tube channel
1
42
0 5 10 15 20 25 30 35 40 45
No Yes

Fig. 1

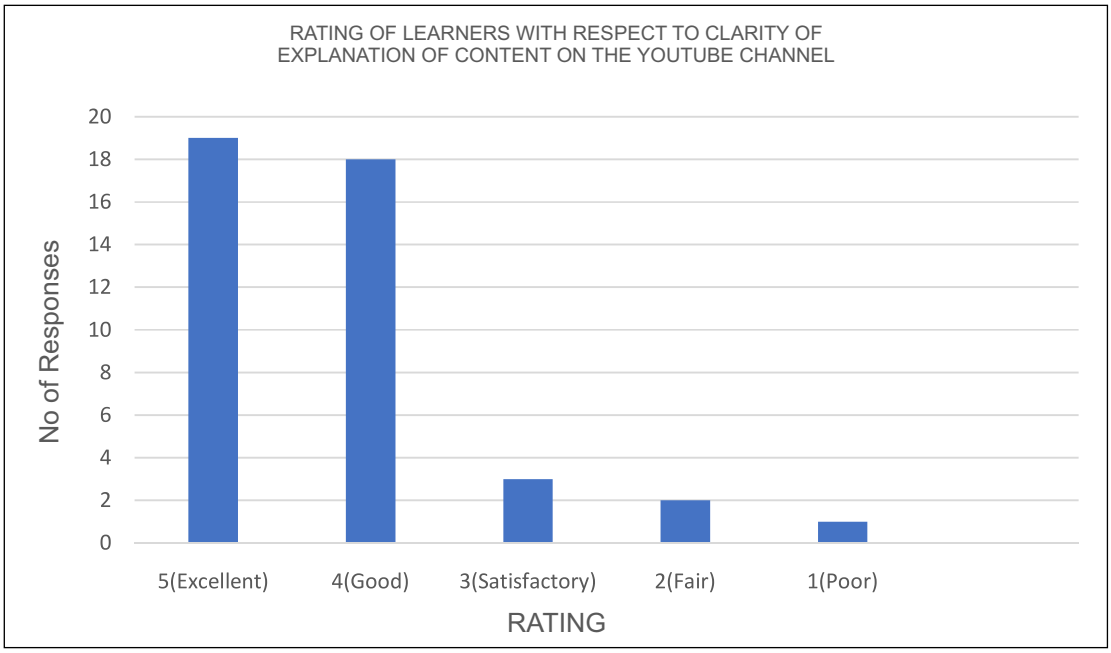
RATING OF LEARNERS WITH RESPECT TO CLARITY OF EXPLANATION OF CONTENT ON THE YOUTUBE CHANNEL
No of Responses
20
18
16
14
12
10
8
6
4
2
0
5(Excellent)
4(Good)
3(Satisfactory)
2(Fair)
1(Poor)
RATING

Fig. 2

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Accreditation and its Impact on Enhancing the Quality of Education in B-School

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Abstract :

In today's competitive era, India needs to produce professionals with absolute global business lookout. The present academic scenario does not entirely fulfil this requirement of practical exposure to students even after completion of their degrees. The quality of Education in B-School has been proving inefficient in developing suitable employability.

This paper seeks to understand the mechanism and importance of accreditation of B-schools which helps them in achieving excellence. The research has been carried out in Maharashtra where there has been gradual fall in the craze for the MBA Degree. It tried to find various factors affecting the quality of a B-School. Competition is growing and in order to mark its presence in global market, India needs to produce professionals with absolute global business lookout.

Keywords : Accreditation, Competitive Market, Employability, Knowledge Economy, Quality Education.

Introduction :

Education plays a key role in the development of any nation. It is the fundamental enabler of knowledge economy which lays the foundation for the continuous and equitable growth of any country. The continued strong growth of the Indian knowledge economy demands a high supply of quality graduates to cater to its growing and complex needs.

India has one of the largest higher education systems in the world, with 903 Universities, 39050 Colleges and 10011 Stand Alone Institutions with Gross Enrolment Ratio (GER) of 25.8%, which is calculated for the age group of 18-23. The enrolment for Higher Education is 36.6 million which includes enrolment of 57,840 in MBA, 25,305 in PGDM and 3431 in PGPM . Is the business world ready to accommodate into the job market all these and many more who walk out after several other courses?

The corporate world is very competitive and demands quality. How many of the students passing out from a B-School are ready to prepare for the rigours and challenges of the corporate world.

1. Number of Management Institutions in India & Maharashtra

Table 1 indicates the Number of Management Institutions in India and Maharashtra.

Number of Management Institutions		
A.Y	**India**	**Maharashtra**
2012 -2013	3865	459
2013 -2014	3740	445
2014 -2015	3587	426
2015 -2016	3450	406
2016 -2017	3334	388
2017 -2018	3232	379
2018 -2019	3085	370

Table 1 - Source: AICTE websitewww.aicte-india.org (12.12.2018)

With reference to the **Table 1**, shows the decreasing trend of Management Institutions in Maharashtra. Comparing the existence of Management Institutions in the year 2018-2019 against 2012-2013, there was a decline of 19.39%.

2. Intake of Students in Management Institutions in India & Maharashtra

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Intake		
A.Y	**India**	**Maharashtra**
2012 -2013	443274	64416
2013 -2014	450858	62232
2014 -2015	455089	60147
2015 -2016	431570	55681
2016 -2017	411818	52118
2017 -2018	393035	50878
2018 -2019	372083	51693

Table 2 Source: AICTE website, www.aicte-india.org (12.12.2018)

Table 1 indicates the gradual decline in the number of B-Schools in India as well as Maharashtra, whereas **Table 2** shows the gradual decline in the intake of students for Management Programs in India and Maharashtra. It clearly indicates that the craze for MBA is gradually falling since the last few years. It may be because of the non-availability of suitable jobs for the MBA graduates. The reason cited by corporates is that most MBA's are not ready for the corporate world and need further practical training. The present academic scenario doesn't entirely fulfil this requirement of practical exposure to students even after completion of their degrees. The quality of Education in B-School has been proving inefficient in developing the suitable employability.

The question arises as to whether these existing Management Institutions are really able to provide quality education to the students and make them fit to face the challenges of the corporate world.

A pertinent question is how we can improve the quality of a B- School? Can Accreditation and Ranking of B-Schools lead to improvement in the quality of Management Institutions?

3. Accreditation

Accreditation is the process of quality assurance and improvement, whereby a programme in an approved Institution is critically appraised to verify that the Institution or the programme continues to meet and/or exceed the norms and standards prescribed by the regulator from time to time. It is a kind of recognition which indicates that a programme or Institution fulfils certain standards.

Accreditation has a direct impact on improvement and development of any B-School. It is a quality based standard process used by the higher education system to scrutinize colleges, universities and higher education programs for quality assurance and quality improvement.

4. Purpose & Role of Accreditation

The purpose and role of accreditation goes far beyond quality assurance of an Institution/programme. Major impacts of the accreditation system are summarized below

- Encourages quality improvement initiatives by Institutions.
- Improves student enrolment both in terms of quality and quantity.
- Helps the Institution in securing necessary funds.
- Enhances employability of graduates.
- Facilitates transnational recognition of degrees and mobility of graduates and professionals.
- Helps create a sound and challenging academic environment in the Institution, and Contributes to social and economic development of the country by producing high quality technical manpower.

5. Accrediting Bodies

There are various National and International Accrediting Bodies in India. The names of a few are as below:

i. National Accrediting Bodies

In India, there are three Government Accredited Bodies which rank the Institutions on the basis of their pre defined quality based standards. These are as below:

a. National Board of Accreditation (NBA)
b. National Assessment and Accreditation Council (NAAC)
c. National Institute Ranking Framework (NIRF)

ii. International Accrediting Bodies

There are various international bodies for accreditation. In India, many premium B-Schools prefer to have International Accreditation. It becomes more attractive for global students, faculty and recruiters. It also helps in differentiating an image with higher ability to create a price differentiation in fees and admission brochure. It gives the advantage of international recognition, status and exposure across the globe.

The following are there nowoned International Accrediting Bodies:

- The Association to Advance Collegiate Schools of Business (AACSB) - The Association of MBAs (AMBA)
- The European Quality Improvement System (EQUIS)
- South Asian Quality Assurance System (SAQS)
- The Accreditation Council for Business Schools and Programs (ACBSP)

Literature Review

Literature Review has done on various categories which include Quality Education, Accreditation, Branding of an Organization and Institute-Industry Interface.

1. Literature on Quality Education

- Dr.Gonda (2014), concluded that the majority of non-granted colleges have become economically unviable which is affecting adversely on the quality of college education and has resulted in developing unemployment graduates.
- Sharma Deepti (2014), concluded in her PhD thesis, the different factors involved in measuring Quality Education in Management Institutions. The study also discussed the SERVQUAL Gap Model of Quality Education, but it can be further explored by studying the impact of accreditation on Service Quality.
- Mann, J.S (2014) reflected on the facts about how corruption affects the quality of Education & Research in India. He concluded that a teacher is a trained pilot of education and competent to fly the quality of education and research. The corruption in terms of admitting the candidates at Institute Level in seats and the corruption in appointment of teachers badly effects the quality of education.
- Dr. Haseena V.A (2015), in Journal of Education and Practice, Vol. 6, No 4, reflected on the education system in Kerala. He has discussed about the TQM principles and the scope of the Higher education system. He has also discussed about the philosophy of Education and concluded with the fact that the absence of appropriate philosophy of education in Kerala is one of the lacunae in Higher Education in Kerala.

2. Literature on Accreditation

- Sahay (2007), highlighted the facts that management institutes should consider the context of quality and assessment as a guide for planning and assessing for future calls or reforms. It also concluded with the learning that accreditation enhances the student centeredness, continuous improvement, leadership and global preparedness.
- Patil, Arun (2004) suggested the development of the scientific model for the accreditation and quality assurance in Engineering Colleges. The author discussed the educational cycle and also highlighted the accreditation process in each department of the Engineering colleges. He emphasised more on academic curriculum and practical learning as being of importance to the students.

3. Literature on Brand Management

- Sharma A. A (2013) highlighted the measuring strategies for brand image of B-School through Quality education. It concluded with the facts that brands are pivotal sources for generating and sustaining a competitive advantage which helps in minimizing the quality gap and increasing the

satisfaction level of the stakeholders. The article highlighted the comparative study of the brand image of a few top B-Schools of India, but did not discussed on accreditation and its importance in building a brand.

- Heslop L. (2010) highlighted on the MBA program and its importance to the corporate world. It concluded that brands of this program required to be differentiated from the other programs. This program should be given more importance being highly accepted in the corporate world for being a decision making profession.

4. Literature on Institute-Industry Interface

- Murtuza (Jan 2013) cited on the various issues and challenges faced by B-schools. He concluded that the quality assurance certificate is of no use, if students are not able to get jobs as per their skills and knowledge. He concluded that the Quality Mantra is not about ISO or accreditation, about how Management graduates find a good job to meet the needs of the fast growing industry.

- Singh (2014) at the 2nd World Summit on Accreditation (WOSA-2014)highlighted the role and utility of quality assurance and accreditation in management education in the context of India. It includes the analysis of present quality assurance and accreditation mechanism of management education in India in terms of (I) accreditation organizations viz-a-vis the number of management educational institutions, (ii) the evaluation parameters of different accreditation agencies, (iii) entry and acceptability of international accreditation agencies, and (iv) impact of accreditation on management education.

Problems Definition

- The craze about Management program has been gradually reducing in the last few years.

- The Quality of education in B-Schools is deteriorating day by day.

- Students with MBA Degree are not able to get a satisfactory job.

- The corporate world feels that MBA's today do not possess the skills required to face the challenges in the dynamic and competitive market.

- Many B-Schools are struggling for admission of students.

Objective of the Study

- To study the process of accreditation, its benefits to the academic institute and flaws in the process of accreditation.

- To study the positive and negative effects of accreditation on the quality of education in B Schools.

- To study if accredited B-schools are providing quality education as compared to non- accredited B Schools.

- To study if accreditation of B-Schools helps in enhancing placement opportunities.

Hypothesis

$H_0$1: There is no significant difference in the quality of education between accredited B-schools and non-accredited B-Schools.
H_A1: There is a significant difference in the quality of education between accredited B- Schools and non-accredited B-Schools.
$H_0$2: There is no significant difference in the industry-institute interface between accredited B- schools and non- accredited B-Schools.
H_A2: There is a significant difference in industry-institute interface between accredited B- schools and non- accredited B-Schools.

Research Methodology

1. Methods

The study was descriptive and analytical, so a survey method was used. Questionnaires were divided into three sections. The first two sections consisted of personal and demographical details of respondents

while the third section consisted of the research questions.

The questionnaires were based on the input which consists of teaching methodology, faculty knowledge, infrastructure, placement record of B-Schools and parameters which help in enhancing the brand value of B-School.

Each questionnaire was of the objective type with options measured on a Likert- scale.

2. Data Collection Procedure

Data was collected from both Primary and Secondary sources. Primary data was collected from all the stakeholders which included students, academicians, parents and corporate professionals.

B-Schools were selected from all the following 5 regions of Maharashtra as per the regional offices of "Directorate of Technical Education (DTE, Maharashtra)" which include the following cities:

(i) Mumbai
(ii) Pune
(iii) Nagpur
(iv) Aurangabad
(v) Amravati
(vi) Nashik

Two types of well-structured questionnaires were designed for all the categories of the respondents. The questionnaire designed for students and academicians was the same. A separate questionnaire was designed for corporate professionals. Quality being one of the core and important factors in enhancing the brand value of any institution, it was included in all the questionnaires. Further for analysis, all the stakeholders were classified into two sets of groups, the first set of stakeholders included faculty, academicians and parents while the second set of stakeholders included corporate professionals.

3. Sampling

a. Universe - The study includes Management Institutions of Maharashtra which include Autonomous B-Schools or/and University Affiliated B-Schools. It includes both accredited and non-accredited types of B-Schools.

The B-Schools having Tier II and Tier III categories were selected for the study. Normally Tier-II and Tier III are Non-Autonomous Institutions affiliated to a university. These institutions depend on the university for any change in curriculum, its implementation and to examine the enrolled students for award of degree.

The institutions selected for study include both University affiliated colleges offering MBA, MMS Degree as well as Autonomous Institutions offering AICTE approved PGDM.

In Mumbai, University of Mumbai offers Master of Management Studies (MMS) instead of MBA.

b. Sample Size

The study has been taken in Maharashtra for B-Schools selected from all the following 5 regions of Maharashtra as per the regional offices of "Directorate of Technical Education (DTE, Maharashtra)" which include the following cities - Mumbai, Pune, Nagpur, Aurangabad, Amravati and Nashik.

Sr. No	Respondents	Numbers	
		Pilot Study	Main Study
1	Student	145	725
2	Academician	30	210
3	Parent	27	160
4	Corporate Professional	32	120

Table 3, Source: Primary Data

Sampling at a Glance

B-Schools of Maharashtra (MBA/MMS and PDGM)							
Type of B-School	Accredited & Non-Accredited (Nos-60)						TOTAL
Target Locations	Amravati	Aurangabad	Mumbai	Nagpur	Nashik	Pune	
& Count	5	4	22	7	4	18	**60**
Respondent & Count	Student	Academician	Parent	Corporate Professional			
	725	210	160	120			
	1st set of Stakeholders = 1095			2nd set of stakeholder=120			**1215**

Table 4, Source; Primary Data

4. Validation of Questionnaire

Questionnaires were validated through Pilot Study as well as by calculating the value of Cronbach's alpha on the variables as used in the questionnaires.

a. Calculation of Cronbach's alpha

Questionnaires were also validated by calculating the value of Cronbach's alpha for variables on Quality, Infrastructure, Branding, Industry Interface and Global Relevance and it was found that the value lies in the range of 0.601 to 0.81 which indicates it as acceptable. SPSS were used to find the value of Cronbach's alpha.

Reliability of Coefficient (Cronbach α)					
Dimension-> / Respondents ↓	Quality (4 items)	Industry-Academia Interface (3 items)	Infrastructure (3 Items)	Global relevance (2 Items)	Parameters for Branding (6 Items)
Students	0.615	0.688	0.621	0.708	0.811
Academicians	0.601	0.613	0.642	0.714	0.792
Parents	0.622	0.676	0.686	0.712	0.782
Corporate Professionals	0.638	0.641	NA	NA	0.701

Table 5, Source: Primary Data

Cronbach's alpha is a measure of internal consistency, i.e, how closely related a set of items are as a group. It is considered to be a measure of scale reliability. A "high" value for alpha does not imply that the measure is unidimensional.

Cronbach's alpha is a good measure of internal consistency of the latent variable, and acceptable values are normally above 0.70 (Nunnally, 1978). However, the value can be acceptable near 0.60 (Hair, et al., 2006), especially if the factor has only a few items.

Referring to the Table 5 the result of the analysis indicated that no values of coefficient α were less than 0.6 and was acceptable.

5. Techniques of Selection

Simple random sampling was used for the study. The samples of all the categories of respondents which included students, academicians, parents and corporate professionals were selected on a random basis considering the convenience and effectiveness.

6. Analysis Method

The data collected for study was carefully validated and uploaded on SPSS software for analysis. Excel was also used for analysis of the data.

7. Data Analysis

The purpose of this chapter was to examine results of the study of accreditation and its impact on the quality of education in Management Institutions. This chapter contains the data collected from the survey of the stakeholders which include students pursuing Management program, academicians, parents and corporate professionals, and their analysis using various statistical tools. The statistical package SPSS (20.0) was used to analyze the data received from the questionnaire. SERVEQUAL gap analysis was done to check the satisfaction level of the students for measuring the quality aspects.

A. Hypothesis Testing

a. $H_0$1: There is no significant difference in Quality of Education between Accredited B-schools and Non- Accredited B-Schools.

Respondents	Status of Accreditation	N	Mean	Std. Deviation	Std. Error Mean	T-Test	Df	Sig. (2 - tailed)
Student	Accredited	355	3.9331	0.35643	0.01892	3.588	723	0.00**
	Non-Accredited	370	3.7872	0.68209	0.03546			
Academician	Accredited	109	3.7775	0.35247	0.03376	2.996	208	0.003**
	Non-Accredited	101	3.5495	0.70535	0.07019			
Parent	Accredited	78	3.8846	0.36417	0.04123	8.282	158	0.00**
	Non-Accredited	82	3.25	0.57601	0.06361			

Table 6, Source: Primary Data

Table 6 and **Table 7** show contradictory views related to Quality of Education among all the respondents. Comparing the mean value of accredited and non-accredited B-Schools, it shows that it is higher as per students, academicians and parents but lower as per corporate professional.

Table 6 reflects that t-values are highly significant for the 1st of stakeholders. $H_0$1 is not accepted. The t-value

for students, academicians and parents are 0.00, 0.003 and 0.00 respectively which are less than 0.05 (Critical value of t). As per the response of students, academicians and parents, there is significant difference in the quality of education between accredited and non-accredited B-Schools. Accredited B-Schools have better quality compared to non-accredited B-Schools. Also comparing it course wise, it has been found that the quality of PGDM is much better than that of MBA or MMS.

On the other hand, the responses of corporate professionals are the reverse. Table 7, reflects the calculated value of sample as 0.77 which is higher than the critical value of 0.05, hence the hypothesis is not significant. As per these, the corporate world is least concerned about accreditation. They prefer to hire students as per their skills, knowledge and suitability to job requirements. A few of the corporate professionals especially from FMCG and IT sector said that they recruit students only from accredited B-Schools, as per their HR policy. They consider accreditation only in a few cases in the preliminary stages of selecting B-Schools for placement drive.

b. $H_0$2: There is no significant difference in Industry-Institute Interface between Accredited B- schools and Non- Accredited B Schools.

Referring to **Table 8**, the calculated value of t-test for Student, Academician and Parent are 0.02, 0.034 and 0.00 which are less than the critical value 0.05, hence it is highly significant. $H_0$1 is not accepted. The t-test was used at 95% significant level.

The study found a mixed response from all the 4 categories of respondents. As per the response from students (Mean 3.2554), most of them agreed that placement of accredited B-Schools are better than non- accredited B-Schools.

Referring to Table 9, the ANOVA Value for the corporate professionals is 0.291 which is higher than the critical value of 0.05. It reflects that this Hypothesis is accepted.

With reference to the Corporate Professionals, in today's competitive world, the industry is looking for candidates who suit their requirements and are fit for the job. They are less concerned about accreditation. During the recruitment process, if students from a particular B-School are found to be efficient and capable for jobs, then the industry would recruit students from that same B-School in future too, irrespective of the accreditation status.

B. Analysis of Overall Service Quality

Quality of Education is the main aspects for Branding of any Institution, so SERVQUAL Quality test was done for students to test their satisfaction gap. The result was analysed through the statistical method by finding the difference between their Perception (P) and Expectations (E). The Gap (Q) has been calculated as Q=P-E.

Table 10 reflects on the fact that the SERVQUAL Quality gap is greater in non-accredited B-Schools. The gap in non-accredited B-School is found to be more in tangible items; it means that the students of Non-accredited B-Schools were not satisfied with the infrastructure or facilities provided.

a Efficiency Calculation (PE Ratio= Perception/Expectation

With reference to the SERVQUAL GAP analysis for finding the quality and satisfaction level of students of accredited and non-accredited B-Schools, the study reflects that the satisfaction level is higher in accredited B-Schools than those non-accredited B-Schools.

Referring to **Table 12**, regarding the Efficiency (PE ratio) for all the five Parameters of the SERVQUAL Model (Tangibility, Reliability, Responsiveness, Assurance and Empathy), it has been observed that the mean value of all the parameters of accredited B-Schools are higher than non-accredited B-Schools. The PE Ratio indicates the perception of the students against their expectations, considering various parameters.

The above result shows that the averages mean

scores of Efficiency (PE Ratio) in accredited B-Schools lies between 0.9232 and 1.0213 and is between 0.7304 to 0.9178 in non-accredited B-Schools. The result also reflects that the ratio is highest for “Empathy” in both Accredited and Non-Accredited B-Schools. The value is 1.0213 and 0.9178 in accredited and non-accredited B-Schools respectively. It means that the individual caring and attention towards students is more than other parameters.

C. Findings of Parameters Affecting Quality of B-Schools

Quality of Education of any B-School depends on various parameters which include teaching pedagogy, infrastructure, placement, location of the institute, faculty and alumni.

The result indicates Faculty and Teaching Pedagogy are the key parts of any B-Schools irrespective of Accreditation **(Reference Table 13)**.

Research Findings

A. Related to Students & Parents

- Students are the direct users of the facilities at B-Schools.
- According to students, accreditation helps in enhancing quality education in B-Schools.
- Students were more focussed on and ranked higher on the parameters of faculty and teaching pedagogy for creating a brand image.
- The expectations of students and parents from B-School were to get quality education and respectable placement
- Quality of Education and Placement of accredited B-Schools is better than Non Accredited B Schools.

B. Related to Academicians

- Accreditation helps in enhancing the quality of education and work culture within the organization which helps in enhancing the career of an academician.
- Accredited B-Schools were easily able to get qualified and experienced faculty.
- Accreditation helps in enhancing the institute industry relationship and placement activities, but to some extent it depends on the students' attitude and calibre for getting a suitable job.
- Accreditation helps in career growth of staff and students.

C. Related to Corporate Professionals

- In today's dynamic and competitive world, industry prefers to hire multi-tasking candidates.
- Industry is least effected by accreditation of B-Schools. They prefer students who suit and fit their requirements.
- Some Industries like IT and a few top FMCG sector prefer campus recruitment from accredited and top ranked B-Schools as it is mentioned in their HR policy.
- The quality of education is better in accredited B-Schools than non-accredited B-S Schools.

Conclusion & Suggestions

The goal of quality of education of B-Schools is to create awareness in the minds of MBA aspirants and to focus on the intersection of the core value of B-Schools and the expectations of the MBA aspirants. In today's complex, dynamic and highly competitive market, management institutions are turning to branding as a solution in dealing with global challenges.

The study concluded with the fact that accreditation

helps in maintaining certain standards which help in enhancing the quality of education which results in better placement of management students and enhancement of the B- School Brand.

The brand of a B-School is directly proportional to quality of education, infrastructure, placement record and global relevance. All the stakeholders, students, academicians, parents and corporate professionals agreed on the fact that accreditation help in enhancing quality of B-School which leads to better industry interface. The students from accredited B-Schools are more confident with practical knowledge and are more capable to face the challenges of today's competitive and dynamic world.

Respondent-Corporate Professional (ANOVA Test)

Respondents	Preference of B -School for Campus Recruitment	N	Mean	Std. Deviation	Std. Error Mean	Sum of Squares	df	Mean Square	F	Sig.
Corporate Professional	Accredited	48	3.6771	0.48641	0.07021	.092	2.00	.046	.262	.770
	Non-Accredited	30	3.700	0.35598	0.06499					
	Both	42	3.631	0.37546	0.05793					

Table 7, Source: Primary Data

Respondents	status of Accreditation	N	Mean	Std. Deviation	Std. Error Mean	t	Df	Sig. (2-tailed)
Student	Accredited	355	3.2554	0.67313	0.03573	3.15	704.893	0.002*
	Not Accredited	370	3.1063	0.59718	0.03105			
Academician	Accredited	109	3.3456	0.70554	0.06758	2.133	207.033	0.034*
	Not Accredited	101	3.1518	0.61015	0.06071			
Parent	Accredited	78	2.4103	0.39813	0.04508	6.011	158	0.00**
	Not Accredited	82	2.0894	0.26733	0.02952			

Table 8, Source: Primary Data

Respondents	Preference for Campus Recruitment	N	Mean	Std. Deviation	Std. Error Mean	Sum of Squares	Df	Mean Square	F	Sig.
Corporate Professional	Accredited	48	3.3177	.39525	.05705	.370	2.00	.185	1.250	.291
	Non-Accredited	27	3.3796	.40054	.07708					
	Both	39	3.4487	.35900	.05749					

Table 9, Source: Primary Data

Dimensions of SERVQUAL GAP Model			
Sr. No	Dimension	No of Items in Questionnaire	Definition
1	Tangible	6	The appearance of physical facilities, equipment, personnel and communication materials
2	Reliability	6	The ability to perform the promised service dependably and accurately
3	Responsiveness	5	The willingness to help customers and to provide prompt service
4	Assurance	5	The knowledge and courtesy of employees and their ability to convey trust and confidence
5	Empathy	5	The provision of caring, individualized attention to customer

Table 10, Dimensions of SERVQUAL GAP Model

SERVQUAL GAP Findings							
		Accredited B-Schools			Non-Accredited B-Schools		
Sr. No	Dimension	Mean - Perception (P)	Mean - Expectation (E)	Gap (Q)	Mean - Perception (P)	Mean - Expectation (E)	Gap (Q)
1	Tangible	4.088	4.3862	-0.2982	3.375	4.3559	-0.9809
2	Reliability	4.293	4.302	-0.009	3.782	4.209	-0.427
3	Responsiveness	4.3127	4.3268	-0.0141	3.5324	4.2297	-0.6973
4	Assurance	4.3296	4.3352	-0.0056	3.8378	4.3784	-0.5406
5	Empathy	4.2704	4.1944	0.076	3.6601	4.0027	-0.3426

Table 11, Source: Primary Data

Parameter	Status of Accreditation	N	Mean	Std. Deviation	Std. Error Mean	T	df	Sig. (2-tailed)
PE Ratio-Tangibility	Accredited	355	0.9232	0.06149	0.00326	32.347	723	0.00*
	Non-Accredited	370	0.7304	0.0948	0.00493			
PE Ratio - Reliability	Accredited	355	0.9444	0.06954	0.00369	22.057	723	0.00*
	Non-Accredited	370	0.8271	0.07349	0.00382			
PE Ratio - Responsiveness	Accredited	355	0.9985	0.05865	0.00311	25.706	723	0.00*
	Non-Accredited	370	0.8382	0.10249	0.00533			
PE Ratio - Assurance	Accredited	355	0.9999	0.05286	0.00281	21.442	723	0.00*
	Non-Accredited	370	0.8787	0.09308	0.00484			
PE Ratio-Empathy	Accredited	355	1.0213	0.07359	0.00391	18.353	723	0.00*
	Non-Accredited	370	0.9178	0.07797	0.00405			

Table 12, Source: Primary Data

Mean of Factors Affecting Quality of B-School								
Group	status of Accreditation		Teaching Pedagogy	Infrastructure	Placement	Location	Faculty	Alumni
Student	Accredited	Mean	3.831	3.4704	3.9352	2.3493	4.0648	3.4648
		Nos.	355	355	355	355	355	355
	Non-Accredited	Mean	3.7838	3.5351	3.9405	2.3	4.073	3.4189
		Nos.	370	370	370	370	370	370
	Total	Mean	3.8069	3.5034	3.9379	2.3241	4.069	3.4414
		Nos.	725	725	725	725	725	725
Academician	Accredited	Mean	4.0826	3.3486	3.844	2.5046	4.1743	3.2569
		Nos.	109	109	109	109	109	109
	Non-Accredited	Mean	3.2673	3.4752	3.1881	2.2376	3.5347	3.396
		Nos.	101	101	101	101	101	101
	Total	Mean	3.6905	3.4095	3.5286	2.3762	3.8667	3.3238
		Nos.	210	210	210	210	210	210
Parent	Accredited	Mean	4.6154	4.3846	4.0769	3.0769	4.5385	3.8462
		Nos.	78	78	78	78	78	78
	Non-Accredited	Mean	4	3.8049	3.2927	2.5732	4.0854	3.5732
		Nos.	82	82	82	82	82	82
	Total	Mean	4.3	4.0875	3.675	2.8187	4.3063	3.7062
		Nos.	160	160	160	160	160	160
Total	Accredited	Mean	3.9945	3.5775	3.9373	2.4852	4.155	3.4779
		Nos.	542	542	542	542	542	542
	Non-Accredited	Mean	3.7215	3.5642	3.7071	2.3291	3.9765	3.4376
		Nos.	553	553	553	553	553	553
	Total	Mean	3.8566	3.5708	3.821	2.4064	4.0648	3.4575
		Nos.	1095	1095	1095	1095	1095	**1095**

Table 13, Source:Primary Data

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Metaresearch on Escalating Education and Ameliorating Employability Skills through MOOCs

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Abstract :

Job market trends suggest that a majority of the graduates seeking employment do not meet the requirements of the industry. The present study uses metaresearch to show that this mismatch between industry requirements and graduate skills can be bridged using Information Communication Technology (ICT) enabled learning practices like Massive Open Online Courses (MOOC). Studies show that MOOCs are cost and time effective. Therefore, they are preferred by potential employees and governments alike. The Ministry of Higher Education hopes to improve the quality of education through MOOC. There is skepticism in MOOCs actually filling the gap. In order to minimize this skepticism MOOC courses can be developed in association with Multi National Companies, MOOC developers and colleges/universities. Thereby MOOCs can play an important role in offering the skills that satisfy industry requirements to both new graduates entering the job market and existing employees.

Keywords : MOOC, job market, ICT

Introduction :

Aim : The paper aims to highlight the usage of MOOC as a mode to deflate the discrepancy between graduate skills and employment requirements using metaresearch.

Purpose : The purpose of this paper was to highlight the role of MOOCs in providing versatile and accessible learning to enhance the skills for both employers and new conventional students. The skills and employability review found that, perhaps the discrepancy between potential employers and their ability to hire graduates with necessary skills is a growing problem not only in India but also across the globe.

Technology plays a pivotal role in the twenty first century. Today's Information and Communication Technologies (ICTs) offer solutions to address one of the most pressing problems in the society namely unemployment. ICT in education had been included in the Rashtriya Madhyamik Shiksha Abhiyan (RMSA). ICT helps in transcending education level by providing various tools for students. MOOCs are invariably “21st century's educational revolution” (Bulfin qtd. in Calonge and Shah). MOOCs were introduced in the year 2012. Since then corporations are showing “a keen interest” in exploring whether MOOC can be used to minimize the dearth of competence found in “newly-recruited university graduate employees”. Along with the companies MOOCs have caught the “attention of educators and have raised the hopes of change in academic circles” (Calonge and Shah). A study conducted by the Organisation for Economic Co-operation and Development (OECD) submitted a report titled Education at a Glance (2014). That report has underscored the time-place flexibility of MOOCs and said that they may have “the potential to bridge the graduate gap as they offer on demand affordable continuing education” (Cross 74).

Discussion

“What is the value of a college degree?” (Selingo qtd. in Calonge and Shah)

“What's a college education worth these days?” (Miller qtd. in Calonge and Shah)

The discrepancy between industry requirements and the skills of the freshly recruited employees have been emphasized in various surveys. Calonge and Shah,

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for example, cite YouGov survey which said that about "52%" of the recruiters felt that the number of "employable" graduates ranged from "none" to "few". Using Harris' blogpost, they conclude that only "25% of fresh graduate interviewees were employable".

A recent study from Japan had declared that students who possess ICT based learning have extra knowledge of the field and their skills are extraordinary while compared to other students. Their presentation skills were different and it was scholarly. They were constantly exposed to the technological updates in the education field. The trend in ICT is mobile learning which is also called m-learning. Students have access and inclination towards mobile learning. They surf and learn which makes education handy and easy to get in touch with the updates.

ICT has various advantages. One can access the course material from a remote device. There is an online digital storehouse for the lectures, course materials, and it also has a digital library. ICT provides enhancement in learning experiences. It gives training for the faculties. It is minimal in cost and everyday task based education is encouraged in this learning. The service rendered by the institution can be improved by offering these courses to the students. These courses not only improve the quality of education in the students but they are also added criteria for the accreditation of the institution during NAAC and NBA.

MOOCs provide opportunities for individuals with Internet access to enrol in a wide range of courses. These platforms allow those enrolled to learn from distinguished faculty from some of the world's most elite schools. MOOCs are constantly updated with new material. It has no barriers associated with course registration and has significantly reduced the cost of a traditional education. Given these paybacks, MOOCs are in a position to support education as well as future employment. Friedman from the New York Times' has proclaimed that the uses of MOOCs are phenomenal.

For students joining an online course is much rewarding. Even those students who are reserved in regular classes are active in online classes, with the unknown peers. Online exams are less scary than the usual examinations. The following is the data of the students enrolled in online education in Tamil Nadu for the years 2016 and 2017.

Year & No. of Students	2016 20,224,069	% 2016	2017 20,135,159	% 2017	Change 2016 -2017
Enrolled Exclusively Online	2,974,836	**14.7**	**3,104,879**	15.4	4.19
Enrolled in some Online courses	3,325,750	**16.4**	**3,552,581**	17.6	6.38
Enrolled in No Online Courses	13,923,483	**68.8**	**1,477,699**	**66.9**	**-3.31**

Table 1: Students Enrolment in Online Courses at Tamil Nadu 2016-2017.

Table 1, shows the steady increase in the enrolment of online courses in Tamil Nadu. It could be seen that within a year there is a 0.44 % rise in students opting for online courses.

This steady increase in the popularity of online courses could be traced back to the year 2012. Between 2012 and 2017 MOOCs witnessed a rapid growth. Increased number of students counted in at least “one course jumped to 58 million in 2016 as reported”(Rene24). Nowadays, Future Learn, Udacity, XuetangX, Edx, and Coursera, are the most astounding MOOC suppliers as far as the quantity of enrolled clients are concerned.

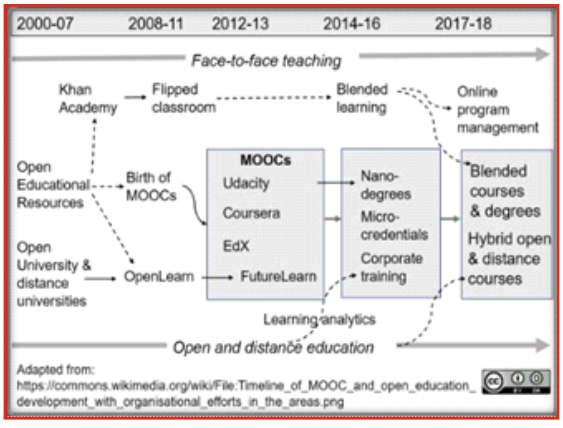

Figure 1: Timeline of MOOCs and Open Education (Rene 24).

Blending face to face teaching with distance education and degree as shown in figure 1, is one of the reasons for the success of these platforms. Since they cover new areas of study and research, they are popular in corporate trainings as well.

NPTEL, Coursera, Khan Academy and edX are some of the domains for online learning. These domains distribute MOOC domains to various universities. IIT Bombay is one such institution which offers EduMOOCs, SkillMOOCs, TeachMOOCs, and LifeMOOCs. Under these heads courses as advanced as Azure, Big Data, Excel, Artificial Intelligence, Statistics, Robotics, business and management are offered. Their aim is to act as the designated location for learners in need of quality education. These courses are easily accessible even from remote places.

According to Calonge and Shah learning through MOOC gave students "greater ownership and control over their learning experiences" compared to traditional classrooms where they were constantly under the surveillance of the faculty. They draw upon the study of Albert & Sekhon to emphasize the need for a flexible and engaging method of study over the "one-way, inflexible, broadcast-style training" (qtd. in Calonge and Shah). This old method of study will not help the present generation of students because it "doesn't respect the modern learner's time, intelligence, workload, and competing life and work demands" (qtd. in Calonge and Shah).

NPTEL is a MOOC offering agent created by the Ministry of Higher Education, Government of India. Since March 2014, it provides learners, the certificates of IITs / IISc on the successful completion of their courses. It is a dream for many aspirants to join in an IIT for their under or post graduation, or to do some research. This online learning helps one to listen to the lectures of IIT professors and earn a certificate as well. It is a prestigious thing for a rural student studying in a normal college to receive a certificate from IIT. Because of MOOC quality education can now reach the so far unreached areas.

In Tamil Nadu many colleges are offering online courses. The following data shows the number of colleges providing online courses in Tamil Nadu. Colleges in Chennai, Coimbatore, and Kanchipuram districts stand active in the NPTEL course as per the data from January to April 2019

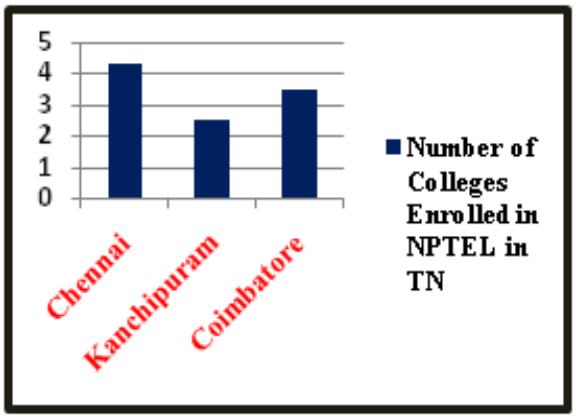

Figure 2: Number of Colleges Enrolled in NPTEL in Tamil Nadu

The number of colleges enrolled in Chennai is higher than that of Coimbatore and Kanchipuram. It shows that metropolitan cities have greater awareness about MOOCs followed by adjacent districts. Though the popularity of MOOC in Kanchipuram (very close to Chennai) is the lowest among the three districts, it is still a good number. The difference could be attributed to the variation in the number of colleges located in these two districts. The total number of colleges enrolled in Tamil Nadu is ninety seven.

Easy accessibility and affordability serve as the crucial pointers for the preference of MOOC. Among the employed, those who were at the tail end of an enterprise showed more enthusiasm to learn newer subjects without worrying about losing their "personal time" (Calonge and Shah). The most popular courses were “on Leadership, Management, and Communication” (Radford qtd. in Calonge and Shah). This shows that employees seek upward mobility in "their careers". They were willing to "demonstrate their eagerness to improve their skill set while employed i.e., potentially for performance reviews” (Radford qtd. in Calonge and Shah, Mishra 2005).

The electives offered in the colleges add an advantage for the students to get an employment.Since electives get lesser credits and lesser time in the college schedule, a MOOC course can come in handy.

Students can even take a course which is not offered in their college. Students undergoing these courses are benefited than the others. The knowledge from the online course is wide for the scholars. They get sources from eminent professors, across the nation. This helpsstudents to gather a huge knowledge from them. The following figure 3 shows the popularity of online courses across varied educational stream.

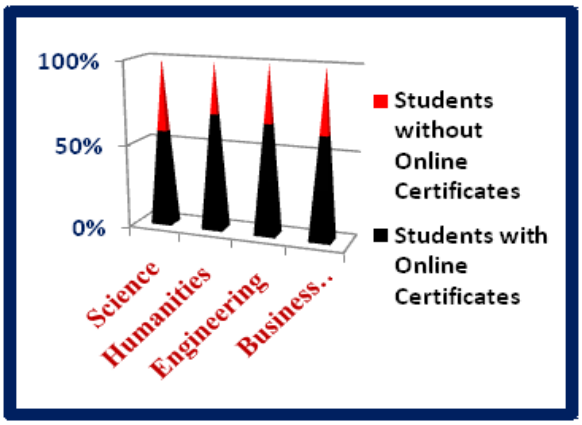

Figure 3: Number of Students with Online Certificates in the year 2019.

Figure 4 shows the job opportunities available in Tamil Nadu with online course certificates in the year 2019. In connection with this Sujatha says,

An engineering student named Pamir Roy had successfully completed fifteen NPTEL courses in his second year. He did his studies on Aviation, Artificial Intelligence and few more (8).

He says that these online courses helped him to get deeper knowledge in subjects and the electives which are not in their syllabus. Many students enrol in NPTEL in order to widen their knowledge and also to get job opportunities. A student who has completed an online course and has a certificate of merit stands first in interview and grabs their jobs. These online courses are for Engineering, Arts and Humanities and also for Business Management. They provide education in various streams. If the elective online courses are extended to core subject courses it will be helpful for the students, who cannot reach higher education. As discussed above the students in medical care can also be benefited by studying in these online courses from IITs. The online courses are very much effective in the career of the students. It also increases our economic level by creating job opportunities which decreases unemployment. These online courses should be encouraged by the institutions and should motivate the students to study further. Online courses will bring in a tremendous change in education.

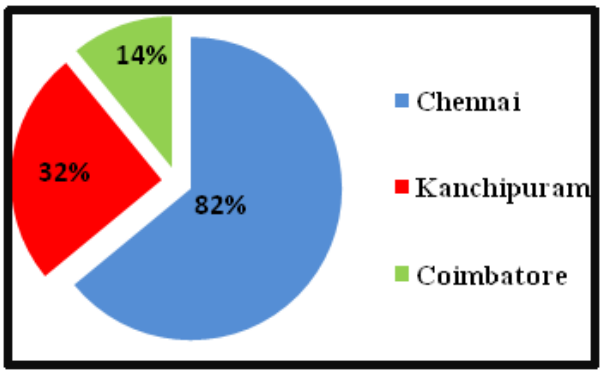

Figure 4: Number of Students Employed through MOOCs in Tamil Nadu in 2019.

Even though MOOC have advantages in terms of "time" - accessible at the preferred time of the learner, duration - courses are no longer than 12 weeks, and are usually conducted by faculty of renowned institutions, there are many misgivings about them.

But Calonge and Shah clarify beyond any doubt that these misgivings are quite unnecessary. "Neeru (2015) and Waters (2015)" argue that the collaboration between technological giants like "Unow, Instagram, Google, and Qualcomm" with higher education institutions and employers presents a unique opportunity. Their alliance is not only unprecedented but also ground breaking. For example consider the potential of "courses on Interaction Design, Mobile Cloud Computing, or Data Science" offered by the above mentioned collaborative effort. Old fashioned "curriculum" offered by colleges are clearly no match for them. When "nano", "micro", and "meso certificate programmes" are added to these courses, they may even replace traditional classroom in the future (Calonge and Shah).

Despite such colourful advantages, there are no long-term studies that had researched MOOCs' influence in reinforcing graduates' deficit in skills. Also there are no records to show the toll that employees' deficit skills

can take in terms of profit and loss for the company they are employed in. Similarly none have studied “a company's return on investment related to MOOCs vs 'traditional' in-person skills development training opportunities offered to employees” (Calonge and Shah).

Conclusion :

So far it has been analysed that, hardly any journal article is published on the benefits MOOCs provide in aiding graduates for the development of pertinent skills in advance and subsequently during the employment. This paper highlights graduates' skills, employability and the uses of MOOCs in offering opportunities for the employers as well as 'new traditional' graduates. It is found that corporations in partnership with MOOCs and universities have deciphered a way in bridging the skills gap in employers. Corporations are particularly searching for the MOOCs that use swift and affordable courses in 'learn-certify-deploy' pattern which can offer an interactive continuing professional development (CPD) chances to their employees and also upskilling courses for tech-savvy and geographically- dispersed staff.Corporations and MOOCs are mutually benefited: while MOOCs provide the multi-faceted methodological knowledge, universities unveil student databases which aid MOOC platforms, statistical, research and marketing objects. Apparently, Ed Tech companies directly teamed up with the employers to improve flexibility, arrangement and strategy of MOOCs that can help in gratifying their needs in business which in succession helps in the enhancement of their credibility and acceptability among all the other online skill courses. Since they are easily accessed, completed, updated and offered as often as required they have become more valuable.Thus, MOOCs are becoming global shareholders in progressing opportunities for new traditional graduates and also to the corporations' employees.

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Teaching Molecular Symmetry: From Being a Sage on the Stage to a Guide by the Side

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Abstract :

Traditional teaching practices often employ the teacher as the source of information and students as mere receptors. In order to make the learning process more enriching for the learner, teaching pedagogies need to shift to a more student-centered approach. Innovative teaching pedagogies need to be adopted to transform the classroom environment wherein every learner gets an opportunity to be involved in the learning process and the need of every learner can be addressed. This paper describes the use of a guided inquiry and collaborative learning approach as an alternate teaching pedagogy to overcome the challenges faced in a traditional classroom set up. A transition from the traditional lecture method to a more student-centered approach to teach molecular symmetry and the positive outcomes of the same has been presented.

Keywords: Traditional Teaching, Student-Centred Learning, Cooperative Learning, Molecular Symmetry, Molecular Models.

Introduction :

Even though the lecture method remains a time-honoured tradition used by most teachers to teach chemistry in higher education institutes in India, it seldom offers students an opportunity for exploration of the subject under study or to actively engage with the learning process. Dissemination of information in the classroom is often a one-way process where the teacher is the source of information and students are mere listeners. Classroom interactions and discussions if any are restricted to learners who are more focused and those with a higher potential or learning aptitude while learning for the rest becomes a passive process. This process of passive learning leads to students being inattentive and uninvolved in the class and they slowly lose interest in the subject. At the same time, large student to teacher ratios in most colleges make it difficult for the teacher to have one-on-one interaction with the students. It also restricts students' interaction amongst other learners in the class, thus reducing the possibility of exchange of ideas. Thus the traditional lecture method often results in superficial learning and students resort to rote learning to achieve good examination scores. Also in a traditional classroom many students are hesitant to ask questions or clarify their doubts for fear of being ridiculed by others. As a result many doubts/misconceptions continue to exist in the mind of the student.

To overcome these challenges faced in a traditional lecture method, the need for an alternate teaching pedagogy was felt and the active and collaborative learning approach was explored. Active learning engages students in the learning process through activities/ and or discussion in class as opposed to passively listening to an expert. Research in chemistry education has shown that active engagement of the student in the learning process results in more meaningful and fruitful learning.[1] Active learning can take many forms and its impact on learning has been well-established.[2-6] The Process Oriented Guided Inquiry Learning (POGIL) is one such active learning approach started by chemistry educators and is now being used in a variety of disciplines including biochemistry, biology, social sciences and humanities. POGIL is a non-lecture, student-centered teaching-learning strategy, wherein students work in groups on activities designed by the instructor. POGIL aims at fostering a deeper understanding of the subject using a learning cycle paradigm of exploration, concept invention and application.[7-11] Through the use of distinctive classroom material, POGIL employs the instructor/teacher as a felicitator of learning rather than a source of information. Thus, in a POGIL classroom the teacher becomes the observer, observing and listening to group discussions and

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periodically addresses individual and classroom- wide needs. Thus the teacher moves from being a 'Sage on the stage' to a 'Guide by the side'. Studies indicate that students learning by the POGIL method have a greater grasp of content knowledge than students who learn by the traditional lecture approach.[12,13] POGIL has been successively used in the teaching of various subjects and its implementation has shown to provide meaningful learning experiences to students along with optimizing their reasoning skills, helping students develop skills like problem solving and critical thinking and improving their outcome in terms of learning and engagement.[14,15] POGIL has a number of advantages with regard to student learning in large classrooms as well.[16-19]

While striving to make the learning process more student-centered, the paper describes how the POGIL method was adopted as a successful alternate teaching pedagogy for teaching molecular symmetry.

POGIL for Molecular Symmetry

Molecular Symmetry is an important aspect in the study of chemistry and provides the foundation for the understanding of concepts like chirality along with many principles in spectroscopy, solid state chemistry, molecular orbital theory etc. and therefore a thorough understanding of symmetry concepts is essential. Many will agree that molecular symmetry is a topic that students find difficult to understand. The biggest challenge students face in the study of molecular symmetry is the visualisation of molecules in three dimension which is the first step in the learning of symmetry.[20-22] Many a times students find it difficult to convert a two dimensional image into a three dimensional one. Finding the symmetry elements in complex objects is often a difficult skill to learn. The inability to mentally manipulate molecules so as to find the different symmetry elements affects the learning process. The traditional way of teaching molecular symmetry is with the use of molecular model kits and multimedia. However in spite of the use of model kits many students still struggle to identify symmetry elements in molecules and they resort to memorisation. The challenges faced in a traditional classroom discussed earlier add to the problem of effectively teaching and learning symmetry. Therefore an activity for students to learn molecular symmetry in a more interactive, collaborative and constructive way through exploration and concept building rather than concept memorisation using POGIL was explored.

The Activity

The activity was conducted in an inorganic chemistry class for students of the third year, of a three year under-graduate program. The student group consisted of all female students in the age group of 20-22 years who were well versed in the English language.

The activity had the following learning objectives:

1. To understand the concepts of symmetry, symmetry operations and symmetry elements.

2. To identify symmetry elements in different molecules.

Students were divided into groups of four each, thus making a total of ten groups in the class. They were given a brief introduction of the POGIL method. Each member of the group was assigned the role of either manager, presenter, recorder and reflector in accordance with POGIL guidelines.[7] The roles of each student were decided by the group members themselves. Since this new teaching pedagogy was being explored, the POGIL activity on molecular symmetry by Luxford et.al. was used.[23] Alterations in the original modules were made so as to suit the needs of the learners. The activity consisted of four modules and each module was designed to be completed in a class of 60 minutes. Each module was designed to help build concepts that would guide the learner through the next module. Molecular model kits were provided to the students along with the POGIL activity sheets so as to enable them to build various models and explore the symmetry elements that they contain. In Module 1,students were introduced to the concept of symmetry. Students explored the symmetry of water and ammonia and through a series of critical thinking questions the module familiarised students with the axis of symmetry, identity element and vertical plane of symmetry. Based on their observations students were expected to form a definition of each of these elements of symmetry. Concepts learned from each module had

to be applied to the next module. Through module 2 and 3, students explored symmetry elements like the centre of inversion, vertical and dihedral planes of symmetry and the improper axis of rotation using various examples. Module 4 consisted of a large number of molecules whose symmetry elements had to be identified. The learning outcomes of module 1,2 and 3 were to be used in module 4. Each module had a series of questions through which the concept was built and a short quiz to assess learning outcomes. Consolidation of concepts was done at the end of each module through classroom discussion. Oral feedback from the students was also taken so as to frame the next module with regard to the ease of questions.

While teaching symmetry by the traditional lecture method, students are passed on concepts from the teacher and numerous examples are used to explain the concept, whereas in POGIL, students build their own concepts using numerous examples while being guided through a series of critically thinking questions. POGIL was used to teach molecular symmetry to two different batches of students over two years.

Observations :

The use of POGIL saw a drastic increase in class participation. Initially some students were hesitant to take part in discussions while others were more dominant in expressing their ideas. As students got more comfortable with each other, group conversations increased. For each successive module, participation of group members also increased. Some students took the lead to clear doubts that others had. Presentation of the matter at the end of each module by the presenter, led to discussions within the class and also with the teacher. Students, who otherwise seemed shy, were also actively involved with their group. Students also seemed more comfortable with the topic of symmetry and could answer most of the questions asked to them as a part of the evaluation of the effectiveness of the activity. Feedback taken from students indicated that they appreciated this process of active and cooperative learning as it gave them the opportunity to have a deeper understanding of the subject in a simpler way and a chance to express their ideas and clear their doubts which is sometimes not possible in a traditional classroom. It also gave them an opportunity to interact more closely with their peers and also with their teacher.

Conclusion

Working in a group encourages active involvement of every student in the class. It helps students to build on each other's ideas and creates a more positive and constructive approach towards learning. It also gives students an opportunity to express their ideas and doubts in a supportive group atmosphere. Periodic interactions with the teacher make it possible to understand students' gaps in knowledge. Many of the challenges faced when the didactic approach to teaching is adopted can be overcome by changing the teaching- learning pattern to a student-centered approach. Apart from a gain in content knowledge, POGIL sessions also help in simultaneously developing skills like critical thinking, effective communication, time management and team work which is not possible in a lecture method. Based on observations of the teacher, students can be reshuffled for each module and the role of each group member can be changed, giving each student a chance to play different roles and enhancing different skills.

To the instructor, POGIL provides an opportunity to reflect upon subject content in a deeper way. It also provides an opportunity to form a stronger bond with the students and to understand their strengths as students as well as individuals.

With the positive outcomes observed with this change in instructional pattern, the POGIL approach to teach other topics in inorganic chemistry is being explored. For educators who wish to transition to POGIL, a lot of POGIL resources for different topics are available which can be modified to suit students' needs. Transitioning to POGIL may involve a lot of time, effort and a change in instructional pattern by the teacher but the benefits it provides far surpasses these. The implementation of POGIL or any active learning method has the potential to overcome challenges that educators face in a traditional classroom setup and to bring about desirable changes that we as educators seek.

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Impact of Learning Management Systems and Open Education Resources on Science Education

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Abstract :

The education system serves as the backbone of any developing nation. In order to be globally competent and equip ourselves with respect to the pre-requisites of a digital economy, the national education system is required to adapt and serve as the guiding principle for holistic development. Information and Communication Technology (ICT) plays a pivotal role to make learning student-centric. With respect to Science education, ICT has immense potential to serve as a tool and a catalyst for change. ICT enabled teaching; learning and evaluation lead to increased efficiency and effectiveness on both the part of teachers and students. There are many tools available in educational technology two of the promising ones being Learning Management Systems (LMSs) and Open Education Resources (OERs). Learning Management System is a programme-based provision for the documented record, administrative task, retrieval of data and sharing of educational resources. Open Educational Resources are in the public domain available to everyone with open-licensed text resources and other technical aspects significant for education and research requirements. In this research, an attempt was made to evaluate the impact of LMS and OER on Science Education by considering F. Y. B.Sc. and S. Y. B.Sc. Microbiology students. LMS-Edmodo was used as a platform for out of class activities and different educational resources were uploaded on the LMS. It was observed that the LMS served as a student-centric and convenient platform for the exchange of ideas and different OERs such as text material, videos and quizzes enhance the level of the students' understanding. An instructor needs to curate the educational content as per different levels of learning so that all levels of Blooms Taxonomy are taken into consideration. LMSs and OERs both enhance the understanding abilities of the students. Both the tools in combination with face-to-face class sessions constitute Blended Learning.

Keywords: LMS, OER, Blended Learning, Science Education, Pedagogies.

Introduction

Information and Communication Technology (ICT) has the potential to serve as a driving force in the process of imparting education. There has been a tremendous advancement in educational technology in the 21st century, coupled with a paradigm shift in the overall perception of academicians and policy makers of ICT enabled teaching, learning and evaluation (Assar, 2015). Computers have gradually permeated almost all domains of our lives and have proven to be indispensable in the process of storage and retrieval of data as and when needed. The integration of ICT in academic transactions has the potential to significantly increase the traditional courses and Internet-based education that is e-learning(Assar, 2015). Technology contributes by offering a significant role with an ability to change learning and facilitating the establishment of a rapport between educators and learners. Technology enables us to reinvent our approaches to learning and collaboration and adapt learning experiences to meet the demands of learners in the current scenario.

As per the concept of STEM (Science, Technology Engineering, Mathematics) education, that is often referred to as meta discipline, one would realize, that it emphasizes on an interdisciplinary approach, catering to holistic development, rather than traditional compartmentalization of education in four domains (Education, 2009).

Teachers are lifelong-learners and need to regularly update their ICT based knowledge along with their respective subject domains. As per the TPACK (Technology, Pedagogy and Content Knowledge) concept which was built on Lee Shulman's construct of pedagogical content knowledge (PCK), there is a

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concept regarding inclusion of knowledge of technology. In order to practically implement technology-based teaching, teachers need to become familiar with TPACK and allied concepts (Koehler, Mishra, & Cain, 2013).

The impact of technology on Science education is phenomenal. E-learning has proven to be the result of LMS and OER associated teaching-learning methods. The use of technology to enhance knowledge and performance is E-learning (Ruiz, Mintzer, & Leipzig, 2006). With respect to the pattern of education in India, OERs have the potential to facilitate life-long learning eventually leading to the development of different skills. OERs have the potential to revolutionize the educational scenario leading to the empowerment of young learners (Das, 2011).

Learning Management System (LMS) enables Colleges to design a strategy to upload educational resources and supplement their routine academic transactions. The contribution of LMS in blending learning approaches is significant. Basic computer literacy and a novel approach to content delivery are some of the factors influencing satisfaction in the use of LMS. (Al-Busaidi& Al-Shihi, 2012)

India is a developing nation, with a diverse cultural background where people from different religions co-exist in harmony. In order to raise the level of higher education with respect to global benchmarks, there is a need to incorporate technology in education. One thing deserves mention here, that while incorporating technology utmost precaution needs to be taken not to disturb the national integrity, religious sentiments and the rich cultural heritage of the country. There is a need to have an approach which is both a combination of face to face traditional class sessions and online educational content. In other words, Blended Learning seems to be a better option to have a student-centric impact of LMSs and OERs on Science education.

An approach to education in which there is a harmonious combination of online educational resources, avenues for discussion and online interaction with conventional face to face classroom interaction is termed as Blended Learning. (Graham, 2011)

Objectives

The present research had the following core objectives:

1. To introduce the topic in a class face to face session (in-class activity)
2. To create a technology-based online platform that is LMS, to serve as an interface between learner and instructor (out of class activity)
3. To explore the other features of LMS Edmodo which could be useful in academic transactions (out of class activity)
4. To design a strategy to upload Open Educational Resources (OERs) as per the need and cognitive abilities of the learner (out of class activity)
5. To encourage students to visit the LMS and observe the educational content (out of class activity)
6. To conduct Formative Assessment to get a real time update of the response from the students and their level of understanding (out of class activity)
7. To analyse the data obtained in the form of online responses from the students (out of class activity)
8. To study the social, educational and psychological aspects of the responses from the students (in class and out of class activity)

Method:

Sample: F. Y. B.Sc. and S. Y. B. Sc students for the academic year, 2019-2020 were studied for the impact.

1. Introduction of the Topic

For F. Y. B.Sc. (Semester II) the topic was based on Air Microbiology and for S. Y. B.Sc. (Semester IV) the topic was based on Enzymology. Along with these topics, there was also discussion in class on General Aseptic techniques and safety practices in the laboratory. Students were introduced to the basic safety precautions to be adopted when they enter the

laboratory and perform practicals with live organisms. For example, when classrooms were created on Edmodo platform, e-content, in the form of YouTube videos based on Basic techniques in Microbiology was shared with the students. A video on Use of Mono-pan Balance https://youtu.be/201pUvSfvyY and another video about Use of Incubator were shared with the students https://youtu.be/SI1irHJYlok. Along with this, there were general discussions on the contribution of science to environmental issues, where one of the questions discussed was as follows: How can Science be helpful in the mitigation of problems like soil, air and water pollution? The learners were introduced to different topics from Microbiology and also sensitized issues from the environment in which Microbiology could contribute. The content was delivered in class and the basic description was given to the students. Some simple oral questions were asked to initiate the thinking process of the learners.

2. Creation of technology-based online platform

F.Y. B. Sc. and S. Y. B. Sc class students were taken into consideration. The reason to select undergraduate students for this research was the fact that the first year and second-year students were relatively new to the subject as compared to postgraduate students, since Microbiology is not a subject taught at junior college level. Responses from them would be based on pure subject content understanding without any prejudices. LMS Edmodo was adopted. Edmodo is a company associated with technology associated with learning, facilitating provisions for exchange of ideas, collaboration and platform for guidance right from elementary knowledge to higher education. One class was created for F. Y. B. Sc., https://new.edmodo.com/groups/fybsc-microbiology-2019-20202029775884?utm_source=classes_pageand another class was created for S. Y. B. Sc. https://new.edmodo.com/groups/sybsc-microbiology-2019-20202029739183?utm_source=classes_page.After the creation of classes on Edmodo, the class codes generated digitally by the system were shared with the students and by using the respective class-code the students could join the class. After creation of the class, the first message uploaded by the instructor was an introductory welcome message stating the use of the LMS and students were asked to participate maximally on the digital platform. Here not only was the online correspondence done, but also the students were informed about the ICT based teaching tools like LMS in extra class face to face sessions. As the students were from diverse sections, there was a need to encourage them to incorporate learning using ICT. The classes were created in the beginning of the Academic year 2019-2020 in the duration June-August.

3. Exploring LMS

Different features of LMS were explored to know about the features to invite students, teachers and parents. An attempt was made to explore the different options available to upload resources in the form of text, multimedia etc. along with the options to create a quiz using LMS. The intention was to explore the different options available for formative assessment.

4. Strategy to upload educational resources

After the creation of classes the intention was to make it student-centric. As the students were from different social backgrounds and with other genuine issues, the educational resource was curated as per the requirement. It was also observed that all the students had different levels of concept understanding abilities. Hence, the measures which were undertaken while uploading educational resources were as per Blooms Taxonomy. The intention was to enable students to learn the concept right from the basic level to a relatively enhanced state as per the need of an undergraduate curriculum. Aspects like Knowledge, Comprehension, Application, Analysis, Synthesis, and Evaluation were considered while framing subject sub-topics-based objectives. Different educational videos from YouTube under Creative Commons short were shortlisted and checked for their relevance as per the need of the students. The syllabus, along with educational videos from YouTube served as introductory material for the initiation of academic transactions. As per educational psychology literature, it has been observed that short duration videos serve the purpose in a better way as compared to long

duration videos. Different e-books along with other subject related text material were uploaded and the messages were given on the respective WhatsApp group. Although the classes were created at the beginning of the Academic year 2019-2020 and many different educational resources were uploaded, this current research is based on the latest educational material data shared with the students. For F. Y. B.Sc. class the video content from YouTube was on Technique based on Impaction on Solid Media to enumerate bacteria in air https://youtu.be/lvFQx2R1V0M, whereas for S. Y. B. Sc. the video content from YouTube was on Activation energy https://youtu.be/O4ZHhciMoq8, a topic from Enzymology. The video link was also shared with the students on respective WhatsApp groups.

5. Encouragement to visit LMS and observe the educational content

After the scrutiny of the relevance of the subject content and checking its suitability for the class the content was uploaded on Edmodo as well as shared on WhatsApp group. The students were then encouraged to log in to their accounts and visit the LMS- Edmodo. Students were also informed that the App could also be downloaded as per the need. Consistent reminders on E-mails and WhatsApp group served the purpose

6. Formative Assessment

In order to get a real-time update of the responses from the students and to get an overview of the understanding ability of the students an Objective test was conducted using Google Forms. The Google forms were selected since it was easy to use and followed a simple approach. Questions which were earlier asked in class during face to face sessions were again re-framed to get an overview of the responses and with an intention to design future strategy to deliver the content in a more student-centric manner.

7. Analysis of the data in the form of Responses

Students saw the video and attempted the tests using the link which was shared with students https://forms.gle/PxVZGu4gLgE2WUMF7(for F. Y. B. Sc.) https://forms.gle/uoUs3rsNJUfcZTAfA(for S. Y. B.Sc.).Data was entered in MS- EXCEL and analysis was done to get an overview of the responses.

8. Study of the social, educational and psychological aspects of the responses from the students

With respect to the social background of the students, an attempt was made to consider and study the ease with which students had access to technology along with the emphasis on quality of the educational content, There was a need to derive data from them to know them better. A Google form was created and the link for the form was shared with the students on the WhatsApp group.

The following questions were shared with the aid of the Google form with the first- and second-year students, and they were instructed to enter the data.

1. Do you belong to Maharashtra state in India?
2. Was English your medium of instruction in School?
3. Do you read scientific books and related literature?
4. Are you determined to pursue a career in Microbiology?

Consistent reminders were given to them to enter the data. An attempt was also made to study the impact of the educational content on the psychology of the learners. Different parameters like their response in class in the form of participation, discussion, and approach towards the topic were considered as parameters to deduce the impact on learner psychology.

Results and Discussion :

Introduction to the Topic

The topic was successfully delivered initially in the class. The intention was to have a Blended Learning approach, which consisted of the in-class face to face sessions and out of class online academic transactions.

Creation of technology-based online platform

LMS Edmodo was adopted for the Research and academic transactions. The classes were successfully

created and the class codes were shared with the students (Fig 1 and Fig 2). At present, there are 70 members in F. Y. B. Sc. class and 50 members in S. Y. B. Sc. class on Edmodo whereas there are 62 members in F. Y. B.Sc. and 48 members in S. Y. B.Sc. WhatsApp group.

Exploring LMS

After the initial creation of classes, an attempt was made to further explore the features of Edmodo, wherein it was observed that there were different approaches to invite people, by sending an invitation in the form of email, by sharing class code (Fig 3). It was observed that there are options to create an assignment, select an assignment to copy and create a quiz and to load the existing quiz (Fig 4). It was also observed that the instructor could create discussion forums and encourage students to discuss on a particular topic. There is also an option to create folders and save the content in the form of a Library which consists of organised data in an archive mode. (Fig 5)

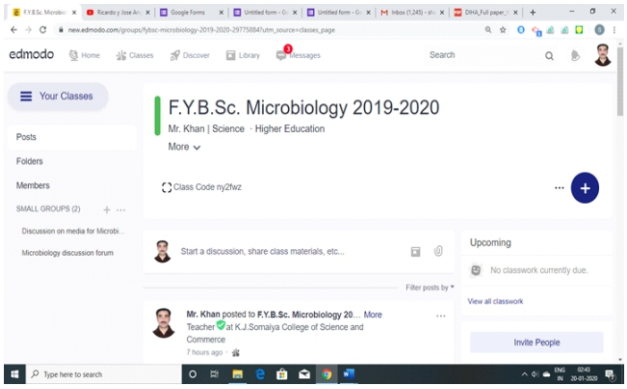

Fig 1: Screenshot of F. Y. B.Sc. class on Edmodo.

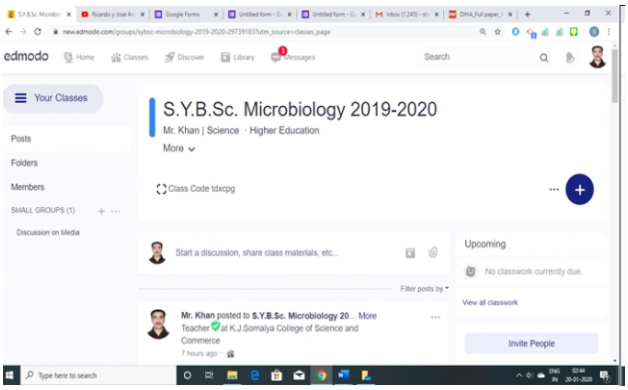

Fig 2: Screenshot of S. Y. B.Sc. class on Edmodo.

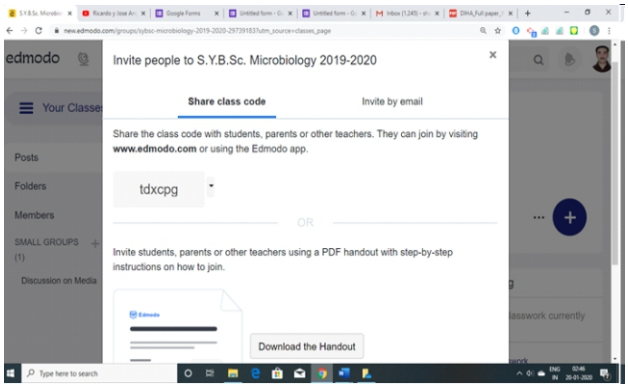

Fig 3: Screenshot of invitation to join class on Edmodo

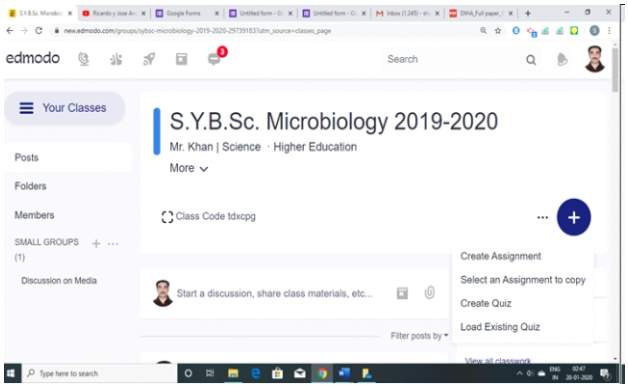

Fig 4: Screenshot to show options for Assignment and Quiz for Assessment using Edmodo.

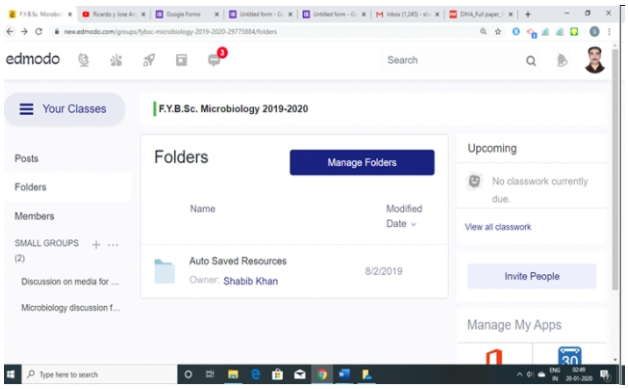

Fig 5: Screenshot to create and manage Folders on a class on Edmodo.

Strategy to upload educational resources

After the creation of the classes, good Open Educational Resource OER in the form of videos under Creative Commons from YouTube available under public domain were uploaded. It was observed that students actively observed the video and enhanced their subject knowledge. As the link of the video was shared on both the LMS platform as well as by WhatsApp it was observed that 80 % of the students could observe and learn.

Encouragement to visit and check content on LMS as well as WhatsApp group:

97.91% from F. Y. B.Sc. and 96.77% from S. Y. B. Sc. class observed the video in the first 4 hours and 50 minutes on WhatsApp.

Formative Assessment

An objective test using the Google Form was conducted by sharing the link with the students. Although the test had a score; here the purpose was not just to give marks and take it as the final score, but to encourage students to check the content, replay it again and again as per the need and to understand the concept.

Analysis of data in the form of Responses

As per Table 1, it was observed that 30 students from F. Y. B. Sc. and 33 students from S. Y. B. Sc. opted for the Objective test. At a 95 % level of significance, as per Table 2, it could be observed that the mean value obtained was 10 with a minimum score of 3 and a maximum score of 21. At a 95 % level of significance, as per Table 3, it could be observed that the mean value obtained was 11 with a minimum score of 1 and a maximum score of 28. Overall the number of students who scored 100 % score was 21 in F. Y. B. Sc. and 28 in S. Y. B. Sc. which is significantly more, as compared to the response which was noted in class face to face session where only 5 students from F. Y. B. Sc. and 10 students from S. Y. B. Sc. had answered with 100 % score.

Table 1: Comparative Analysis of the Responses from students

Class	Number of questions	Number of students who opted for the Objective test	Number of the students who scored 100 %	Number of the students who 0 %	Number of the students who scored 50 %
F. Y. B. Sc.	2	30	21	06	03
S. Y. B. Sc.	2	33	28	01	04

Table 2: Data Analysis Summary Table 3: Data Analysis Summary for F. Y. B. Sc. for S. Y. B.Sc.

S. Y. B. Sc.	
Mean	11
Standard Error	8.54
Median	4
Standard Deviation	14.79
Sample Variance	219
Skewness	1.65
Range	27
Minimum	1
Maximum	28
Sum	33
Count	3
Confidence Level (95.0%)	36.76
F. Y B.Sc.	
Mean	10
Standard Error	5.56
Median	6
Standard Deviation	9.64
Sample Variance	93
Skewness	1.54
Range	18
Minimum	3
Maximum	21
Sum	30
Count	3
Confidence Level (95.0%)	23.95

Study of the social, educational and psychological aspects of the responses from the students: With respect to the background of the students from F. Y. B. Sc., it was observed that out of 27 responses received using Google Form, 24 were from Maharashtra state and 03 were from other states in India. Twenty students had English as the medium of Education in school and 07 had other languages. Sixteen students

had the experience of reading scientific books and related literature, whereas 19 students were determined to pursue a career in Microbiology with 08 students who were not sure of their career development in Microbiology.

With respect to the background of the students from S. Y. B. Sc., it was observed that out of 23 responses received using Google Form; all of them were from Maharashtra state. Eighteen students had English as the medium of Education in school and 05 had other languages. Sixteen students had an experience of reading scientific books and related literature, whereas 16 students were determined to pursue a career in Microbiology with 07 students who were not sure of their career development in Microbiology.

It was observed that students had a mixed response for the ICT based teaching-learning pedagogies. Based on personal interaction with the students, it was observed that some had ready access to the Internet and technology and the social environment was conducive for them for technology-based learning. Some students were better able to enhance subject content and had a substantial positive impact on their psychology of learning, leading to self-learning in some of them. They appreciated the content and could correlate with the topic concepts in a better manner.

In both classes, it was observed that there was diversity with respect to geographical origins, the medium of Education in school, access to scientific books and determination to pursue a career in Microbiology.

Conclusion

Technology-based learning enhances the technical skills of the learners where they can learn new concepts and terms and at the same time even the teachers avail benefits by learning and implementing new pedagogies. Overall, ICT based teaching, learning and evaluation seems to be very promising with respect to the changing global academic scenario but will materialize in the true sense only when teachers or instructors work efficiently as facilitators to curate the educational content and make it available to the learners as per their requirement. There is a need to screen many other available LMSs and OERs, to check their authenticity and content offered and to explore their unique features which would be beneficial for both the learner and the teachers.

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Understanding College Students' Perceptions of Access to Higher Education: A Phenomenological Study

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Abstract

One of the major concerns in higher education in India is to provide access to a growing segment of the population and reduce the demand supply gap. The study is aimed at developing a better understanding of college students' perception of access to higher education. In-depth interviews were conducted employing interpretative phenomenological analysis with 15 final year students across 15 colleges in greater Mumbai. The paper attempts to present the various concerns and disparities in accessing higher education through the lens of college students. The findings suggest that the students opine that higher education should disseminate the information pertaining to various choices and opportunities. This would help students to make a proper choice while entering into higher education. This would empower the students to pursue the courses of their choice, interest and aptitude. It also highlights the steps that can be undertaken to bring about change so that higher education remains both accessible and affordable to all sections of society.

Keywords: Higher education, Access, Improvement areas

Introduction

Higher education is one of the key factors which contribute to national development. Qualitatively, higher education equips the students with the necessary skills and competencies, which are essential for the advancement of the nation. Quantitatively, higher education helps in increasing the number of educated citizens in an economy.

India has experienced a tremendous growth in the students getting enrolled for higher education. Despite this increased growth, it is not accessible to all, mainly on account of lack of accommodation for students in colleges, lack of awareness among students about the various opportunities to access higher education, lack of availability of seats and affordability.

One of the greatest challenges to higher education in India is providing access to the growing segments of the population demanding post-secondary education. The concern is that the existing capacity to absorb the increasing numbers coming out of the high school system into the college system is inadequate and causes a massive mismatch between the demand and supply frontiers.

Based on the All India Survey on Higher Education (AISHE) for 2018-2019, the following data comes into the picture: among 993 Universities, 385 Universities are privately managed and 394 Universities are located in rural areas; 16 Universities are exclusively for women; the estimated Gross Enrolment Ratio (GER) in Higher education in India is 26.3%, which is calculated for the 18-23 years age group. 10 Programmes cover more than 80% of the total students enrolled in higher education. The Bachelor of Arts (B.A.) program enrolls 93.49 lakh students whichamounts to the highest enrolment. Student enrolment at Under Graduate level is proportional to 51% male and 49% female. Distance education has become a useful mode of obtaining degrees for a large number of students who are staying in far off and remote areas and for whom accessing universities on regular basis is still a dream.

Accommodation: With a never increasing number of candidates passing out of high school, the supply of higher education institutes is not enough to meet the demand ofthe growing population. There is also a need to focus on undergraduate courses by providing courses which will help students achieve excellence and provide deeper knowledge in areas of their interest and aptitude.

Awareness: Although new age courses are being

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launched by colleges on a regular basis due to lack of awareness among the students and parents such courses are not getting popularity among the students and parents. The awareness about the benefits of such courses can lead to accessibility of these opportunities to the masses.

Affordability: India is a country with an overwhelming number of poor people who cannot afford expensive education. According to the recently released report of the National Statistical Organization (NSO), only 10.6% of the Indian population has completed a graduate degree. This proportion is further skewed in the rural areas at 5.7%. As per the said report, the socially & economically backward population is poorly educated. Thus there is an urgent need for making higher education affordable for all sections of society, especially for the socially and economically backward section.

According to the principles of neoliberalism, college students are the consumers and important stakeholders of higher education. Students are at the forefront of global change and innovation. Understanding student perceptions of various aspects related to access to higher education will provide a gainful insight of the present scenario in higher education.

The purpose of this paper is to present the concerns and suggestions of students pertaining to various aspects related to access to higher education in the present day context. Thus, the research study is focused on understanding college students' perceptions of access to higher education.

Literature Review

Agarwal, P. (2006) emphasized the need for greater adaptability in the higher education system so that it continues to provide the needed skills and trained workforce to the economy as it integrates with the world economy. The research took a comprehensive look at the various facets of higher education in India and adopted a systems approach for achieving policy coherence and multi-level coordination to address genuine concerns in the Indian higher education on a long-term basis and used the experiences of other countries to suggest measures to tackle its various systemic deficiencies. Kaul (2006) in his paper, 'Higher Education in India: Seizing the Opportunity' suggested that India needs to have a proactive demand based policy towards private higher education including foreign institutions/universities desirous of setting up campus in India or entering into joint-ventures. Singh, JD. (2011) examined critical issues in Indian higher education, and highlighted the need to create a second wave of institution building and of excellence in the fields of education, research and capability building. Ramesh (2013) conducted research on Indian higher education and the challenges of sustainability and observed the fact that the female Gross Enrollment Ratio (GER) is very little. The study also evidently spoke the truth that the challenges of higher education have been caused due to low college enrollment, employability crisis of unskilled labour and lack of flexibility in the education sector.

Joshi & Ahir (2013) conducted research on Indian higher education to understand the governance of higher education in India, the access to higher education in India, financing of higher education in India, the nature of privatization in higher education in India, the equity related issues in Indian higher education and to examine the efficiency and quality concerns of Indian higher education. Basant & Sen (2013) conducted research to study access to higher education in India with respect to deficits in participation of marginalized groups in higher education and have explored the role of socio-religious affiliation and other factors in determining participation in higher education. Menon, Tiwari, Akshay and Singh(2014) analyzed the various facets of higher education in India and studied the various steps required to address genuine concerns in the Indian higher education on a long-term basis and used the experiences of other countries to suggest measures to tackle its various systemic deficiencies. It was found that most of them agreed that India has an average level of existing infrastructure of higher education and indicated that higher education did not meet the expected standard and revision of syllabus and the implementation of pedagogy is needed to bring it on par with western education. Chahal (2015) conducted a research study to analyze the current scenario of the higher education system in India, to

study the total student and girls' enrolment in Higher Education and to identify the emerging issues and challenges to higher education in India

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Jahan, Selvarani (2015) conducted a research titled 'Higher Education in India: Issues and Challenges' with the objective to analyze the present status of the higher education system in India and highlight the opportunities and challenges faced by the higher education system in India. It also examined the variations in the enrolment in higher education across states, gender and social groups and discussed trends in the financing of higher education. Sirswal (2016) conducted research on higher education and research in India to explore issues of concern like financing and management including access, equity and relevance, reorientation of programmes by laying emphasis on health consciousness, values and ethics and the quality of higher education together with the assessment of institutions and their accreditation. Singh S. P., (2016) conducted research on the availability and affordability of Indian higher education and according to facts from the data collected from the All India Survey on Higher Education (AISHE) reported that as many as 44.81 million–16.6% male and 9.5% female–Indian undergraduate students aged between 18 and 24 are too poor to pursue higher education. Besides while government-owned institutions for higher education increased from 11,239 in 2006-07 to 16,768 in 2011-12 (49%), private sector institutions recorded a 63% growth in the same period from 29,384 in 2006-07 to 46,430 in 2011-12, indicating the need for public higher educational institutions.

The preceding literature indicates that research on higher education is conducted extensively in the field of issues and concerns; where in the facts presented are from secondary resources and from various reports published by national bodies; however no research can be located that has been undertaken to understand these concerns from the point of view of the stakeholders of higher education. Prior research in higher education is mainly focused on challenges in higher education, issues, and problems faced by higher education, the requirement of a paradigm shift in higher education, etc. Students are important stakeholders and consumers of higher education but their viewpoints are not considered on various aspects of higher education. Thus, the necessity is felt to fill this gap with a new theme of understanding the students' perspectives on access to higher education. Also, the researchers conducted so far are quantitative in nature and are conducted abroad. Thus, there arises an urgent need to conduct more researches to close a major research gap in prior research by presenting a qualitative study on access to higher education.

Statement of the Problem

Understanding College Students' Perceptions of Access to Higher Education: A Phenomenological Study

Broad Research Question

The study was conducted with the research question: What are the college students' perceptions of access to higher education?

Methodology of the Study

As the aim of research focused on understanding college students' perception of higher education, the overall design of this study took the form of qualitative phenomenology approach. Phenomenology is a qualitative research method that is used to describe how human beings experience a certain phenomenon. A phenomenological study attempts to set aside biases and preconceived assumptions about human experiences, feelings, and responses to a particular situation. It allows the researcher to delve into the perceptions, perspectives, understandings, and feelings of those people who have actually experienced or lived the phenomenon or situation of interest.

Thus, the researchers' aim in choosing this approach for the study was to follow the emic perspective to study the views, perceptions and interpretations of college students on access to the Indian higher education system.

Participants of the Study

The participants of this study were selected using the non-probability sampling method. Qualitative researchers' typically use non-probability sampling techniques to collect the sample. This is the most suitable technique to be used when researchers want

to select small samples.

In the present research, the research participants were 15 students from government and private colleges affiliated to the University of Mumbai. The research setting included the natural settings of the college classroom or a science laboratory or a computer room or sometimes a designated room which had been allotted to conduct interviews. During the interviews, the researcher introduced the topic for discussion, developed a rapport with the participants and made them feel comfortable for the interview.

Table 1: Number of participants included in the study

Regions	Boys	Girls	Total
North Mumbai	1	4	5
South Mumbai	2	3	5
Central Mumbai	3	2	5
Total	6	9	15

Of the 15 students who participated in the research from North, South and Central Mumbai, 6 of the participants were boys and 9 of the participants were girls from diverse socio-economic and educational backgrounds.

Table 2 : Faculty wise distribution of the participants of the study

Regions	Science	Commerce	Arts	Total
North Mumbai	1	4	0	5
South Mumbai	2	1	2	5
Central Mumbai	2	0	3	5
Total	5	5	5	15

An equal number of participants were interviewed, with five students each from the Science, Commerce and Arts faculty.

Techniques of Data Collection and Research Instrument

Qualitative research uses tools and techniques that allow studying the totality of interactions which help researchers gain deeper insights into why people do what they do. Qualitative research is an inquiry into the way people interpret a certain social condition around themselves. It usually involves interviews or conversations and observations.

In the present study, the researchers used the self-developed open-ended questionnaire as a research instrument to collect qualitative data. The researchers wanted to take a glimpse into the minds of college students on various aspects of access to higher education.

Results

In the present study, the themes emerging from the analysis of participants' perception of access to Indian higher education were “Guidance towards Access to Higher Education”, “Disparity among Different Sections towards Access to Higher Education” and “Affordability and Access to Higher Education” and “Education Accessible to All”, which are illustrated below. * Table on Page No 49.

The following themes with participants' statements are illustrated.

Theme 1 : Guidance towards Access to Higher Education

Evidence in the form of participants' statements:
“…There should be a larger number of courses available in colleges. Not all colleges are offering all course combinations…”

“…Higher education accommodates everybody unless you belong to an unconventional field like photography, dancing or music which may not be available here in Mumbai or India. Exposure to these subjects is not given to students…”

“…The proper information which the government or universities and schools should provide is not properly given. Basic information such as where to go, whom to approach and which form to fill is all messed up. No guidance or counseling on where to start with.

“…Parents need counseling because they have fears. The Education department needs to open the parents' mind…”

“…Universities can make the best use of social media to increase such awareness. Their pages on twitter and facebook are inactive. The way social media is

used for election campaigning, it can also be used to spread the awareness about availability of various opportunities to access higher education…"

"…When we apply for admission to colleges we get the admission form. Let's say for example, that rather than giving the short form of courses the form should give the full name and details of what the course contains. If we have three to four more pages extra in that admission form that elaborate the courses, it might be easier for the students to pursue by reading and by actually understanding about what the courses are about…"

"…Universities can send their students to talk to the school students. As there is a lesser age gap; the school students will be able to understand college student's perspective of looking at different subjects…"

"…The universities' colleges can issue the aptitude test officially to all the students so that they know at least what options are available for them as per their aptitude. They can tie up with the educational counselor…"

Theme 2: Disparity among Different Sections towards Access to Higher Education

Evidence in participants' statements:
"…Actually in urban areas there are lots of colleges but in rural areas there are lack of colleges so there should be development of colleges in those areas..."

"…We have fewer colleges in rural areas. So when a student passes out of Std.10th or 12th, parents do not allow them to go to cities and stay in a hostel. So most of the students especially girls choose not to study further…"

"…Rural students face transportation problems while trying to get education. In the news we see the difficulties students have to face in crossing railway lines and sometimes lakes to reach school or college…"

"…For IT subjects most of the students have to go to Bangalore or Pune. Even in Arts, for archaeology we have to go to Pune. In Mumbai I think there is only one college. Those students who cannot move, especially girls, cannot fulfill their dreams …"

"…For engineering there are plenty of colleges and these colleges are not getting their seats filled. Commerce offers plenty of options but for the medical stream the seats are very limited and the aspirants are large in number. So I feel that, for medical aspirants, there is a scarcity of seats…"

"…Returns for investment in the humanities is so poor that it really doesn't figure among our choices. There is no financial outcome of it. Engineering and MBBS provides capital at the end of your investment…"

"…We need to create more higher educational institutes in remote areas and also conflict-ridden areas like Kashmir or the North East. There should be peaceful environment so that people can invest their time in education…"

Theme 3: Affordability and Access to Higher Education

Evidence in participants' statements:
"…hardly any students are aware of new and specialized courses that are coming up. The fee is high so students who are below the poverty line and willing to go ahead for higher education because of lack of awareness and high fees cannot do so…"

"…No, I don't think higher education is affordable to everyone. Because of the financial conditions there are so many students who drop their dreams…"

"…With time the number of students going in for higher education has increased but proportionately, the seats or colleges have not increased…:

"…the numbers of government colleges are decreasing and privatization is increasing because of which the college fees, course material and admission fees are getting expensive day by day…"

"…I feel concessions should be given to those who are economically weaker and not those who are economically well off but belong to a certain caste…"

"…Universities can divide the fees semester wise instead of year wise. Provisions should be made for

the part - payment of fees…"

"…There should be scholarships for economically backward students. The colleges give scholarships but they don't give them on time. The process is very slow in government colleges and is not there in private colleges…"

"….There are scholarships. There are foundations. The universities or colleges can tie-up with NGO's to support students financially …Colleges should openly tell students about the policies that can help them pay part for / of their education…'

Conclusion

The themes emerging in data analysis answer the broad research question signifying the college students' perceptions of access to higher education.

Research question: What are the college student's perceptions of access to higher education?

Answer: The college students have shared their perceptions under the following three headings covering various aspects:

1. Guidance towards Access to Higher Education

The students highlighted the need for availing of guidance not only when they were in school but also highlighted the importance of continuous guidance when pursuing courses in college. One of the participants commented, "Very few people are aware about the availability of opportunities. For example, in science, people have the perception that after 12th you can pursue either medical or engineering colleges. There are so many other opportunities and wide number of streams available such as life sciences and natural sciences but students are practically brainwashed to either opt for medicine or engineering. This is bad for the nation." Most of the participants felt the need for guidance and counseling. The students also highlighted the need for counseling to parents of the students, as parents play a very important role in providing access to higher education for students. Students also stressed upon the need to highlight the availability of unconventional courses and combinations of subjects among different streams. In the course of discussion, the importance of the aptitude test also came out significantly.

2. Disparity among different sections towards Access to Higher Education

The students highlighted the disparities among the different strata of people. The students were also critical of the caste based quota system and lower availability of seats in the open category. They also highlighted the regional disparities and the availability of colleges in rural areas. Similarly the lower availability of colleges in suburbs / outskirts of the cities were also highlighted. Another important aspect shared was lower availability of dedicated transport infrastructure for students. Special mention has made of the government's role in maintaining peace and harmony in all areas, as it was highlighted that any kind of disturbance in the region, would lead to lower access to higher education. The spread of education is directly proportional to peace and harmony in the area. Another important area being highlighted is the social stigma attached to the education of girl child.

3. Affordability and Access to Higher Education

Though some of the students mentioned that higher education is quite affordable and within the reach of the general public, but a large section of participants highlighted that the affordability depends on the stream the student is opting for i.e. the students who are opting for the commerce or arts stream find higher education to be quite affordable. However, as one moves toward the specialized fields and technical education the affordability reduces. The participants also highlighted the need for college tie-ups with NGO and banks, for bridging the affordability gap for specialized and technical courses.

Implications of the Findings

The research study is expected to gain insight into students' perceptions of access to higher education by gathering evidence of their experiences and feelings. The findings will help in understanding the existing gaps in access to higher education. The study will help all the stakeholders including policy makers, administrators, academicians, faculty members, students & parents to understand the disparities in

access to higher education. The various suggested measures will help the system to overcome the disparities in society in accessing higher education.

* Following table demonstrates categories along with the major themes as they emerged out of the study:

Categories	Themes
A. *Lacuna* • All course combinations are not available • Courses on unconventional subjects are not available in abundance • Social Stigma related to Arts • Lack of guidance and counseling services in schools • Lack of awareness about opportunities B. *Suggestions* • Technology & new age tools should be used to spread awareness • Benefits of higher education to be popularized • Guidance to parents • Aptitude tests for students should be conducted at regular intervals • Seminars in Colleges • Role of Government / Universities • Admission forms / Websites elaborating course details. • Motivating youth • Counseling by college students in schools • Tie-ups with educational counselors	Guidance towards Access to Higher Education
A. *Lacuna* • Urban and rural divide • Regional disparities • Language Barriers • Science and non-science streams • Brainwashed to opt for engineering and medical stream • Caste & Quota based admission is a farce • Differences in stream wise seats availability • Social Barrier for Girl Child • Travelling from faraway places B. *Suggestions* • Check on Corruption • Increase the colleges in rural or semi urban areas • Benefits of Arts stream to be popularized • Increase in number of seats for open category • Opportunities in suburbs / outskirts of cities • Peaceful environment in regions • Concessions on the basis of economic status • Special transport facilities for students pursuing higher education	Disparity among Different Sections Towards Access to Higher Education
A. *Lacuna* • High Fees for specialized courses • Increased Privatization • Rate of increase in population is higher than the increase in seats for colleges • High Fees for career counselors B. *Suggestions* • Tie-up with Banks • More affordability by part-payment of fees • Financial support for economically weaker sections • Collaboration with NGO • Timely release of scholarships	Affordability and Access to Higher Education

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Impact of Project-Based Learning at Undergraduate Level

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Abstract

Project based learning (PBL) is a pedagogical strategy which is envisaged to enable learning by giving control of the process to the learner. In order to promote critical thinking and problem-solving abilities, various educational contexts have adopted PBL. Its implementation can vary across institutions and programs, but in general, it can be viewed as an iterative process made up of first, a problem analysis phase, a period of self-directed learning and lastly, a reporting phase. The purpose of this study is to evaluate whether the PBL introduced at the undergraduate (UG) level has had an impact on the learner with respect to improving their abilities pertaining to computation, critical thinking and oral and written communication skills which eventually would help them in their studies ahead. A survey-based approach was carried out to examine the impact of PBL on student attitudes toward science, problem-solving skills, computational abilities, critical thinking and their perceptions regarding the learning environment. The feedback was also targeted towards improving the quality of UG research if required.

Keywords: Project based learning, Undergraduate research, Survey-based research, Critical thinking, Communication skills, Likert scale.

Introduction

Teaching-learning strategies can be classified into three groups. One of these is Passive learning, where the trainer is active and students are passive, accepting the trainer's authority. Another strategy is Active learning, which involves student based knowledge acquirement. Students themselves search for information, whether through the study of printed material (texts or manuals), graphs and figures, or through carrying out group-work exercises. Student based learning methods are generally centered on group activities like role plays, project work, seminars, etc. involving all members of the group. Action-based learning, the third type, is where after a period of preparation, students will be motivated to develop their creative, innovative and initiative-taking skills, while assuming direct responsibility for their actions (Thomas., 2000).

The difficulties incurred while teaching research methods to undergraduates primarily lies in engaging the students in a subject which they are not basically interested in. (Tiwari, R. et al., 2017). Exposing undergraduates to research can increase the likelihood of creating successful researchers in the future. Some undergraduates are unsure of their future goals and proceed to graduate school thinking that it is the only next logical step after their undergraduate studies. Exposing them to undergraduate research helps them to understand their aptitude for research. In some cases the passion for research is kindled which otherwise would have remained unknown. (Petrella and Jung, 2008). Despite the burgeoning number of undergraduate researches undertaken, little is known about the success of these programs because of the lack of empirical educational research on them.

The education research or survey-based approaches generally use Likert-type scales such as end-of-rotation trainee feedback, faculty evaluations of trainees, and assessment of performance after an educational intervention. This kind of data frequently collected involves the determination of attitude or feelings with respect to some attribute. That is, the response categories have a rank order, but the intervals between values cannot be presumed to be equal (Jamieson, S. 2004). The typical Likert scale is a 5- or 7-point ordinal scale used by respondents to rate the degree to which they agree or disagree with a statement (Sullivan, G. M. et al., 2013). When

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conducting survey-based research, data is measured from a sample of the total population of interest, not from all members of the population. Descriptive statistics, such as means and standard deviations, are generally not recommended for ordinal data. Similarly, it has been contended that frequencies (percentages of responses in each category), contingency tables, Chi-Square tests, the Spearman rho assessment, or the Mann-Whitney U test should be used for analysis instead of parametric tests, which, strictly speaking, require interval data (Sullivan, G. M. et al., 2013; Jamieson, S. 2004). However, if there is an adequate sample size (at least 5–10 observations per group) and if the data is normally distributed (or nearly normal), parametric tests can be used with Likert scale ordinal data (Norman G., 2010).

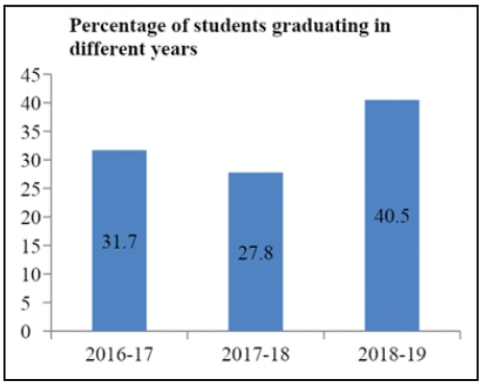
This paper deals with the introduction of PBL to one unit of an otherwise traditionally taught practical program at the UG level and the attempt to understand its implications. We have tried to correlate our results to the graduate attributes and learning outcome of the learners and thereby try to ascertain its importance in UG curriculums and also improve their quality wherever required.

Methodology

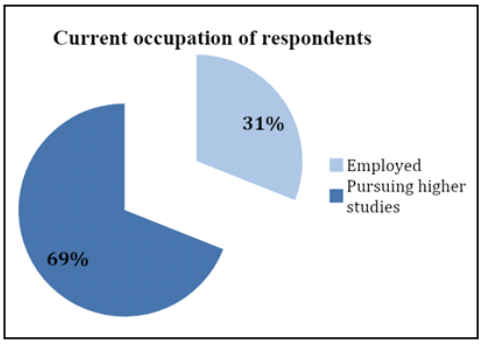
In this study, we used a survey based approach wherein the students who graduated in Biotechnology during the period 2016 -2019 had to fill in a questionnaire giving their feedback on the impact of PBL in honing their organizational, communication, and computational skills; ability to read and understand research papers; work in a team etc. Basic information with respect to the semester in which the project was undertaken, duration of the project, number of individuals involved in a project etc. was also taken from the respondents. We have also tried to garner their views on various aspects so as to make the UG research a better learning experience if necessary. The study was restricted to students who completed their undergraduate program in Biotechnology from various colleges across Mumbai.
Respondents were asked to rate their opinion on the various skill sets achieved on a bipolar 5-point Likert scale where 1= Not at all helpful, 2= not so helpful, 3= somewhat helpful, 4 =very helpful and 5= extremely helpful (Krosnick and Fabrigar, 1997). The results of the survey were analysed using Z test and Chi-square.

Results and Discussions

A total of 126 participants spanning three graduation years, currently pursuing higher studies or employed responded to the survey. 31.7% completed their graduation in the year 2016-17, 27.8% belonging to 2017-18 and 40.5% from 2018-19 (Fig.1). Of the total respondents, 69% are currently pursuing higher studies, whereas the remaining 31% are employed which includes both research based and a non-research based role (Fig.2).



(Fig.1)



(Fig.2)

Learning Outcome and Overall Evaluation the Undergraduate Research Experience

To evaluate the educational experience of undergraduate researchers, eight evaluative questions on specific learning outcomes were presented to the respondents. A median response of 4 was obtained on a 5- point Likert scale to all of these evaluative questions. A vast majority of the respondents benefitted from their research experience in terms of organizational skills, team work, laboratory skills and critical thinking (Table.1).

Table. 1. Percentage responses to various learning gains questions from the undergraduate research experience

Skills	Median responses	Percentage of individuals responded in range of 'very helpful' to 'extremely helpful'
Improving Laboratory skills	4	86.50
Developing team work	4	76.19
Ability to think critically	4	73.01
Developing organizational skills	4	74.60
Developing communication skills	4	66.66
Ability to understand scientific papers	4	60.31
Enabling referencing and reviewing literature	4	61.90
Enhancing computational skills	4	51.58
Responses were on a scale of 1 (not at all helpful) to 5 (Extremely helpful)		

Figure depicts the response of the participants pertaining to the various skill development following UG research measured on a Likert rating scale. The highest rated skills were found to be "laboratory skill development" followed by "developing team work", "development of organizational skills", "ability to think critically", "development of organizational skills", etc.

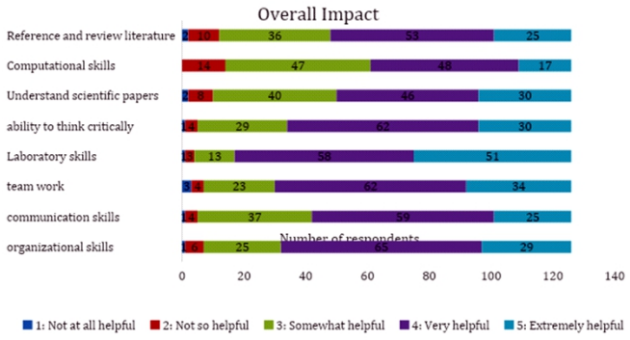


Fig.3. Overall impact of undergraduate research of development of various skills

Thus, the percentage of students who have found the undergraduate research experience beneficial is quite high and depicts an overall impact on skills achieved because of PBL.

Development of skills as a function of semester in which the project was undertaken :

By comparing the skills developed in respondents who undertook their projects in fifth semester and sixth semester of their undergraduate program, we aimed at understanding whether there exists a difference in the skill sets achieved. Figure 4 indicates that the skills achieved were higher when the project was carried out in the fifth semester as compared tothe sixth semester. A one tailed Z score test was carried out in order to assess the differences in the skills achieved in proportion of students undertaking research in a particular semester. Of the eight skill sets compared, communication skills (Z score 2.011) and understandingof a research paper (Z score 1.792) exhibited high significant difference across semesters at $p < .05$, indicating that these skills were better achieved in the fifth semester. Critical thinking (Z score 1.465) and referencing & reviewing literature (Z score 1.5548) were not found to be significant at 5% level, but they were found to be significant at 10% level. However, skills such as organizational, computational, laboratory skills and team work did not show any significant differences across semesters.

Thus, the fifth semester is comparatively better in imparting various skills to the participants of undergraduate research projects. This could be because the fifth semester is relatively longer in comparison with the sixth semester which enables the students to devote more time to research. Though computational skills, organizational skills, team work and laboratory skills were observed to be enhanced, these attributes were not semester dependent.

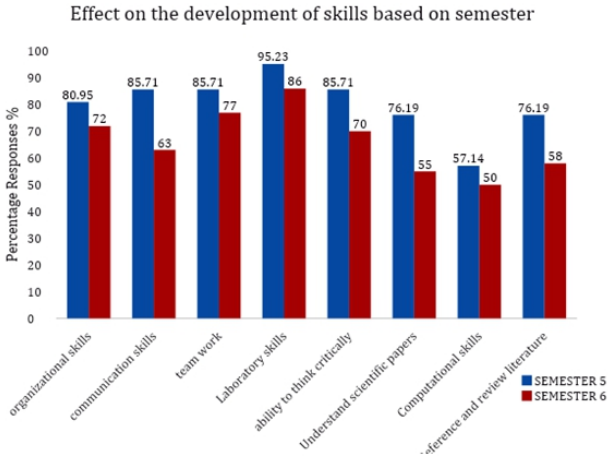


Fig.4. Effect on the development of skills based on the semester in which the project was undertaken

Development of skills as a function of the number of individuals involved in the project

A Chi-square test of independence was performed to examine whether the number of individuals involved in a research project had an impact on the total skills achieved. The total skills were calculated by a summation of the scores obtained for all the eight evaluative questions per individual, a score of 40 being maximum skills achieved. The respondents were divided into two groups viz., ≤ 4 individuals in a research group and ≥ 5 individuals in a research group. Respondents who have achieved ≥ 75% total skills were considered to be benefitted from there search project and those who acquired ≤ 60% were not. The respondents between ≥ 61 to ≤ 74% of total skills were considered to be insignificant as their responses were inconclusive. The 2 x 2 contingency table for the same is as given below in Table 2.

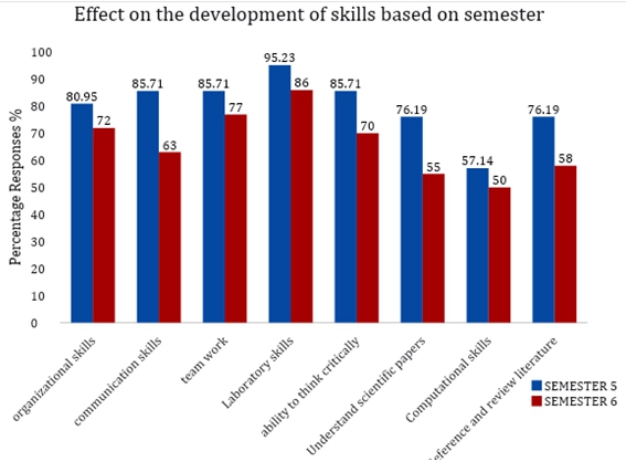


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Table 2: Contingency table for number of individuals in a research group and skills achieved

	≥ 75 % total skills achieved	≤ 60% total skills achieved	Total
≤ 4 individuals in a research group	52	25	77
≥ 5 individuals in a research group	22	26	48
Total	**74**	**51**	**125**

The relationship between the variables were found to be significant, X2 (1, N = 125) = 5.764, p = .026847. The total skills achieved are dependent on the number of individuals in a research group and more skills are achieved if there were four or less individuals per group. A smaller team allows for better interactions as well as hands-on experience in most of the experiments planned.

Features or Modifications in Research Based Learning

The survey concluded by asking for features or modifications required in undergraduate research project. Opinions were sought on the choice of research topic, specific guide, semester for undertaking the project, number of individuals desired in a group and whether an orientation session was required. A good number (98.4%) of respondents suggested that the choice of selecting a research topic should be given to the participants and 89.6% of the respondents believed that choice of selecting the research guide should be provided. This could be because of the strong relationship with the mentor who with their interpersonal, organizational, and research skills play a large role in facilitating positive outcomes. 81% felt that orientation on the use of MS Office prior to the commencement of the research project would have helped them in honing their computational skills.

93.7 % respondents believed that a group of 4 or less individuals were optimal which is in agreement with our findings.

Conclusions

A total of 126 students are both representing different colleges and are involved in undergraduate research were surveyed to assess the impact of project-based learning on the development of various skill sets. We found that there is an overall increase in skills achieved because of research based learning at UG level, of which laboratory skills ranked the highest. The Z test revealed that there is a significant difference in the skills achieved between semesters with respect to communication skills and understanding of research papers ($p<.05$). Chi-square analysis revealed that the total skills developed are a function of the number of individuals in a research group, not exceeding 4 members in a group. The choice of selecting a topic of research and research guide could have a better impact on the skill development, according to the respondents. However, the study needs to be applied to a larger group in order to get an overall impact across different universities in both urban and rural areas.

A significant number of undergraduate students are overwhelmed by the academic process and do not even know that research is an option for them, let alone how to get involved. Therefore PBL is a tremendous opportunity for the teacher to ignite a passion for research.

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Pedagogy for Gen Z: An Experiential Study using blended learning

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Abstract

Technology in the present day has changed the landscape of learning as to how the teacher teaches and the learner learns. A teacher should be a facilitator rather than aknowledge provider as there is a wide range of knowledge available around the globe and the present Gen Z student no more relies purely on the teacher for knowledge. The student should be taught to learn, unlearn and relearn as there is a digital transformation happening at a rapid pace and we are not sure about what is there in the future. Further, they should be equipped to embrace, debate, discuss, analyze and adapt to what ever is coming their way and hence a paradigm shift in the teaching-learning process becomes a necessity. Integration of technology into the curriculum will enhance the learner's understanding and creativity. The experimental study carried out would elaborately discuss the effectiveness of integrating technology and the use of digital tools that promotes learner autonomy in the classroom. From the observations and reflections, it is evident that integrating technology in the classroom or beyond using the flipped method is effective. Moreover, this paper highlights the necessity for a shift from teacher-centric to student-centric learning and the different tools and methodologies that can be used for an effective transformation of Generation Z.

Keywords: Flipping Classroom, Blended learning, LMS, Student-centric learning, Gen Z learners, Google Classroom, Edmodo

Introduction

“Tomorrow's illiterate will not be the man who can't read; he will be the man who has not learned how to learn” – Herbert Gerjuoy

The fragility of knowledge, the limitations of learning from a confirmed set of principles and experiences, the increased randomness, uncertainty and growing complexity as Taleb explains is the new world order and an average Gen Z student has to encounter more black swans these days. Earlier learning was focused on the teacher who had the full responsibility of imparting knowledge to the students. Now there is a 360 degree change wherein the knowledge and the facts are available around like an ocean and the role of a teacher has changed from a knowledge provider to a facilitator.

Generation Z refers to the individuals born between 1996 and 2010 and are close to the style of the Millennial Generation. A survey conducted among 91 Gen Z and 101 Millenials revealed that more number of Gen Z considered long term papers as insignificant when compared to the Millenials. In addition, Gen Z prefers online books and free online book sites and they consider class work as a critical component as opposed to just listening to lectures. (Arlene J. Nicholas Dr., 2020). Such, independent Gen Zs, do not look up to the teacher as the “Source of Knowledge” as they want to gather theirs, from a variety of sources on their own. Thus, the role of the teacher is more of the “Facilitator”. Like the Tennis Coaches, who put the ball to the players and allow them to call the shots, teaching is now more about the learners and their learning ways. In preparing them for the unpredictable future, one's education has to guide them to adapt to those events as they unfold, retrospectively, in hindsight, relate to their learning. In essence, the need of the Gen Z is to be taught about these changes and how to embrace them and adapt to the situation. Essentially, this would mean “On their Own”. When the need is to be on their own, the teaching methods, processes and tools have to undergo a paradigm shift.

The premise of Strauss-Howe generational theory is that those of a similar age share formative experiences that can produce important and widespread commonalities in personal traits. The

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educational system has always debated on the issue of teaching methods followed in our country. Nonetheless, the learning space in the near future will be decided by the advancement of technology. The evolution of technology in education has made teaching effortless and very interesting to teachers as well as students. Integrating technology in teaching encourages the learners to learn and enhance their performance. The teaching-learning experience using technology has actually made a very close bondage in the teacher-student relationship and has encouraged learners by involving themselves in meaningful interaction. It has also enabled them to be technologically confident users of online materials and encourages learning from one another.

Education is a complex process in which human and technical resources should be used carefully to yield good results. This paper aims to make a study on the relevance of technology for effective learning. An attempt has been made to present the significance of technology aided teaching and how it helps the learner to be more effective learners when compared to conventional type of teaching i.e. using blackboard and chalk. In recent years, researchers are emphasizing on the need for the change in age old teaching and learning methods. The shift from the Gurukula system to the modern system has only substituted the traditional method to the conventional method. It is important to note that it is teacher-centered and not student-centered. In a conventional classroom, teacher delivers the subject content which is figuratively called 'Jug and Mug technique of learning' where the teacher is represented as the full jug who pours out knowledge to the student, figuratively the empty mug. This system was felt so orthodox because it was advantageous for a group of students. The age old methods of using blackboards, chalk, charts and flashcards have been now replaced by the modern method of teaching. Researchers started focusing on process-centered teaching i.e. method oriented, with a view that methodology strengthens the process of learning. By introducing technology in teaching, students develop an interest in the participatory learning and get self-motivated to use technology. This method can bring a sea change in the teaching and learning environment.

It is observed by the authors that participatory learning improves students' learning ability and understanding of the concepts taught in a course. This will enhance the communication skills, higher order cognitive skills and enable students to solve problems more efficiently. Flipped learning is one of the important techniques that can be deployed for a more enjoyable learning experience and helps in learner's autonomy.
With independence and confidence also come the uniqueness, sensitivity and fragility. Therefore, the teacher has to facilitate and focus the student on their strengths and ways of learning – just like the mother, who tries to feed her baby by showing the moon. When the mother shows the moon, the baby does not see the moon but merely watches only the tip of the mother's finger. The mother gently holds the chin and lifts the baby up so that it can see the moon. Absolutely no pain, the baby should not feel the force and it had to be gentle and comfortable, and a modern day teaching has to be exactly like this.

We are not sure of the future and we will have to equip students to learn, unlearn and relearn and analyze, debate, adapt to the challenges in the future. So, constructive learning not only should enable students to adapt to the environment they are in and have the willingness to understand, but also to process and analyze the information, collaborate with others and to be a transformer. With digital evolution and technologies, translating Gen Z's digital awareness into a productive skill set will be an important and unavoidable transformation required and for this to happen, teachers must stay ahead of pedagogical changes emphasizing more on the collaboration and efficiency in the classroom as students learn more from their peers. Hence education cannot be confined to knowledge sharing but involve collaborative learning. Our review of research papers confirmed that there is a growing consensus among educators that changes in curricula and pedagogy must be a focus developing skills of Gen Z. As resources are available from around the globe, it is very important to help the students to take the relevant resources and enable them to harness their full potential.

Literature Review

In the past two decades, there has been a considerable increase in the number of children with

disabilities being enrolled in schools, due to positive legislation, increased provision of aids and appliances, etc. Hitherto, very less focus has been given to the quality of teaching and learning conferred on the children with disabilities. According to the Salamanca Statement, inclusive education is feasible in India if efforts are built on contextual realities (Nidhi Singal, 2019).

India as a growing nation has added over 18,000 new colleges during the period 2008-2016. The suggestions and expectations for improving the quality of higher education in India if the country wants to compete at a global level are a) moving towards a learning society with the rest of the world b) Industry and academia connection c) Providing enough incentives to teachers and researchers on a regular basis d) Innovative and scientific practices e) Mobilization of resources f) Focus on information technology g) Student-centered curriculum and dynamic methods of teaching h) Public-Private Partnership i) Need based job-oriented courses to be compulsory in all the higher educational institutes j) International cooperation and k) Marching towards a new vision l) Cross-cultural and multi-dimensional programmes m) conducting academic and administrative audit n) Development of individuality o) Privatization of higher education with check in their activities p) Quality development in education q) World class education as par with the rest of world r) Improving academic research studies s) Stipends to research scholars to arouse their interest in research and many more (Hussain, Dr & Khan, Manzoor, 2019). Twenty-first century skills are an essential factor that needs to be focused in the current scenario. Many recent researches emphasize the importance and relevance of these skills among the learners. Here are the ten key 21st century competencies that today's students need to inculcate and are in demand by their employers. Needless to mention, the Gen Z learners are expected to possess these skills of Communication, Collaboration, Critical thinking, Problem Solving, Adaptability, Innovation, Creativity, Cross cultural competency, Digital and Media literacy to succeed in their career (Okros, 2020). It must be stated that the teaching methodology should accommodate different learning styles and help every student achieve their full potential. In order to do it, one has to be mindful of the differences in learning styles as the visual learners may not respond well to lecture mode (Vogel, 2014).

Digitalization in education system must be more effective so that students work hard. It is wise to 'blend' or mix technological and human approaches that strengthen the enabling and evaluatory mechanisms of digital empowerment (V. B. Hans and S. J. Crasta, 2019). IT-enabled SWOC study ensures transparency and protects the identity of participants in the study there by helping them to put their views fearlessly. Further, IT-enabled SWOC enables the stakeholders to participate in the study from their respective locations (Dr. Pramod Shahabadkar et al, 2019). Digital tools enhance the communication process in the teaching-learning process by using dialog system (virtual personal assistant) taking the input in the form of speech and produce output in the form of a graph. It is an effective way of learning (Gulave K.R, 2020).

Blended Learning facilitates integration of both traditional and e-learning. ICT enabled teaching aids in creating an environment which is more conducive to learning as compared to traditional learning. The integration of ICT has far reaching consequences for the teacher's role and curriculum structure. The students play a passive role in the traditional classroom but digital technologies enable the learners to access educational material as the teacher has no control and they can actively and independently make the right use of their cognitive skills (Indranil Banerjee, 2019).

The rapid growth of ICT has made access to the English language and English language learning easier (Dash 2020). The benefits of interfacing ICT and ELT are realized in terms of accelerating and enriching in the learning of basic skills, giving strength to classroom teaching and making the class global (Bhushan 2020). The current generation students are tech-savvy and are often seen working with their smart phones, with the features which helps them to easily access the apps and other online tools. Nevertheless, Sandip and Milind have published evidence that less than 10% of the students who sign up for the online courses typically complete the course and the most basic solution to the problem of poor completion rates

is to motivate the learners to participate in the activities of MOOCs (IEEE 2020).

Types of Learners and Generation Z

Fleming formulates VARK model which identifies four primary types of learners:

a) Visual

b) Auditory

c) Reading/Writing

d) Kinesthetic.

Every student responds differently to different methods of teaching type. Visual learners remember well when they see, auditory learners remember when they hear, reading/writing style of learners will remember when they read/write and kinesthetic learners are more active during participatory learning. Based on studies that include more than 150,000 students, Seemiller and Grace (2017) noticed that learning for Generation Z students is different from that of Millenials. Generation Z students prefer a) to be engaged in learning in which they can immediately apply what they learn to real life b) to process information first through observing c) to have a broader application on the content they learn rather than just a novice example d) to independent learning e) to view peers and instructors as valuable resources (Seemiller, C., Grace, M, 2017).

As there are different types of learners comfortable with different learning styles and the learners are Gen Z, it becomes necessary for the teachers to adapt to the preferences of the learners in their comfortable style of learning to make learning more effective.

Use of Technology in the Teaching-Learning Process

a) Inside the classroom :

It is impossible to separate technology from learning with the Generation Z learners as they live entirely in the digital era. Integrating technology in the classroom is the basic need of the hour and it brings a constructive change not only in the learner but also in the professional growth of the teachers. Innovative teaching methodology and the apt choice of teaching materials are the major factors that contribute to an effective teaching-learning process. Theoretical explanation in the classroom can be carried out easily with the aid of technology. For instance, usage of MOOC tutorials and discussion videos will enable the students to understand the feminist theories in an effective manner.

Educators are of the view that students of today always accept change as per their trend and especially visuals and computerized instruction create curiosity to learn. The use of technology-based teaching and learning, namely educational videos, Web 2.0 and Web 3.0 tools, computer language laboratory, demonstrations, projects makes the learning process more fulfilling and meaningful. These audio visual aids create an everlasting impact on the learners enabling them to apply the concepts appropriately.

b) Outside the classroom:

Learning can no longer be confined to the classroom and has to be extended 24 X 7. The students should be engaged in learning at their comfortable pace and time. If the students are distracted in the classroom or absent from class because of some personal problems or sickness, they should not be deprived of the learning experience. Hence the materials should be available to students 24 X 7, so that it enables an inclusive learning environment. The students will also have a better understanding in the classroom if they read the content to be discussed in the class prior to their classroom time.

Our work over the years has brought us into thinking heavily about the change of the role of learners from receiver to participant in the whole teaching and learning process of a course. Also, we accept the fact that there is a considerable change in the learning aptitude of students due to an easy availability and accessibility of online resources and the internet. We therefore, have been experimenting with, blogs, video materials, online forums and task based approach activities for collaborative learning from time to time. The flexibility and students' active participation were the salient features which drove us to try this

pedagogy inside and outside our classrooms. This enabled our students to engage in discussions, debate on the concepts, improve their understanding and learn comfortably at their own pace with ease. This gives our students a joy of learning which we are sure will motivate our students for more learning in the future.

Challenges in implementing technology

Teaching has undergone drastic changes in the 21st century. Definitions of 'technology' have changed with time – or rather, the images that come to us when we use the word vary with time. Almost gone are the days of an overhead projector, desktop computers, instructional CDs and the like. Smart classrooms have lost their sanctity or uniqueness of being the single sacred niche for the whole institution.

“For teaching to be sustainable it encompasses also a learning dimension for the tutors themselves” (Hofstetter 2020). The time a teacher has to invest for preparing a session using technology takes away much of the time that can be devoted for other ways of meaningful teaching. For a twenty minute session using computers, preparation time can take more than two hours as pre-prepared materials either bought or downloaded may not often suit the needs and demand of the students. Gone are the times when students were captivated by a mere slide presentation. A student being more updated and with better mental proximity to technology, may be ahead of the teacher in such matters, and it needs much more than mere knowledge and skill to have the child enchanted, enthralled and all the more educated through technology. For a proper integration of ICT in teaching-learning process, a fully equipped classroom with computers and uninterrupted access to the internet and educational software is required.

Description of the Study

Action research is gaining grounds in the educational arena around the world. Given the fact that Gen Z students are familiar with the technology, they learn better in a technology-based environment. Hence, the issue of ICT integration in colleges, specifically in the classroom is vital. The 'one-size-fit all' mode of teaching is regarded as an out-dated method. Our classroom provided an ideal situation to explore the opinion of students using technology in the classroom. Dash in his article points out the functional usage of English language in Communicative English Syllabus could be supported with audio and video tools to ensure comprehensive skill development (Dash 2020).

ICT integration in education encompasses technology enabled teaching and learning process that utilizes the technologies in the learning experience. The authors made use of LMS tools say Google Classroom and Edmodo for the study. Google Classroom is a free web service developed by Google for learners that aims to simplify creating, distributing and grading assignments in a paperless way. Edmodo gives teachers a chance to share lessons, update the parents and build an interactive dynamic classroom environment. The authors created a class in the LMS tool and shared the classroom code with the students. Students then joined the classroom with the code provided. The research was conducted among approximately 180 undergraduate students of I year Commerce, English and Computer Science. The course demanded the learners to use desktop, laptop, smart phones, smart TVs and an uninterrupted internet connection to access course materials or contribute assignments using the LMS tool.

At the beginning of the course, students were given training to get familiar with the tool. Once the learners signed up, they were able to view the assignments and videos/lessons related to the course that has been uploaded. Learners were expected to make use of collaborative online document tools to work on activities and assignments. Students were required to watch the video lectures and read a couple of materials related to the topic that would be taken for discussion in the consecutive class. Based on the video resources and references provided, reading and listening practice assignments and writing tasks were also scheduled. The students were assigned the task of creating their presentations which was uploaded and peer feedback was given. Initially pre-recorded video lectures with demonstrations and examples on the topics were uploaded in the LMS. Gradually, a youtube channel “C-Experience the Joy of Programming” for I year Computer Science students

was started and video tutorials were self-created and uploaded. Further, in online mode, quizzes, short answers and discussions were executed. The online deliberations helped the students to understand the concepts in a comprehensive manner. This way lectures became homework and class time was predominantly used for collaborative student experiential exercises.

The present study therefore, is based on an attempt to integrate blended learning in classroom teaching. The data was collected and analyzed to examine the role of technology and the ease of use of the LMS tool in the learning activities that were well integrated into the course. It was found that the learners were not able to attain proficiency even after learning the concepts/ language in their schools. In order to bridge the gap, we employed interactive materials to enable the learners to learn at their own pace.

A feedback survey was planned and a questionnaire was given to the students and the respondents rated their experience or perceived effectiveness ofan online classroom. The survey given online was based on their opinion of the course and they were asked to describe their experience of online learning. A Google form had ten close-ended questions and four open-ended questions using the Likert scale. More specifically, the study was designed to examine the effectiveness of the course content at the undergraduate level.

Findings-Results and interpretations

The questions were aimed at gaining insight into the learner's perception on the effectiveness of LMS. The survey was conducted among undergraduate students regarding their usage of digital LMS tool as an effective method of learning. The survey was carried out among 125 students from two streams one from the arts (60 students) and the other from commerce (65 students), in online using Google forms and the results were positive (Annexure 1). In Fig.1, the response reveals most of the students felt that the course content was effective and is arranged in a clear, logical and orderly manner. From Fig.2 and Fig.3, the data indicates a positive trend in the perception of course content making learning experience effective and providing with relevant information for learning. Another remarkable fact, in Fig.4 and Fig.5 is that most of the respondents felt that that course materials were made accessible online with relevant videos and presentation. Also as seen in Fig.6, from the survey, a majority of the learners perceived that the learning activities were well-integrated in the course and presented a personalized learning experience.

In Fig.7 and Fig.8, interesting facts were observed regarding the respondent's realization as confident users of technology and their inculcation of peer learning. This could have significant implications. The survey results also provide information on learner's perception of collaborative learning from Fig.9, and on timely feedback and constructive criticism in Fig.10. Yet another major input of the survey is shown in Fig.11 on their rate of the overall effectiveness of the technology used in enhancing their learning experience where more than three fourth of the respondents have agreed on its effectiveness. As in Annexure 2, Table 1, it is observed that the students prefer watching the materials on a mobile phone rather than other devices such as computer, TV and tablets. The authors observed that the students are comfortable in using mobile phones for their learning as it gives them the scope to learn at their own discretion. The authors observed that there is an initial reluctance in viewing the video materials. However, their interests in watching improved gradually when they realized that it led to an improved understanding.

Observations and Reflections

The flipped classroom experiment showed a significant change in the learning attitude of the teachers and the students thereby enhancing teaching-learning experience. This enabled the students to gain knowledge in a personalized manner from the digital sources at their own pace. Availability of resource material, discussion forums, etc. at the click of a button gives the learners the freedom to learn and to actively participate, discuss, analyze and apply appropriately. However, we feel that more time was required to be given to students to debate on the topics in class. To work one-on-one with students, more time is needed as compared to teaching in the traditional classroom. For this, if one more teacher is given to co-teach, the flipped classroom could be an effective means to have more time for one on one student-

teacher interactions and could help in scaffolding deeper understanding of the concepts. As is well known, creating lecture videos, identifying the relevant videos for reference, designing questions on the video, preparing supplementary handout, creating quizzes and on planning the lesson to build upon the online materials effectively requires more time than the traditional teaching. We also observed that the outcome of all initiatives taken depends on the stakeholders - the students. The students should be well motivated to go beyond classroom learning and have the curiosity towards enriching their learning experience.

Conclusion

With the advancement of freely available technological tools such as Edmodo, Google classroom, YouTube, podcasts, online journals, blogs, etc. blended classroom pedagogy proves to be a learner-centric approach. It not only provides space for learning with interest but also serves as a platform for discussions. This would ensure that students do not spend much time during class hours on gaining the lower levels of the Bloom's taxonomy of learning, and can effectively use the class time on the higher levels of the Bloom's taxonomy that is creating, analyzing and applying. However, blended teaching-learning requires the teacher to spend more time on preparatory work and expects the facilitator to have basic skill set on technology usage. Besides, she should also be a willing learner open to constant upgradation along with the students. It can also be argued that a larger time investment is required, at least initially, for implementing the flipped classroom which is a difficult proposition in the syllabus – bound university teaching.

ANNEXURE-I
Online Learning - Student Perception Survey

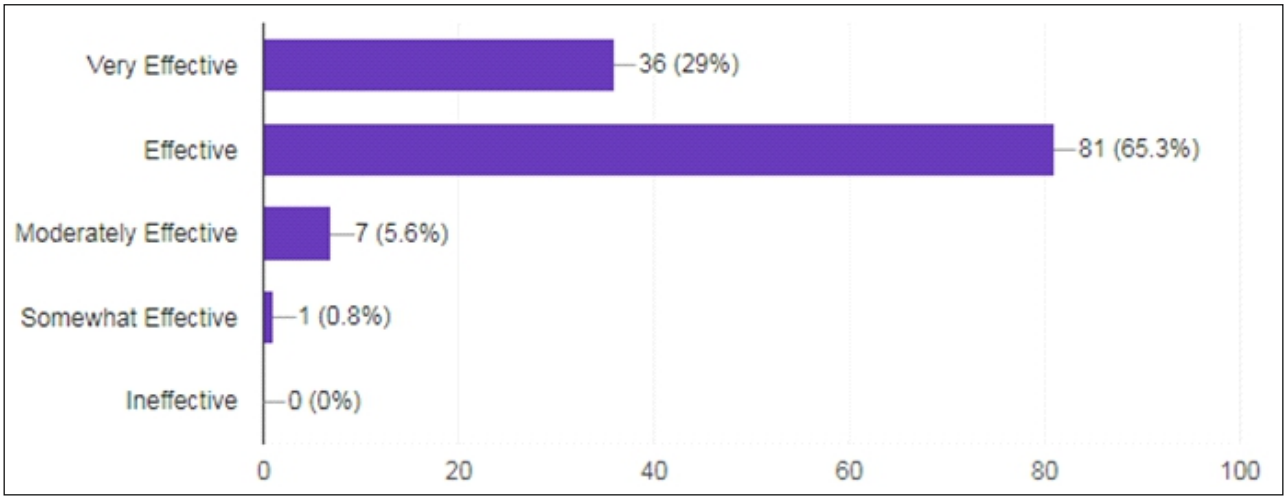

Fig.1 Respondents perception on "Course content arranged in a clear, logical and orderly manner"

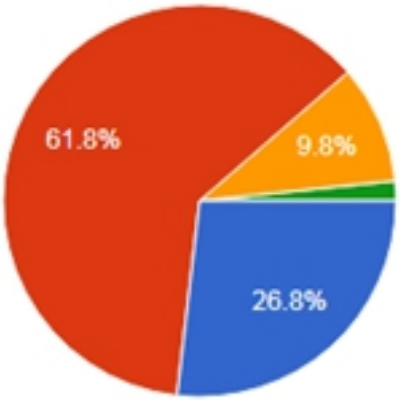

Fig.2 Respondents perception on "Course content makes learning more effective"

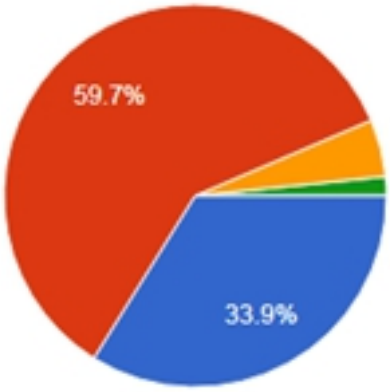

Fig.3 Respondents perception on "Course content provided relevant information for learning

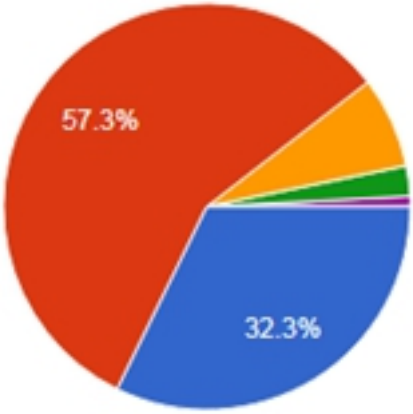

Fig.4 Respondents perception on "Course content made accessible online"

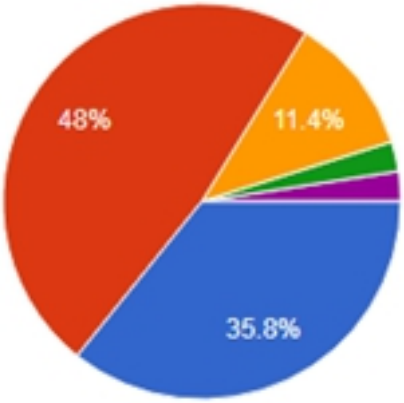

Fig.5 Respondents perception on "Course content Provided relevant videos and presentation"

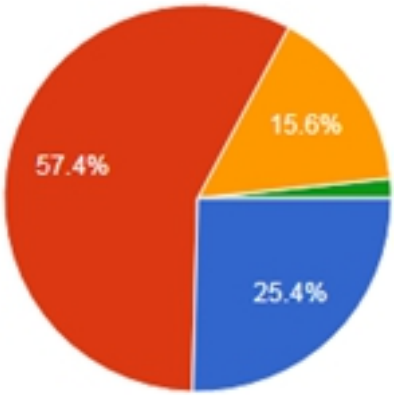

Fig.6 Respondents perception on "learning activities well integrated into the course and presented a personalized learning experience"

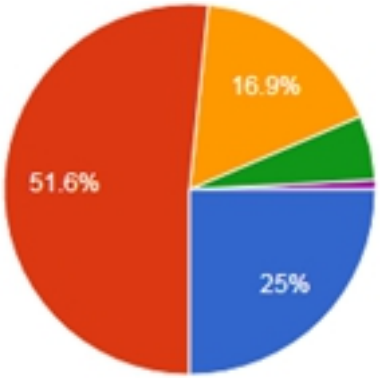

Fig.7 Respondents perception on "technology confident users of online materials and encourages to learn from one another"

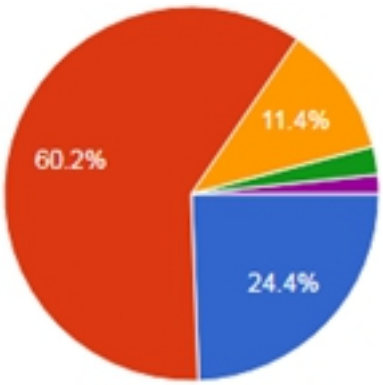

Fig.8 Respondents perception on "independent user of technology increases overall learning performance"

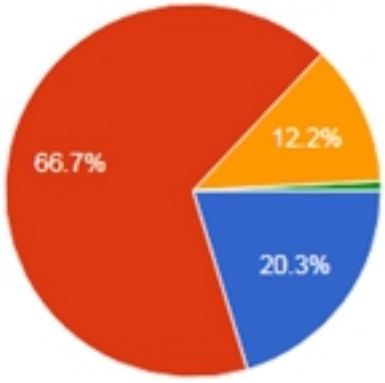

Fig.9 Respondents perception on "collaborative learning method which enable to view each other's presentation and facilitate discussions"

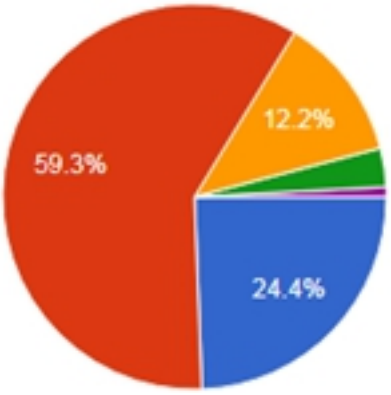

Fig.10 Respondents perception on "timely feedback and constructive criticism offered for the online assignments"

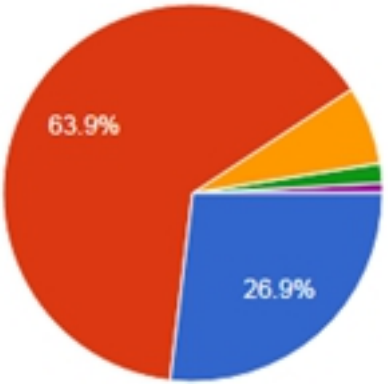

Fig.11 Respondents perception on "the rate of overall effectiveness of the technology used in enhancing your learning experience"

Legend for Annexure 1
Online Learning - Student Perception Survey

- Very Effective
- Effective
- Moderately Effective
- Somewhat Effective
- Ineffective

Please list and explain the things you found most effective about the use of Google Classroom

Excerpts from student comments:
Online materials to learn
Easy accessible
Grammar part was very effective
This is very easy to submit our works.
It made our work more easier
New learning scenario.
This virtual classroom had taught so many new things! This is the future and its amazing to have had experience now itself.
Work was easy to be done.
It is very useful to understand to answer and useful learn more
I was able to learn the syllabus much better with the self-study facility.
I find the constructive criticism very effective because, we can learn from our peers whether our presentation had any flaws or not. And if there are any, we can make sure to correct them in the coming presentations.

ANNEXURE - II

Analytics for the period Dec 20, 2019 to Jan 16, 2020

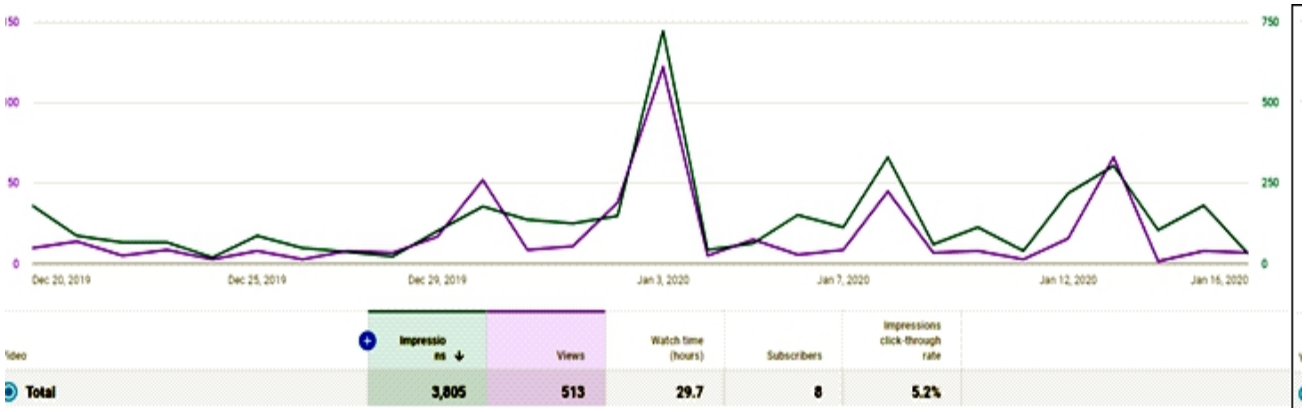

Fig. 1 Watch time vs Impressions in You Tube

Device Type	Impressions	Watch time (Hours)	Views
Mobile Phone	3036	24.5(82.7%)	416(81.1%)
Computer	749	4.7(15.8%)	86(16.8%)
TV	20	0(.01%)	5(1.0%)
Tablet	0	0.4(1.5%)	6(1.2%)

Table1-Average View Duration by Device Type

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Technology Enabled Learning in Higher Education: A Case Study

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Abstract

This paper examines the use of educational technology in higher education with the idea of supplementing traditional classroom teaching with open educational resources, such as mobile apps and social messaging groups for collaborative learning. The course "Critical Thinking and Social Media Technology", was being taught using Open Educational Resources. This paper analyzes the data collected from a sample of 218 students who completed the course through OERs. The data was collected from six different disciplines over a period of three academic years both at undergraduate and post graduate level. The results showed that the idea of technology enabled learning is significant and is embraced by the students.

Keywords: Educational Technology, Higher Education, Massive Open Online Courses (MOOCs), Mobile Learning, Open Educational Resources (OERs).

Introduction

Education is the backbone of a cultured society. It is a system that enriches the mind, abilities and character of an individual and allows him to lead a meaningful and coherent life. The structure of education in the 21st Century has changed drastically. With the advent of the Communication Technology and the Internet, the word "Learning" is being given more emphasis in higher education. The pedagogy and methodology of imparting knowledge has changed the entire structure of traditional classroom based learning. The last few years have witnessed a paradigm shift from traditional learning to e-learning using methods like blended learning, flipped learning, virtual laboratories, Open Educational Resources, Massive Open Online Courses and Mobile learning.

The upgrading in technology is transforming the approach of the society in almost all segments of life. The low cost hardware, software and the advancement in communication channels have resulted in the availability of powerful gadgets at our doorstep. These gadgets are available to youngsters these days 24x7 and without much effort.

Technology can be used to transform young minds into creative thinkers and critical thinkers. It has been observed that when one is involved and occupied with the activities that one enjoys and loves to do, learning capacity is at its best. It is in this context that this research explores the integration of technologies with the traditional classroom environments in imparting higher education in India.

This paper documents the progression of three academic years since the academic year 2016 - 17, where a university course was prepared with the intention that traditional classroom teaching would be supplemented with technology enhanced study materials in the form of open educational resources, a mobile app and a social messaging group. The goal was to analyze the perception and acceptance level of the students for innovative teaching methods. The technology enhanced learning course developed could be very easily converted into a Massive Open Online Course (MOOC) later.

Literature Review

As per UNESCO, "Open Educational Resources (OER) are teaching, learning and research materials in any medium - digital or otherwise - that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with limited or no restrictions"(Guidelines for OER in Higher Education, 2015). It is high time the United Nations must include

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OER in its program like Millennium Development Goals and Education for All to promote open education resources as learning materials.

Weller (2014) in his support towards transformation in education laid the idea of the pedagogy of openness and connectedness using social learning applications which could comprise of group assignments, chat rooms, discussion forums, wikis and even blogs. Weller suggests benefit of all participants if every student contributes something.

However the quality of OER published is a concern and it was pointed out by Kortemeyer (2013). He claims that unlike publishing houses, OERs have a limitation in terms of quality control. This is because of the mostly nonexistent experienced editorial/publishing personnel. Thus quality control has to be given importance while developing OERs. According to Coffin (2012)OERs are supported by students because they are available and accessed at no cost. In addition the print copies can also be generated at moderate low cost. In contrast the commercial textbooks are very expensive and sometimes even unaffordable as in the case of books by foreign authors. But it is seen that textbooks are still cherished, as they are still purchased by students every semester.

Methodology

This paper talks about the course "Critical Thinking and Social Media Technology", which is offered as a generic elective course at undergraduate level, and is also being offered as a course in a few selected schools at postgraduate level in Graphic Era Hill University (GEHU), Dehradun, India. Students from different major subjects like English, Mathematics, Physics, Media & Mass Communication, and Computer Applications had an opportunity to opt for this subject as a generic elective. The subject is taught by the traditional classroom teaching method in the first semester of the program at both Dehradun and Bhimtal campuses of the University. The course has a six-credit workload at undergraduate level and four-credit workload at postgraduate level as per the guidelines of the University Grants Commission, India. This paper is based on primary data collected online from students who opted for this elective course, through three academic years. A questionnaire was planned in seven sections viz.

i. Personal details
ii. Opinions about OERs
iii. Opinions about educational technology
iv. Familiarity with mobile devices
v. Opinion about subject educational app
vi. Opinions about collaborations and future actions,
vii. Evaluation of education technology.

The questionnaire had 5-point Likert scale using strongly agree, agree, neither agree nor disagree, disagree and strongly disagree as the choices.

Objectives of the research

- To develop an Open Educational Resource for a raditional classroom course.
- To analyze the open educational resources developed in the process on the basis of the survey of the students who took this course.
- To study the effectiveness of the implementation of technology enhanced learning with traditional classroom teaching in higher education.
- To check the viability of the course as a model for converting traditional classroom courses into MOOCs.

Modus Operandi

UNESCO and Commonwealth of Learning (COL) have always been instrumental in providing guidelines on Open Educational Resources (OER) in Higher Education. The OER of the course, "Critical Thinking and Social Media Technology" was developed under the support and guidelines of COL. The course comprises of five learning units with each unit comprising of activities, assignments and assessments. The students were evaluated on the basis of class assessment at the end of each unit as well as mid-term examination and end-term examination. The OER developed is discussed below:

a) Text based study material :

The teaching learning material developed was divided

into sections such as course overview, course outcomes, time frame, study skills, links of additional online video resources, and details of the teaching resources, contents, unit outcomes, terminologies, study materials, activities, case study, tips, summary, assignments, assessments, and further readings. The complete MS-Word version of the course / learning material was made available on Oasis, which is COL's online institutional repository for learning resources. The study material was published online at http://oasis.col.org/handle/11599/2383.

One of the pre-requisites for any educational resources to be OER is that they must have an open license and in most cases the license used is by The Creative Commons. The publication was licensed under Creative Commons BY-SA 4.0 (CC BY 4.0, 2016) and can be freely downloaded for reuse and adaptation.

b) Short Videos on YouTube

In order to improve learning a total of ten short video lectures were created and uploaded on Commonwealth of Learning Channel of www.youtube.com. As videos not only help in better familiarity with the concepts but also rope in the human and visual aspect to e-learning, the short video lecture acts as an ideal means for quick revision as they are merely of five – nine minutes in duration.

c) Android App

There is an upward rise in the use of mobile technologies in youngsters which emphasizes on finding new ways to amplify the acceptance of mobile learning(Cheon, 2012). In order to explore this new dimension of learning an Android app “GEHUeGURU” was developed which contains all of the text based study material as well as links of all short videos on YouTube. Android was selected as the preferred platform so that it could reach the maximum students. The app was developed using Android Studio which is designed especially for Android development and is the official integrated development environment for Google's Android operating system. After development the app “GEHUeGURU” has been uploaded on Google Play Store and has been downloaded more than 350 times. The app requires Android version 4.0.3 or upwards and can be downloaded and used on any Android platform of mobile phones, tablets etc.

d) Social messaging groups

In order to promote collaborative learning among the students opting for the elective course, separate social messaging groups for post graduate and under graduate students were created. WhatsApp was chosen as the preferred social messaging app because of its popularity and ease of use.

Analysis of participants

A total of 358 students got enrolled for this elective course in both the campuses of the University. All these students were invited to participate in the survey through the digital medium. A total of 218 responses were received, which s60.89% of the total targeted population. The gender distribution of the sample is shown in Table 1.

	Frequency	Percent
Female	94	43.10
Male	124	56.90
Total	218	100

TABLE1:Gender Distribution of the sample

The highest percentage of students who responded to the survey were of the age of 19 years (28%) followed by 18 years (27.5%). The lowest age group of respondents was 24 and 25 both with a percentage of 0.9%. 81.2% of the respondents were enrolled in the under graduate program while 18.8% were enrolled in the post graduate program. The percentage distribution of the participating students by Schools / Program in ascending order is given in Table 2 and Figure 1, while their distribution by academic year is given in Figure 2.

School / Departments	Percentage (%)
School of Humanities	10.56 %
School of Media & Mass Communication	17.59 %
School of Sciences	25.12 %
School of Computing	46.73 %

TABLE 2:Distribution of the Participating Students by Schools / Departments

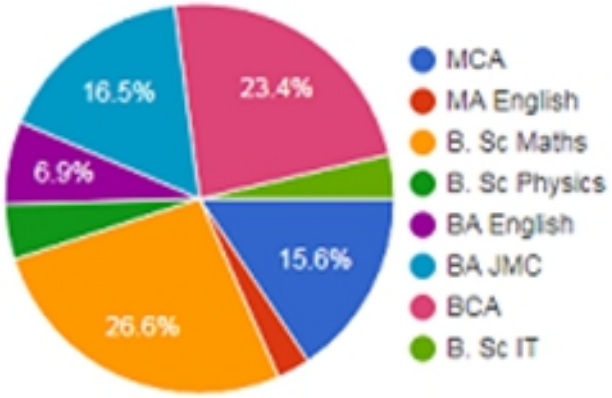

Figure 1: Distribution of the Participating Students Program wise

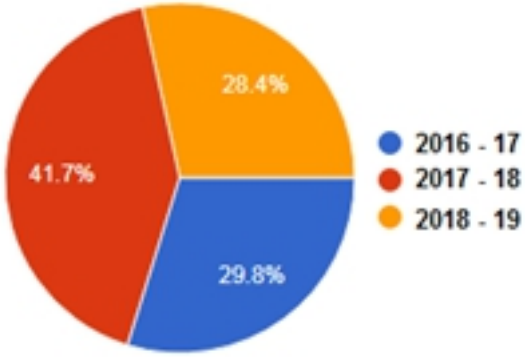

Figure 2: Distribution of the Participating Students by Academic Year

Results and Discussions

The analysis of the data collected through the questionnaire yielded few interesting results, some of which are discussed as follows:

Only 7.8% of the respondents had an unpaid educational loan, yet when it came to buying books only 44.5% respondents bought books every semester, while around 31.7% never bought any book and 19.7% seldom bought books. The result is shown in Figure 3.Besides, 14.7% of those who buy books spend only Rs. 500 per semester on books, while 17.9% spend around Rs. 1000 per semester on books and only 11% spend Rs 2000 or more on books per semester. These results tell the significance of OER, as the trend is not to buy books but consult online and open resource materials. Thus a professionally developed OER helps a student gain the concepts of the subject matter at either a minimal cost or at no cost.

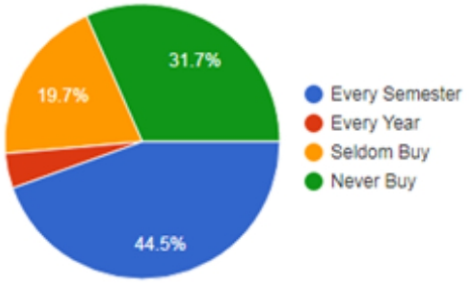

Figure 3: Buying necessary textbooks of courses

An important question that the respondents were asked was on the usefulness of OERs. Results showed that 39.4% strongly agreed and 51.4% agreed while 9.2% neither agreed nor disagreed. None of the respondent felt that OERs are not useful. Emphasizing again OERs of the course is very well accepted by students' community. The results are shown in Figure 4.

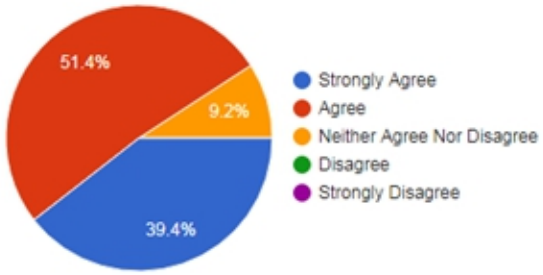

Figure 4: OER useful in higher education

When asked to evaluate the usefulness of the digital format of the OER course, 24.3% were strongly convinced and happy, 59.2% wereconvinced, 14.7% were neutral. On the other hand 1.8% were not convinced and happy with the digital format (Figure 5). As the OER of the course was developed on the OER format and guidelines of Commonwealth of Learning, it was very well received by students community at large.

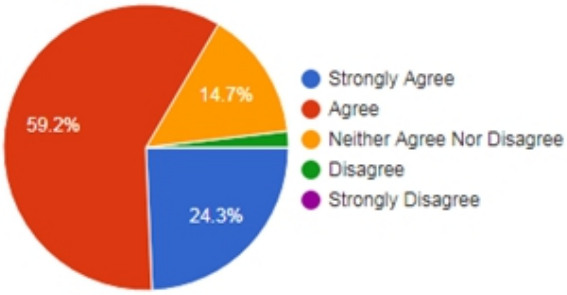

Figure 5: Convinced with the digital format of the OER course

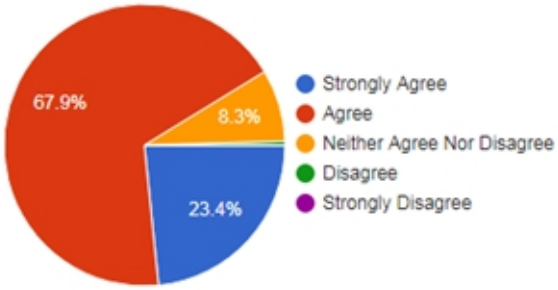

Figure 6: Leads to Constructive Learning

67.4% of the respondents agree that OER leads to constructive learning. None of them think that it is not useful for fruitful and constructive learning. The result is depicted in Figure 6.When asked whether OER is flexible for learning and about ease of access to resources anywhere and anytime, almost all the respondents agreed to this while 1.8% respondents disagreed (Figure 7). This is comprehensible as most of the respondents are from the hill state of Uttarakhand and there are still some connectivity issues in some interior hilly areas.

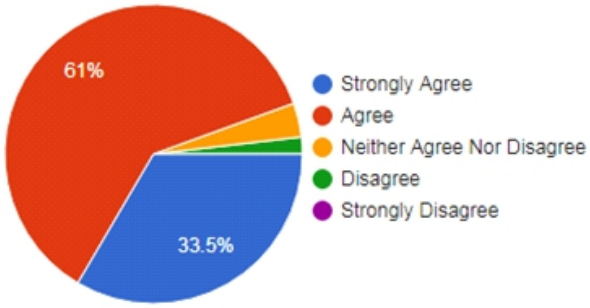

Figure 7: Flexibility and ease of access to resources anywhere and anytime.

94.5% agreed that technology enhanced learning is effective and useful for students, 5.5% neither agreed nor disagreed. As none disagreed, it can be established that technology helps learning and is useful for students of the present generation as they are also very tech-savvy.

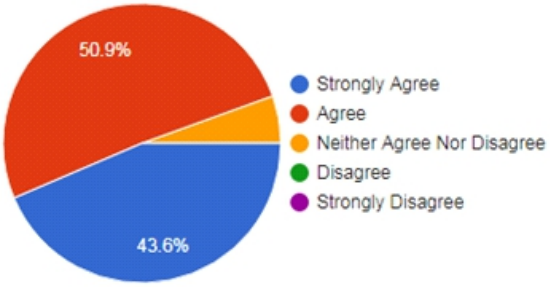

Figure 8: Technology enhanced learning is effective and useful for students.

73.4% respondents were of the opinion that technology enhanced learning improves the communication between teacher-student with just 8.7% disagreeing, while 17.9% said it has no it effect on teacher-student communication.(Figure 9).

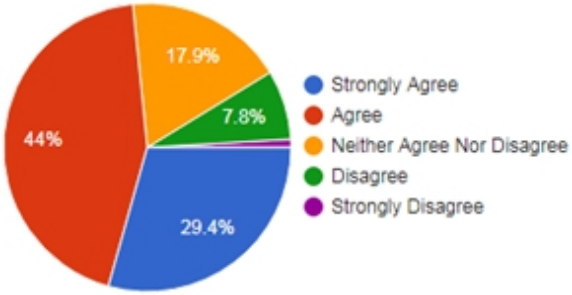

Figure 9: Technology enhanced learning improves the communication between teacher and student.

90.4 % of the respondents feel that supplementing technology enhanced learning with regular classroom teaching is an innovative initiative. 8.7% neither agreed nor disagreed while 0.9% disagreed.

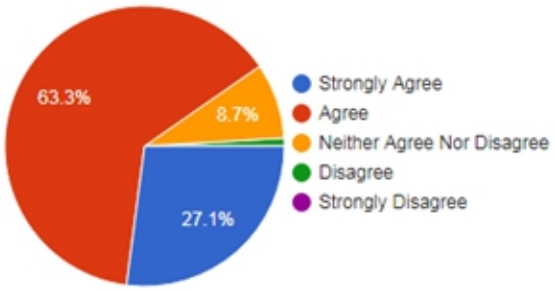

Figure 10: Supplementing technology enhanced learning with regular classroom teaching is an innovative initiative.

Conclusion

It is very evident from the survey conducted, that students not only accepted and adapted to OER but their response towards technology enabled learning was positive. This research submits to us the idea that OER supplemented with higher education would stimulate better imagination and understanding in young minds thereby making them lifelong learners ready for the future.

Acknowledgements

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Perception of Values Among MBA Students & Need For Value Education

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Abstract:

Higher education in India is undergoing a lot of change, a lot more people have access to higher education and there is continuous effort to improving quality. The National Policy on Education (NPE) had made a strong recommendation for including value education. The justification offered was that the tremendous advances in science and technology have resulted in a complete change of attitudes and lifestyles all of which may not be desirable.

India with its joint family set up had a long tradition of imparting value education which was passed on in the form of stories, epics and religious discourses from the elders to the kids in the family. With fragmentation of joint families' children and how they perceive values have changed. Youngsters today do not want to follow long standing values and tend to question everything and their arguments on most of the issues are quite understandable.

The onus of getting these post graduate students to understand the need of values in organisations and the need to follow them thus has to be shouldered by someone, is it the parents or the Business School teacher that needs to be studied.

Keywords: Value Education; Perception of Youth; Teachers - Parents responsibility

Introduction

According to C.V. Good “Value Education is the aggregate of all the process by means of which a person develops abilities, attitudes and other forms of behavior of the positive values in the society in which he lives.”. Values reflect ones' attitude, choices, decisions, judgments, relationships, dreams and visions towards their life and surrounding environment. Values are learned from different sources like family, relatives, friends, community, religion, traditions customs, books, environment, great personalities etc. Higher education in India is undergoing a lot of change, a lot more people have access to higher education and there is continuous effort to improving quality. The National Policy on Education (NPE) had made a strong recommendation for including value education. The justification offered was that the tremendous advances in science and technology have resulted in a complete change of attitudes and lifestyles all of which may not be desirable.

India with its joint family set up had a long tradition of imparting value education which was passed on in the form of stories, epics and religious discourses from the elders to the kids in the family. With fragmentation of joint families and the necessity of both parents working it has become difficult for children to acquire value education at home. Young Parents are highly stressed with the demands of their jobs and life in general they are unable to instill values in their children and sometimes their actions are very counterproductive to the child achieving good values.

There are two types of values, Innate and Acquired values. Innate values are the internal values developed from one's own mind and feelings e.g. Love, care, empathy, honesty, hate. Innate values are influenced to a great extent by family, friends, relations and society. Acquired values are the external values developed from one's experience or influences of the immediate environment e.g. Ambition, power, culture, customs traditions habits, tendencies, status, convenience etc.

Value Education can be given or gained at any place like homes or school, college, Universities and even prisons. Value educations is the process of teaching and learning about the ideals that a society considers

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to be important - Lovat & Toomey, 2007. Value Education is defined as the process by which people give moral values to others. It can be seen as an activity taking place in an institution or organization in which people are helped by others who are elder or have more experience or have an authority over the people. This activity is used to make people better and it is important to assess the result of it in order to see the long term well being of an individual and others- Vijaya Lakshmi & M Milcah Paul.

Value Education is seen at three levels

- Household level : Traditions, family culture, education and religion
- Class Room Level: Curriculum, Interaction with peer groups. Professional learning
- Society Level: Political education, Legal education, social interactions

Post Graduate students (MBA) are considered to be the most sorted out about their lives as they are preparing to enter the corporate world or the world of business after this stage. Their opinions on the importance of values are very crucial. Ethics at business level, honesty, empathy good habits, and respect for all are values that are a must among B school graduates. It has been seen that most students at this level have already formed strong habits and value patters which are little difficult for B Schools and teachers to change.

Millennials have shown some interest in ethics particularly corporate social responsibility (CSR) and many business schools have changed the value education or ethics class to 'Responsible Management Education" (RME)

Objectives of Study :

The main objectives of the study are:
1. To find out the perception of MBA students towards value education
2. To find out how Business Schools can implement value education with a difference
3. To find who is responsible for value education among children Parents or Teachers

The aims are to find out how MBA students feel about values, especially business values and so it was important to speak to MBA/PGDM students about 300 students were contacted for the same out of which 250 questionnaires were selected based on their completeness. An effort was made to select equal number of respondents among girls and boys thus 130 boys and 120 girls were selected. All the students were first year first semester students. A few faculty members (fifteen) were also contacted to get an idea from them on the student's perception.

Research Methodology :

A structured questionnaire was administered to respondents. The researcher contacted the respondents personally. The questionnaire was divided into two parts. Part one is respondents profile and Part two was the main survey. The sample to which the questionnaire was administered was selected based on convenience sampling techniques. The teachers from Post Graduate colleges contacted were based on convenience sampling. The sample distribution was as under:

Table 1:

Sr. No.	Sample	Gender	Sample distribution	Sample Size
1.	MBA	Female Male	80 90	170
2.	PGDM	Female Male	40 40	80

Source: Primary Data

Primary Data

Primary data was collected randomly through the structured questionnaire in using convenience based random sampling.

Sample Size

The study was limited to those participants who willingly elected to complete the instruments in their entirety. There was a total of 250 complete responses received of which there were 120 girls and 130 boys. The average age of the respondents was 24 years. 15

Nos. of teachers were also contacted for the study.

Sample Design

The researcher relied upon convenience based random sampling technique, considering the research methodology and research type as per guidelines. A caution was exercised during the study that the respondents who did not show inclination to be a part of the study were not covered.

Area of Research
South Mumbai

Secondary Data
The secondary information or data was collected from published sources such as journals, magazines, newspapers, government reports, internet and other sources.

Statistical Analysis
Efficient and effective data analysis is the result of effective data preparation. This was found to be very crucial between the completion of the field work and the statistical processing of the collected data. Data preparation involved transferring the questionnaire into an electronic format which allowed and facilitated subsequent data processing. Data sheet was prepared directly at Statistical Program for Social Sciences (SPSS) software for further analysis. Code was assigned to each response for data entry and data record. Transcribed data sheet was prepared for data analysis. On the basis of data sheet, tables and graphs were prepared for the analysis.

Limitations

- Time and area were a major constraint in the study.
- This research reflects opinion and responses of individuals only where by findings and suggestions given on the basis of this research cannot be extrapolated (applied) to the entire population.
- Geographical Area of research is also a major constraint as the sample is form South Mumbai and the students come from elite families and thus their opinion may not be represent the opinion of all students.

Analysis

Values have a major influence on a person's behavior and attitude and it serves as a broad guideline for a person's behavior especially in organizations. Personal beliefs are rights/wrongs that a person perceives and may/ may not be moral. Cultural values are values followed in a particular culture, religion or society; they too affect a person's behavior in an organization. For the purpose of this study few personal values like -

- honesty
- kindness
- respect for all
- personal responsibility

and few social or cultural values like -

- loyalty
- empathy &
- trust

were selected. These values were selected to find the students perception and their take on personal and social values. Students were asked to defend their stand to get a clear picture on their thought process and their reasoning.

Personal Values -

a) Follow honesty in all situations

Table 2

Sr. No.	Gender	Sample distribution	Yes %	No %
1.	Female	120	70	30
	Male	130	32	68

Source: Primary Data

A large percentage of girls said that they followed honesty at all times as compared to them most boys said that it was difficult to be honest all the time. Though the girls look more honest but it was observed that girls were not as honest even in their replies and boys were more forth coming in their replies as to why they could not be honest on several occasions even if they wanted. It was clear that the students were aware of the difference between being honest and dishonest but they felt that it was not viable to be honest in every situation, reasons given for the same being:

- One must think about themselves first
- It is not good to be good always
- Nobody does good for others at the cost of their own good

b) Display kindness to all

Table 3

Sr. No.	Gender	Sample distribution	Yes %	No %
1.	Female	120	85	15
	Male	130	70	30

Source: Primary Data

A large percentage of the students agreed that one must be kind to all in all circumstances, though some agreed that it was at times difficult to be kind especially if there have been earlier experiences of fights or disagreement or other strong emotions involved.

c) Respect for people and things

Table 4

Sr. No.	Gender	Sample distribution	Yes %	No %
1.	Female	120	50	50
	Male	130	40	60

Source: Primary Data

A large percentage of both boys and girls felt that respect needs to be earned and that it is not possible to respect someone/something just because of social norms. Most girls felt that it is not essential that they should respect their elders or that women should respect their husband and his family. On the other hand boys felt that respect should be given where due so respecting parents or boss is not necessary. Mutual respect is a strong feeling among youngsters and respect for authority is very low.

d) Willingness to shoulder Personal Responsibility and not depend on others

Table 5

Sr. No.	Gender	Sample distribution	Yes %	No %
1.	Female	120	90	10
	Male	130	95	05

Source: Primary Data

A very large percentage of the youngsters said that they were willing to shoulder the responsibility for their actions and they would not blame anybody for their wrong decisions and did not expect help from anybody. Though these were strong indication of a strong generation the truth is different on questions related to their failure in getting good marks they blamed the college, teachers, syllabus and many more things. On not being punctual they blamed the infrastructure, the traffic of Mumbai, their parents and many more things but never themselves.

Social or cultural values are very important to organizations and the values that were chosen for the study were -

a) Loyalty towards people and organization

Table 6

Sr. No.	Gender	Sample distribution	Yes %	No %
1.	Female	120	35	65
	Male	130	30	70

Source: Primary Data

Youngsters both boys and girls felt that it is not easy to be loyal to either people or organizations. They feel that loyalty towards parents was the easiest and that they felt that all must be loyal towards their parents and loyalty towards the organization ranked the lowest as they felt that first organizations were not loyal to the employees and thus they must not expect loyalty towards themselves. Loyalty towards spouse, siblings and friends came after parents in the same order and loyalty to neighbors, acquaintances etc. came very low.

b) Empathy from and towards others

Table 7

Sr. No.	Gender	Sample distribution	Yes %	No %
1.	Female	120	95	05
	Male	130	90	10

Source: Primary Data

Large percentage of the respondents felt that empathy is a very important virtue and that it was very important that people understand each other's emotions and respect them. On whether they were empathic towards their family, friends, teachers, colleagues, bosses and society it was observed that they lacked the virtue and most of the time they were quick to hurt, insult and put down a colleague and people in society.

They are not able to do it to their seniors but would love to do it. As far as family go, they are aware of their feelings but are rarely able to express empathy towards them.

c) Ability to Trust and be trusted by others

Table 8

Sr. No.	Gender	Sample distribution	Yes %	No %
1.	Female	120	7.5	92.5
	Male	130	40	60

Source: Primary Data

Trust means reliance on the integrity, strength, ability, surety, etc., of a person or thing; or the confidence to rely on someone. The respondents show that girls have very little trust on others. Whereas boys are able to trust more. Traditionally girls are programmed to not trust other and therefore it becomes habit for them. Though, they feel that, they can be trusted and would not breach the trust of people who believe in them.

Thus, the study shows that the respondents are aware at the postgraduate level on values and value systems but at the same time they have very strong opinions on what they would like to accept as a value. Their sense of 'entitlement' is very high and therefore they are not able to look at the bigger picture of social good and organizational good.

It has also been observed that most of the respondents have a good reason for believing or not believing in a value. Their justification is strong and thus believable. Certain values like loyalty, trust and respect seem to have take a large beating in terms of acceptability the more accepted ones are kindness and empathy.

Who should take the onus of teaching values to students at Post Graduate level?

Higher education in India is undergoing a lot of change, a lot more people have access to higher education and there is continuous effort to improving quality. The National Policy on Education (NPE) had made a strong recommendation for including value education. The justification offered was that the tremendous advances in science and technology have resulted in a complete change of attitudes and lifestyles all of which may not be desirable.

India with its joint family set up had a long tradition of imparting value education which was passed on in the form of stories, epics and religious discourses from the elders to the children in the family. With fragmentation of joint families and the necessity of both parents working it has become difficult for children to acquire value education at home. Young Parents, due to their high demand jobs and other stress in life are unable to give quality time to their children and have not been able to impart value education to the children.

Parents teach or rather push their children to be first in class in education, sports, extra and co-curricular activities. They also many a times encourage their children to win at any cost. Thus virtues like sportsmen spirit, co-existence, fairness, lending a helping hand etc. are all lost at a very young age.

In order to know the role of teacher in imparting value education of students a few (fifteen) of MBA teachers were contacted and a small panel discussion was arranged to know their role and responsibility. The learning from the discussions -

a) The present generation teachers are not adequately prepared to teach values to the students. Value Education is an area where there should be no gap in teaching and practicing and if teachers are not practicing what they teach they will not be effective.

b) In the opinion of the investigator most of the material on teaching value education was drafted during the British rule and was religion based and mainly Christian values. Teachers today are not comfortable to teach values through religion.

c) Teachers are not in a position to teach family values as they themselves live in fragmented families.

d) Teachers are highly educated professionals who are poorly paid (many teachers in private business schools work on consolidated salaries ranging from 25,000/- to 50,000/- per month) and they have aspiration for growth and higher

income and thus may indulge in activities which may be considered unethical by a university teachers who gets a full scale salary. These private college teachers may have a different take on values and ethics.

e) In management studies there is a great emphasis on education which is practical, most teachers at the post graduate level do not believe in preaching values they themselves do not accept, therefore the best they do is throw up a debate on the utility of the values in the class and leave it to the students to accept the values or not.

CONCLUSION:

There are some areas were the youth today is serious and that is Corporate Social Responsibility (CSR) thus if more and more education institutes start course on "Responsible Management" the students would be more interested in learning and would focus on issues ethical management of business. The same can be taught through different methods to achieve leadership qualities via case studies, guest speakers, simulations self-assessment and reflections. The onus of the curriculum should be development of values for leaders.

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Inverted Undergraduate Physical Chemistry Class: A Survey of Attitudes of Student Groups at Different Levels of Commitment towards Chemistry.

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Abstract

The aim of this study was to investigate undergraduate students' attitude towards flipped classroom in a module of physical chemistry. The study was carried out on three different groups of students: Group I consisting 42 third-year undergraduate students majoring in chemistry; Group II comprising 135 first-year students, being taught the physical chemistry course for the entire semester by the author and group III comprising 130 first year students who were being taught the same chemistry course by another faculty but were engaged by one of the author only for the flip classroom module. Several pre-recorded videos were uploaded on YouTube more than a week before engaging the students in the classroom. Although the module added extra burden on each of the three groups, it enhanced their learning experience, significantly improved the student-teacher interaction, diminished misconceptions and lowered their anxiety during exams. The receptivity and attitude of each group were different towards the modules, proving to be most helpful to the class most committed to chemistry. Amongst the first year groups, the pedagogy achieved greater success with the group for which the author was directly responsible for teaching the entire semester.

Keywords : Flipped Classroom, Pedagogy Tools, Inverted Classroom, e-Learning

Introduction

The use of flipped classroom pedagogy has gained momentum in several countries like UK, USA, Singapore, and all over Europe. In a flipped classroom, students review a short lecture video at home or a place of their convenience and do what is considered as homework and problem solving in the class, enabling them to take a more in-depth look at a subject and gain extra guidance from the teacher. The lecture videos in the form of screen casts serve as a revision tool as they allow students to replay difficult points or fast-forward what they know, so that they can concentrate on specific areas of the lessons. 'The pedagogy method represents a unique combination of learning theories once thought to be incompatible-active, problem-based learning activities founded upon a constructivist ideology and instructional lectures derived from direct instruction methods founded upon behaviourist principles' (Bishop and Verleger, 2013).

New Millennium Learners and Technology

The goalposts in education have changed from teaching facts to helping students to learn how to find relevant information, how to assess it and how to organize disparate information into a cohesive whole and the move is towards student-centric learning. This has triggered a virtual explosion of innovation in teaching and learning strategies with the use of technology as a support (Rautet al, 2014). There is a need for finding and analysing innovative educational responses designed to better accommodate the New Millennium Learners (NML) into educational settings, benefiting as much as possible from their enlarged ICT-related competencies, taking into account the changes operated in their cognitive skills from shorter attention spans to the need for immediate answers (Pedró, 2006).

Many teachers and educational institutions started strategizing and pushing for e-learning using

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Information and Communication technology (ICT). However, a 2008 student survey by the Higher Education Academy in the UK found that "e-learning" was ranked lowest of all teaching methods by students for both use and enjoyment (Reeves and Reeves, 2012). Despite several attempts of widespread use of Virtual Learning Environment's (VLEs) in educational institutions, their use appears to be limited, in many cases, as some of them have been reduced to the role of repositories for lecture notes rather than an online learning environment (Seery, 2012).There are even evidences to show that technology can often separate people, and in classrooms, it can distance students even further from teachers if used improperly (Houston & Lin, 2012).

Need to Flip

There are several pedagogic reasons for change to be brought about by educators' which include attempts to enhance student-centred activity, harness technology to provide rapid feedback, facilitate student group work, provide student support to large groups and/or develop intimacy in the student-teacher relationship with large groups (Salmon, 2002). Educators' need to challenge the students to think and understand differently, by means of a learning partnership (McWilliam, 2009). Inversion of a classroom surely strives to build this partnership. The flip classroom pedagogy takes into account the argument presented by Bain (2004) that 'a teacher is no longer in a position as a sole knowledge expert and in some circumstances it may be appropriate to become co-learners with their students' (Bain, 2004). 'The gold standard of online learning-where students dive deeply into course concepts, synthesize, extend, and apply their learning, become curious about a field, or discover and fill key holes in what they know - will likely require more flexible integration between humans and online course curriculum' (Pollock et al, 2014).

The "flipped lecture" or "inverted classroom" model is gaining popularity and unprecedented growth in this context because it provides a template for when and how we should use technology in our teaching to best facilitate learning-what supports are needed before, during and after teaching (Seery and McDonnell, 2013). 'Flipping changes teachers from “sage on the stage” to “guide on the side”, allowing them to work with individuals or groups of students throughout the session(Rosenberg, 2013). Apart from improving the student-teacher interaction in the classrooms, the extra time recovered can give an opportunity to address the relevance of the subjects in a deeper and more meaningful way than usual, and help to connect the classroom concepts to the separate lab course activities better (Smith, 2013).

Sizeable contribution to the inverted or flipped classroom pedagogy was made by Salman Khan of Khan Academy who recorded lecture videos and made them available online on YouTube. Khan Academy videos are used as part of a flipped teaching strategy by many educators (Thompson, 2011) and (Sparks, 2011). The recent advent of Massive Open Online Courses (MOOC) by several universities like MIT, Harvard and Stanford has opened up other avenues of resources. Instructors can use MOOCs to create a successful flipped classroom using “precious classroom time” for meaningful conversations and individually debugging students' thinking and mentoring them in their project work” (Martin, 2012). In 2007, Jonathan Bergmann and Aaron Sams, both high school science teachers implemented their own version of the flipped classroom by first moving all of their direct instruction to online videos, and then introducing the Flipped-Mastery model chronicled in their book "Flip Your Classroom, Reach Every Student in Every Class Every Day”.

Tryst with teaching and learning Chemistry

There are several examples of this pedagogy having success with chemistry teachers. Many instructors feel that this course design is not a passing fad. In a recent publication, Dominic Smith concluded that the flipped classroom model will continue to be used for the foreseeable future (Smith, 2013). Marc Seigel teaching Honour's Chemistry at a High School in Middletown, NJ apart from practicing flipping on a regular basis has a website offering technical know-how to novice chemistry teachers aspiring to invert their classrooms. Flipping the chemistry laboratory modules has also been tried recently for a group of undergraduates in Singapore. Students developed a better understanding of the theory underlying the

procedures before they performed the practical, and were able to decipher the complex practical procedures. They also experienced less anxiety about the complex practical steps and setup, and subsequently, improved work efficiency (Teoet al, 2014).

Pre-class Assignments (Videos v/s Texts)

Most students prefer to go through video lectures over reading texts as assignments before entering the class. It has been observed that students supplied with optional video lectures came to class much better prepared than when they had been given textbook readings (DeGraziaet al, 2012). This is particularly reassuring as even though learning gains are higher from textbook reading, the college students don't generally complete reading their assignments. (Sappington et al, 2002).Visual media tools, in general chemistry, provide a positive contribution to students' behaviours and skills, improves students' learning attitudes to chemistry laboratory courses (Turkoguz, 2012). 'In a video-based chemistry teaching module, students can see and examine the materials repeatedly; students can understand the details in pictures and easily understand the concepts of chemistry' (Franciskowicz, 2008).

For the teacher creating his or her own video, there is an opportunity to elevate teaching practice and the profession as a whole as crafting a great but small video lesson poses a tremendous instructional challenge: how to explain a concept in a clear, concise, bite-sized chunk (Tucker, 2012).Creating his or her own video sensures that the details are attended to in a structured manner and the other nuances of instruction like the pace, the illustrations used, the visual representation, and the development of aligned assessment practices. The prospect of this opportunity and challenge propelled me to create my own videos for the module.

The nature of Physical Chemistry

The study of physical chemistry is an integral part and a 'sine qua non' in the training of chemists. On the other hand, it is perceived as a difficult course (Tsaparlis, 2014). 'Physical chemistry has a reputation for being fascinating and fearsome. It cannot be denied that the subject is abstract and requires effort for mastery'(Vemulapalli, 2009). This importance and apprehension formed a case for running a module in physical chemistry using the flip classroom model. Being a dreaded subject for many due to its mathematical nature, the demand of the time is to increase the comfort level for students in physical chemistry. The success of the inverted classroom design in mathematics is well documented in several surveys. 'The inverted classroom model has achieved great success in mathematics and is particularly well-suited for linear algebra, which mixes relatively straightforward mechanical calculation skills with deep and broad conceptual knowledge' (Talbert, 2014).

Despite its inherent benefits the reverse classroom pedagogy is seldom practiced in India due to several difficulties, some of them being huge classroom strengths which overwhelm the teachers in general, poor internet connectivity in many cities and large travel time spent by students and teachers for daily commute to colleges and universities. The cost of acquiring technical know-how is a constraint for most educational institutions which are devoid of funds to support educational innovations. Also recording lecture videos demands a large amount of time and effort which is difficult to expect from, generally, over-burdened teachers especially, with little or no incentive.

The goal of this study was not only to decipher the extent of success of using the flipped classroom pedagogy in a chemistry classroom of an Indian college but also to possibly standardise a route more suited to be adapted under the given condition and instil enthusiasm amongst teachers to follow the methodology.

The study group

In a typical, three year undergraduate programme leading to a bachelor's degree in science at St. Xavier's College, Mumbai, students take up three science subjects in the first-year [F.Y.B.Sc.] and continue with two out of the three in the second-year [S.Y.B.Sc.] and finally major in one of them in the third-year [T.Y.B.Sc.].The authors decided to take the two extremities of the chemistry classes: the first year and

third year to do a comparative study of the students' attitude keeping in mind that the third year group is more dedicated to chemistry. The first year group studying chemistry being extremely large is divided into two divisions for convenience and the same chemistry courses are conducted, in both the divisions, by different faculties. One of the authors was the course conductor in chemistry for one of the divisions (Division A). However, for a more comprehensive evaluation of the students' attitude, it was decided to administer the inverted classroom model to both the divisions of the first-year, with one of the authors engaging the flip modules.

- Group I: T.Y.B.Sc. students (N = 42)
- Group II: F.Y.B.Sc., Division 'A' students (N =135)
- Group III: F.Y.B.Sc., Division 'B' students (N =130)

1. Methodology

a) The Pre-recorded Videos

Several pre-recorded videos, each having the duration between 20 minutes to 43 minutes, were created before the start of the term. For the first-years separate videos were created for fundamental concepts of chemical kinetics (conceptual videos), derivations and approach to problem-solving (mathematical videos). Whereas for the third-year students, videos created were to explain the concepts of nuclear magnetic resonance and its applications. The fundamentals and concepts which would normally be covered in 3 to 4 lectures of 45 minutes each in a traditional classroom set-up were trimmed to about half an hour time.

The videos were recorded with the help of a PC Tablet. Videos explaining conceptswhich did not demand a large amount of writingwere made usingMicrosoft PowerPointwhereas for the videos which involved derivations and problemsand hence required several mathematical equations to be written step-by-step, Microsoft Windows Journal was used. The screen recording and editing were carried out with the help of Camtasia Studio 7 ® a software designed by Techsmith. The functionality of Camtasia was found more suitable for all the requirements as one can record the screen and the audiosimultaneously, as well as edit out mistakes which is an essential for any videolesson. The program also adds callouts and arrows to highlight important information, zoom in or out at appropriate times and then upload the file directly to YouTube. The PC Tablet provided a feature for the use of a stylus for annotating on PowerPoint which helped the students in improving their attention span and writing the derivations as well as solutions to problems step-by-step.To record the videos with a high quality audio, Shure microphone was used as the sound obtained from the in-built microphone in the PC Tablet was quite poor. The requirement for a high quality audio was expected since many students will view the videos on their smart phones or tablets, some of which have a poor output volume. The idea of uploading the pre-recorded videos on YouTube and not on the college website was to make the videos accessible even to students of other colleges in Mumbai University which follow almost the same curriculum and to the faculty of other colleges who would want to try out the pedagogy of a flipped classroom using these videos. Uploading the pre-recorded videos on YouTube also ha the advantage of students accessing the videos on their smartphones and Tablets which already have the YouTube App. Figures 1 to 4 below are the snapshots of the videos taken on a smartphone.

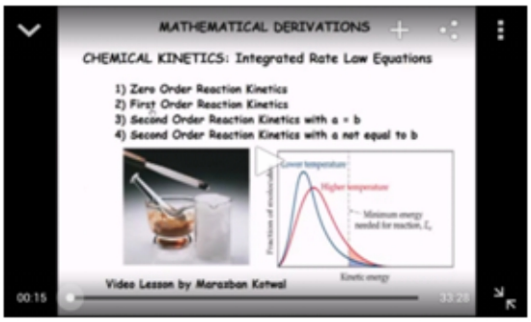

Fig. 1

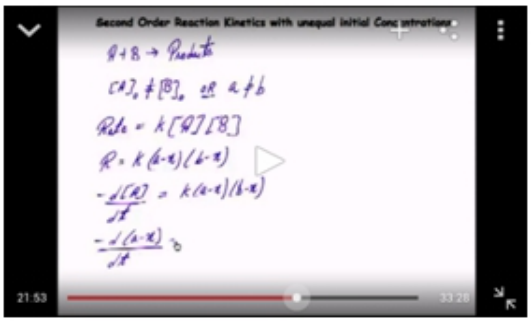

Fig. 2

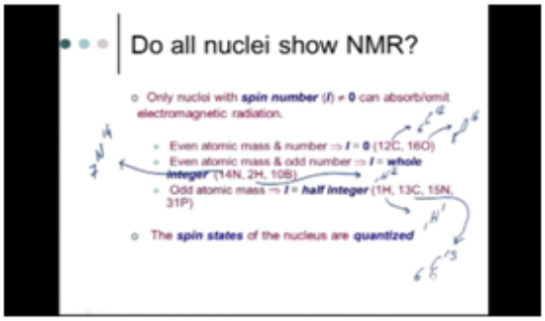

Fig. 3

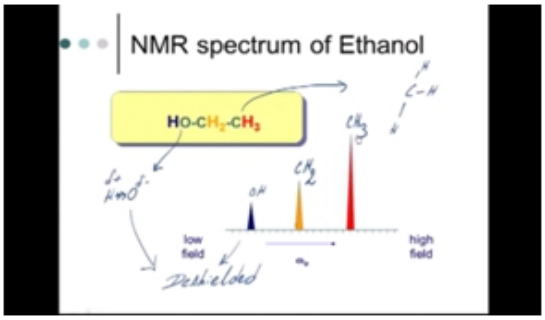

Fig. 4

a) Classroom Activities

At the outset when the new mode of instructions was proposed to the students there were mixed reactions: some students were excited at the prospect of online learning and hence conforming with the global trends and some other students were upset with the increase in the burden it will create. The students were informed about one and a half weeks before the start of the chapters in their respective classes and they were asked to go through the videos in the one and a half week before the start of the modules in their class.

Even before the end of one and a half week, some of the third year students put up their queries on the authors Google+ account. Although the queries were answered, the authors requested them to repeat their queries in the classroom for the benefit of all the students as many of them may not view the chat or posts on Google plus.

It was expected that there may be a sizeable fall in attendance due to the availability of the lectures outside the classroom. However, the attendance levels almost remained the same with all the groups. When asked about their queries some of the students showed me the snapshots of parts of the videos, either on their tablets or smartphones, about which they had doubts. After running through the concepts very quickly to refresh everyone's memory, the students were asked to solve several conceptual and mathematical problems for several classes and most of the students attempted them with a large amount of discussion in the class. For convenience, some of the discussions in the first-year class were carried out in smaller groups. When the internal assessment tests were conducted at the end of the module the average marks were found to be higher than the previous batches of students that learnt the same concepts in a traditional classroom set up. Towards the end of the module in each of the class, there was time enough to discuss the current research trends in the respective fields which is not normally available in a traditional class set-up. Apart from this, the first-year students were told about the experiments that were going to be conducted in the laboratory later.

b) The Survey

A survey was conducted at the end of the module without the students revealing their identities in any form on the questionnaire. The students were asked to fill the survey in the absence of the conductor of the module, with the help of laboratory assistants, and were asked to present their opinions regarding their attitude towards various aspects of the flipped classroom model, including idea of going through the lectures versus reading text books before entering the class, the extent of interaction inside the classroom, adequacy of the discussions in the classroom, the time demand it created, the utility of the pre-recorded lectures covering concepts, mathematical derivations and numerical problems and perceived quality of lecture in terms of its content, clarity, presentation and duration, the utility value of annotations along with the narrations, the improvement that they perceived in their grades, the extent of collaborative learning created, adequacy of the classroom interaction vis-à-vis requirement for a discussion board and decrease in the anxiety levels brought about during assessment. The survey questionnaire was drafted on the basis of a five-point Likert scale as 'Likert Scale items have the inherent advantage of not expecting a simple yes / no

answer from the respondent, but rather allow for degrees of opinion, and even no opinion at all' (Bowling 1997) and (Burns & Grove 1997). The format used for the questionnaire had 5 Likert items, and was scaled from 1 to 5 as follows :

1. Strongly disagree
2. Disagree
3. Neither agree nor disagree
4. Agree
5. Strongly agree

There were 25 questions in the questionnaire. Some of the questions pertaining to student attitudes that helped reach the conclusion of this survey touched upon the following facets of the pedagogy method:

- The attitude towards going through pre-recorded lectures before entering the classroom as compared to going through reading material.
- Improvement of quality of interaction in the classroom including the opportunity to ask questions and clarify difficult points.
- Perception of improvement in the performance/ grades/ marks in the internal assessment due to the flipped model.
- Utility of the pre-recorded lectures for revision and solving homework.
- Extra time demanded by this method perceived by students as an additional burden.
- Perception of the quality of pre-recorded lectures in terms of content, presentation and clarity.
- Perception of the appropriateness of pre-recorded lecture in terms of its duration.
- Overall impact of the methodology of the flipped classroom.

Apart from this, the students were requested to make comments if any at the bottom of the questionnaire and give feedback.

Results and Discussions

The results of the survey are represented below:
Group I : The third-year students [N = 42] [Figure 5]

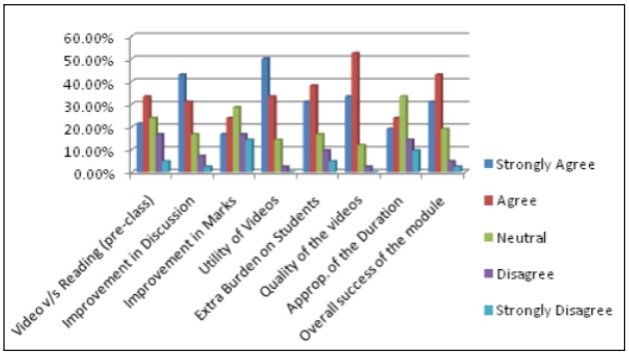

Figure 5:Third-Year Students (Group I) [N = 42]

Group II : First-year students where the chemistry course was conducted for the entire semester by the faculty who created the pre-recorded lecturesN = 135][Figure 6]

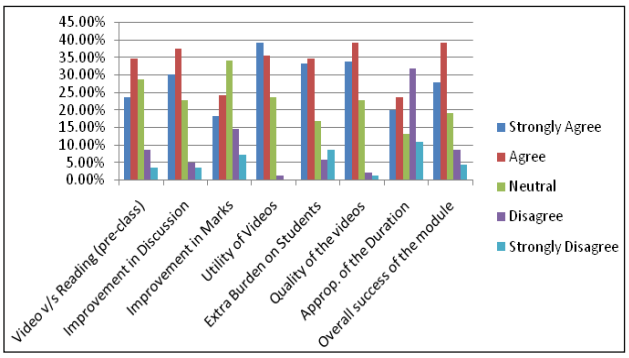

Figure 6:First-Year Students (Group II) [N=135]

Group III: First-year students where the chemistry course was conducted for the entire semester by another faculty who was not involved in creating the pre-recorded lectures[N = 130] [Figure 7]

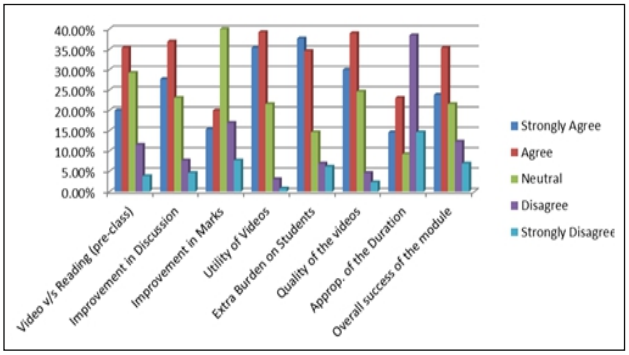

Figure 7:First-Year Students (Group III) [N=130]

The overall success of the course design for each of the group can be assessed from the pie-charts [Figure 8-10] represented below:

Figure 8: Overall Success of the modulefor Third-Year Students (Group I)

Figure 9:Overall Success of the module for First-Year Students (Group II)

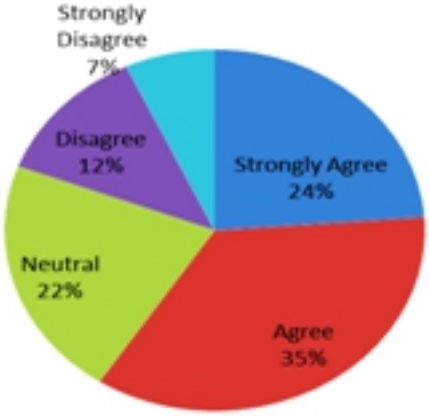

Figure 10:Overall Success of the module for First-Year Students (Group III)

Comparative results for the three groups from the survey are indicated in Figure 11.

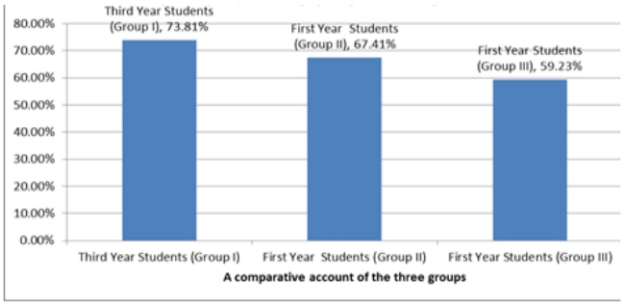

Figure 11: Overall success of the pedagogy with the 3 groups (Strongly Agree + Agree)

The results (from Figures 8 to 11) clearly convey that the group that benefitted the most was the third year group (Group I) with totally 73.81 % of the students agreeing or strongly agreeing with the success of the flip model. This is probably due to their greater commitment towards chemistry with about 35% of the group likely to pursue a master's degree in chemistry. Apart from this, the group being very small with only 42 students, as compared to other groups with more than 100 students, it was possible to have a better quality interaction with them. The group that benefited least (59.23 % agreeing + strongly agreeing with the overall success of the module) was the first year group where the author engaged the flipped module but was not the faculty in-charge (Group III).

There are two plausible reasons for the same: one being a sudden change in the style of approach towards physical chemistry, for the students for a short period of 3 weeks, and another being a lack of rapport and comfort with the instructor, which generally builds over a period of 2-3 weeks. However, the results were quite indicative of the success of the module with this group although to a lesser extent than the others. The students also indicated a preference (almost 58 % agreed and strongly agreed) towards video lectures created by the faculty teaching the course themselves over others, however, this observation should not coerce every teacher to record their own videos for the module as the amount of time and effort required is enormous. Infact, faculty teaching similar courses in a given college or across different colleges under the same university should distribute various modules amongst themselves for the lecture recording purpose

and practice the pedagogy collectively. This will distribute the burden on the teachers, form a platform for sharing expertise and make available lecture videos for all the modules in the syllabus which in turn can be used to collectively and collaboratively adopt the flip pedagogy.

About 21.5% (Figure 5) of the third-year students considered reading textbooks to be more beneficial as compared to video lectures before entering the class; whereas about 12.5% (Figure 6 and 7) first-year students felt the same. This indicates that majority of the students preferred going through video lectures over texts. The third year student group having a greater interest in chemistry had a slightly higher proportion of students inclined towards text books which indeed offer more information and even suggest online resources for furthering their understanding.

About 68 % on an average of the students across the three classes (73% of third-year students from Figure 5) agreed (agreed + strongly agreed) to an increased interaction in the classroom, which contributed to making the classes interesting. Inviting a large amount of interactions in a big class invariably runs into a risk of chaos prevailing through the class with a huge amount of noise levels and can lead to the failure of the envisaged plan. This can, however, be firmly dealt with by asking students to maintain order and waiting for their turn to ask questions or doubts as well as answering the questions asked by the instructor. For the discussions, the entire class can be divided into smaller groups and then each group can be asked to make a presentation at the end of the discussion. The third-year students being a smaller class indicated a greater extent of discussions as every student got a fair share in the interaction. About 40% of the entire study group perceived (agreed + strongly agreed) an improvement in their exam grades. There was indeed an improvement in the performance.

Although quite a few students agreed with the duration of the video lectures, there were a sizeable number of them who desired videos of shorter duration, even at the cost of having a larger number of videos. The reason for this being lesser attention span of the students and reduction in the buffering time of the videos on YouTube. Almost 77% (agreed + strongly agreed) of the students found the videos to be a great review tool for solving homework as well as studying for the exams. The first-year students almost unanimously agreed with the benefits of the videos based on derivations and approach towards solving numerical problems in which equations were written with verbal narrations in sync. This is especially so keeping in mind that physical chemistry is one of the most dreaded parts of chemistry due to the abstract and mathematical approach of the subject and the fact that about 40% of the students are not very comfortable with mathematics and drop chemistry in higher classes with a sole objective of avoiding mathematics involved in physical chemistry. Many students reported (68% agreed + strongly agreed) that they were less anxious while dealing with mathematical problems during their assessment.

Many students (almost 28%) downloaded the videos from YouTube to obliterate their dependence on the internet. Some of these students distributed the downloaded videos on the USB drives to other students who did not have easy access to the internet. About 68% of the students felt that there was an additional burden on them in terms of a time crunch, which stressed them initially. In order to manage this crunch, some proactive students (about 23%) utilised their travel time, in trains and buses, to see the videos on their smartphones or tablets which were almost smoothly streamed on YouTube Apps, thanks to the 3G connectivity throughout Mumbai. This served to be a good time management lesson for the rest of the students.

It was quite interesting to note that quite a few of the students brought their doubts to the classroom by taking the snapshots of the parts of the video lecture that they didn't understand. This ensured no ambiguity in their questions and helped me to figure out the points at which the video lectures needed to be improved in their clarity. It was made sure that the questions asked by them were very loud and clear and repeated by me at least once more to get the entire class involved, inviting discussion and obtaining a better clarity on the topics involved.

About 8% of the students also formed a study group to discuss the contents of the video outside the class

helping each other in their difficulties and solving numerical problems from several text books. This indicates that the flip model improved not only the student-teacher interaction but also student-student interaction from the academics point of view and fosters collaborative learning.

The students, almost in unison, agreed with the necessity of annotations to be used during the explanation of graphs, diagrams, reactions and mathematical equations in the PowerPoint narrations during the video lectures. This they claim held their attention through the video lectures and focus continuously on the screen.

About 28 % of the students strongly agreed and 39 % agreed with the requirement for an online discussion board to accommodate all their queries and at the same time archive the answers and revisit them if required at a later time. In fact a few third-year students made Google+the discussion board, as I had used Google+ platform to forward the YouTube link to them [Figure 12].

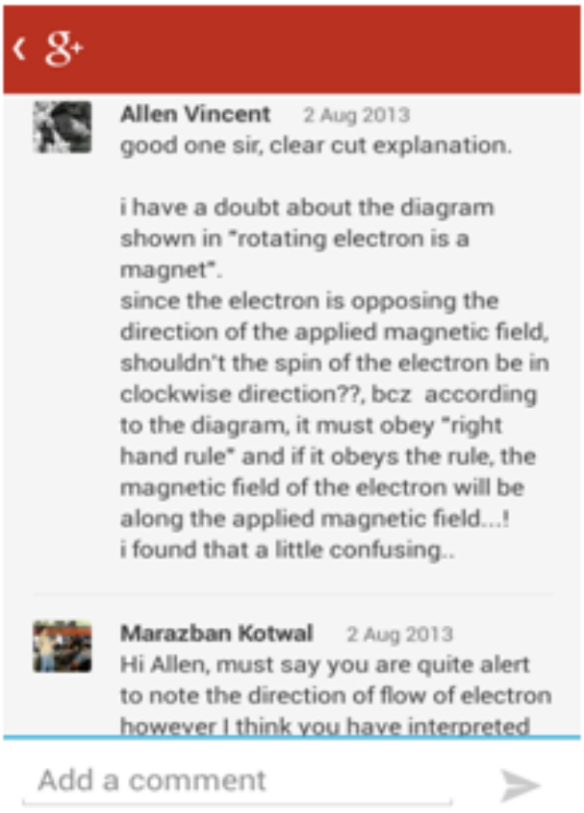

Figure 12: Online discussion

About 83% opinionated (agreed + strongly agreed) that screen-casted videos are far less distracting as compared to live videos recorded during the actual lecture being delivered by a faculty. This is probably because the videos shot live in the classrooms tend to be long and progress at an excruciatingly slow pace.

In the comments section, many students pointed out that they were highly enthused towards chemistry after the classroom discussion on current research trends related to the modules being taught. This obviously would not have been possible due to the time crunch in the traditional classroom set-up. This will surely appeal to many first-year students in selecting chemistry as their major subject at the third-year level.

Another point which strongly came up as a free response or comment was the fact that the flip classroom course design was highly appreciated due to building of a great rapport between the faculty and the students and provided a much awaited shift from the traditional mode of teaching. Many students pointed out that the in-class interaction surely went a long way in getting them involved, interested and learn the subject well sans any doubts. Many students hoped that this pedagogy will be practiced by many teachers and would bring about a paradigm shift in the teaching-learning methodology.

Conclusion

In the course of the research to find a strategy for using technology in the classroom for the benefit of the students the flipped classroom model offers a comprehensive solution. Apart from improving interactions in the class, it can improve the receptivity and confidence as well as lower the anxiety of students towards subjects involving large amount mathematics like physical chemistry, especially for those averse to mathematics. The in-classroom component is a must for learning to be complete without the development of any misconceptions. This makes the position of an instructor almost indispensable. Like any other mode of teaching, the pedagogy of inverted classrooms is more successful with a smaller group of about 50 students but is surely not unworkable with a group of about 150 students. However, special care needs to be taken with big

groups to ensure lesser chaos in the classroom; one of them being splitting the class for discussions into smaller groups. YouTube rather than a university or college website is surely a better repository for the pre-recorded videos due to round the clock availability of the videos on smartphones and tablets and availability of the videos in public domain for other teachers teaching similar courses to flip their classrooms without the requirement of creating any videos of their own.

This, indeed, can open an avenue of bringing about the collaboration between faculties of different institutions teaching similar courses, in practicing the pedagogy. Apart from this, the video lectures serve as a great revision tool for students as they can be accessed at any point in time, from anywhere, and students can precisely jump to those parts of the video lectures which trouble them to reinforce concepts. The time freed-up can be utilized to expose the learners to cutting edge research being carried out all over the world on the topic being discussed. This will surely go a long way in enthusing students towards chemistry and promote its growth. All the arguments presented in this paper clearly calls for a grander use of the flipped classroom methodology as it involves multiple utilities and encompasses appropriate use of technology in classrooms, which has been provoked since the advent of Information Communication Technology (ICT) and the growing demand for e-learning.

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Paper Microscope Foldscope: An Affordable Means to Visualize the Microscopic World

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Abstract

Microscopy, as a subject, remains limited to the four walls of a laboratory due to the nature of the equipment involved - the microscope - that does not facilitate ease of field research, for more reasons than one. Foldscope is a 'frugal science' tool designed by Dr. Manu Prakash, Associate Professor of Bioengineering at Stanford University, USA. It is an inexpensive, portable, light-weight paper microscope, small enough to fit into a pocket, and amenable with on-site field studies. The current work discusses the advantages and applications of Foldscope as an affordable educational aid and research tool at the school-level and in higher education. Research conducted and social outreach work carried out by the authors using the Foldscope is described briefly. The project received funding from the DBT-PrakashLab Research Grant Foldscope India (Phase-I) of the Department of Biotechnology (DBT), Government of India.

Keywords: Foldscope, Frugal science, Education, Affordability

Introduction

Conventional Microscopy and the Problems Therein

Microscopes are instruments used since time immemorial to make the invisible world of tiny objects and life forms visible to the naked eye. The history of microscopy dates back to 1000 AD when Egyptians used a glass sphere called the' reading stone' to enlarge letters and characters above which it was placed (Bellis, 2018; Nd 2016). The Romans invented a glass lens (called lens because their shape were similar to the lentil seed) which was thicker in middle and thinner at the edges. When this glass was held over an object, the object looked bigger (Bellis, 2018; Nd 2016), and hence, these glasses were called 'magnifying' glasses. The development of microscopes as an effective tool in science can be dated back to 1590, when the father- son duo of Hans and Zacharias Jannsen created the first microscope (Tortoraet al., 2010; Willey et al., 2008). This was followed by the publication of Robert Hooke's famous 'Micrographia' that outlines his microscopic observations, and Anton Van Leeuwenhoek's observation of 'animacules' using a microscope with a single lens way back in mid 1600s (Tortoraet al., 2010; Willey et al., 2008; Falkowski, 2015). A series of continuous developments through the next few centuries brought into existence the compound light microscope, phase-contrast microscope, electron microscope, confocal and fluorescence microscopes, and of late, advanced microscopes like the atomic force microscope and super-resolution microscope (Willey et al., 2008; Falkowski, 2015). Although these possess the advantage of high magnification and resolution, the major disadvantages of laboratory microscope is that it is expensive, heavy to carry around, made up of fragile parts, and requires high maintenance. The electron and atomic force microscopes require an entire room for their installation and working. This restricts the use of the conventional microscopes to a few technically trained users and institutions that can afford them. Citizen scientists and students in educational institutes in resource-constrained developing countries, including but not limited to India, thus have limited access to such facilities and are unable to make use of and contribute to scientific progress in these domains.

Paper Microscope Foldscope to the Rescue

The gravity of this problem was realized by Indian-born scientist Dr Manu Prakash, a professor of Bioengineering at the prestigious Stanford University, USA. His lab works to revolutionize already existing technology by bringing in the concept of 'frugal science and engineering'. The aim is to combine

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simple strategies to create frugal science instruments that are easy to build, easy to maintain, easy to use and affordable to even the common man with a wish to carry out citizen science projects. One such highly successful attempt in 2014 by Dr. Manu Prakash and his erstwhile PhD student Dr Jim Cybulski is the invention of the folding paper microscope 'Foldscope' (Cybulski et al., 2014; Pandika, 2017; Prakash 2012). The Foldscope is assembled together from its component parts in less than 10 minutes akin to the Japanese paper art of origami [Figure 1].

Figure 1.Foldscope - the Origami Paper Microscope.

The Foldscope is assembled by paper-folding akin to Origami from its component parts that are all made out of water-proof paper, a fish eye lens (140X magnification) and magnetic couplers to hold the parts together.

Because it is made out of paper, this microscope is light-weight (about 8.8 grams), portable - small enough to fit in a pocket (70×20×2 mm3), and cost-effective – it costs less than a dollar (~ Rs.72/-) to make it! It can survive being dropped from a 3-storey building or stepped on by a person and provides magnification from 140X up to 2000X and resolution of 2µm and less (Cybulskiet al., 2014; Pandika, 2017; Prakash 2012). The Foldscope requires no external light source or expensive spare parts, and thus greatly facilitates on-site field studies. Images can be analyzed by attaching a cell phone camera to the Foldscope by means of a magnetic coupler, further magnifying and enhancing image quality (Cybulskiet al., 2014; Pandika, 2017; Prakash 2012). Adjustments can be made in all three axes, i.e. X-, Y-, and Z- axis, and it comes with a set of accessories like paper slides, plastic coverslips, and a field study kit. Design innovations over the years following its invention have adapted the Foldscope for use in High-resolution brightfield microscopy, Darkfield microscopy, Fluorescence microscopy and Polarizing microscopy – indeed a boon for citizen science and a gift for resource-constrained educational institutions in the form of a sturdy, low-cost educational and research tool. It is available from Foldscope Instruments Inc, USA (www.foldscope.com), and from mLabs, Fundoo labs on Amazon India (www.amazon.in).

Applications of the Foldscope

Foldscope has been used for the microscopic analysis of several living and non-living samples. It has been used for the surveillance of infectious diseases during religious gatherings like the KumbhMela in India (Nsoesie&Kluberg, 2015), and for point-of-care diagnosis (Zhang et al., 2018) in resource-limited areas, for example, in the diagnosis of parasitic and tropical diseases like malaria in the African subcontinent (Cybulskiet al., 2014; Zhang et al., 2018; Saeed and Jabbar, 2018). The mobile phone mounted Foldscope had sensitivity of 55.9% and specificity of 93.3% compared with conventional light microscopy for diagnosing Schistosomahaematobium infection (Ephraim et al., 2015) Rapid detection of neglected tropical diseases (NTDs) is very important in low- and middle- income countries (LMICs) (Rajchgotet al., 2017) as the laboratory infrastructure is not very well developed. Histological specimens like tissue sections of rat liver can be stained and observed under the Foldscope. Embryological studies (eg, observing mosquito larvae) (https://microcosmos.foldscope.com/?p=78458) can also be performed using Foldscope. Researchers around the world have observed various specimens under the Foldscope, ranging from small grass and sand to detecting cellular changes associated withthe Hepatitis B virus (https://microcosmos.foldscope.com/?p=78345).Foldscope is used for observing and analyzing various water and soil samples, leaf sections, and microflora and fauna leading to the identification of various species of microdiversity, and documentation of the same (Pandika, 2017; Prakash, 2012). Several individuals and teachers have used Foldscopes in their classrooms and on-site and shared their exciting results with the world on the Microcosmos website

(https://microcosmos.foldscope.com). This is an online portal that has been created with a view to empower a worldwide community of amateur microscopists to capture and share images of a broad range of specimens. It is a platform that facilitates the sharing and discussion of observations, ideas and problems, all related to the Foldscope. Useful feedback, trouble-shooting videos and Foldscope hacks are also available for the self-learner. Microcosmos is a rich resource that complements the use of the Foldscope by an individual, especially a student of science.

DBT-PrakashLabFoldscope India (Phase I) Research Grant

This grant of the Department of Biotechnology, Government of India, brought the Foldscope to our country in 2017. The 1-year grant was awarded to a total of 445 schools, colleges and universities in India, spanning all states and union territories. The Category A grants of Rs. 4 lakhs each were disbursed to schools for 'Foldscope as an Educational and Training Tool', and Category B grants of Rs. 8 lakhs each were awarded for 'Foldscope as a Research Tool'. The Category C grants of Rs. 2 lakhs each were given for citizen science initiatives. The authors of this paper were awardees of the Foldscope Category B research grant. The grant provided the authors an opportunity to take the Foldscope to economically disadvantaged schools in urban and rural India and carry out social outreach programmes there. The use of Foldscope as a very efficient education aid was apparent during these sessions.

Foldscope as an Educational Tool

Facilitated by the DBT-PrakashLabFoldscope grant, the authors carried out a series of outreach programmes wherein they explained the assembly and handling of Foldscope to school and college students in muffasil areas and in remote villages in rural India. In over 9 workshops conducted at Bijni village in Assam, Shirali and Mallapur villages in Karnataka, and at BMC-run Municipal schools in Mumbai [Figure 2], more than 1210 students and around 50 plus staff were trained to use the Foldscope as an educational and research tool. Over 200 Foldscopes and permanent reference slides were handed over to the Principals of these schools and colleges to facilitate educational activities using the Foldscope.

Figure 2.Social Outreach Programmes conducted to emphasize the use of Foldscope as an educational tool. A. and B.

The authors conducting the programme at Bijni College, Assam.C. and D. Students assembling (C), and holding forth assembled Foldscopes (D) at Shirali and Mallapur villages, Karnataka. E and F. Students viewing self-prepared samples through the Foldscopes they assembled at Shirali, Karnataka (E) and at a BMC school in Mumbai, Maharashtra (F).

The outreach sessions began with an introduction to the history and development of the field of microscopy, followed by a hands-on session in the assembly and usage of the Foldscopes. Students were divided into groups of 4-5 each and handed 1 Foldscope to assemble. They were taught to prepare wet and dry mounts of naturally occurring abiotic and biotic samples in their surroundings (water, soil, leaf, grass, petals, pollen grains, insect body parts etc.) [Figure 3].

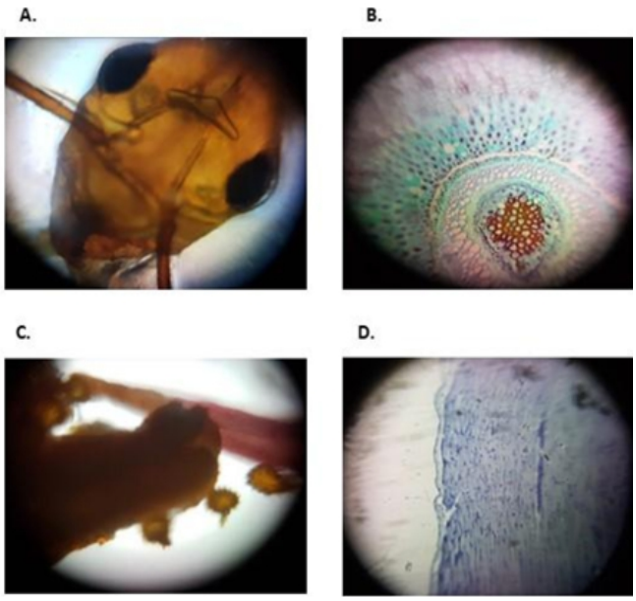

Figure 3. Samples viewed through and documented using Foldscope at the outreach programmes conducted.

Samples were viewed under 140X Foldscope magnification followed by digital zoom on cell phones.

A. Red ant head (prepared slide)

B. Fern rhizome (permanent slide)

C. Pollen grains and pollen sac of a wild flower

D. Skeletal muscle (permanent slide)

The student-prepared slides were then used to display concepts of focussing and panning to observe the samples. Basic principles of light microscopy like magnification, numerical aperture and resolution were explained to the students. The hands-on sessions were concluded by asking students to come up with questions and topics they would like to study using the Foldscope. It was heartening to note that the students suggested refreshingly innovative and meaningful ideas like studying the microbes present in the school water supply, in the eatables sold by vendors outside the school premises, in the fresh water pond in the village, to study the microbial diversity in the soil in the surrounding fields, the structure of leaf and pollen grains as mentioned in the school text books, to study parts of the mosquitoes, ants, and the common house fly, and many more such ideas.

The teachers and principals of the schools were truly grateful for the gift of the Foldscope. Three of the rural schools did not own any compound light microscope, and the one school that did possess a microscope, had not used it even once after buying it, as it would prove expensive for them to take it out for regular use. The microscope was brought out only during the 10th class exams for students to identify the parts from afar. The Foldscopes are thus an apt educational tool to understand and explain the concepts of microscopy to these students and to unravel the mysteries of the microscopic world to them. The science teacher of one school suggested that he would, to quote him, “Let the students loose with the Foldscope during free lectures” so that they may carry out exploratory projects of their own and report the results in their own small field journals.

Conclusion

Based on the outreach programmes carried out, the authors find the Foldscope to be an educational tool with immense potential. It can not only be used to replace the heavy, difficult-to-lug-around and expensive compound light microscope in resource-constrained schools and colleges in developing nations, but can very efficiently be used to explain the concepts of light microscopy. Its portability is advantageous in carrying out field studies, not limited to the four walls of the science laboratories. Students can learn and imbibe the scientific research methodology by engaging in exploratory research projects of their own, guided by their teachers. By sharing their results online on the Microcosmos site, they can gain proficiency in using the internet of things and presenting their results in a scientific format. They can garner feedback from Foldscope users across the globe facilitating science communication and trouble-shooting, creating a community of mutually collaborating young scientific minds. Foldscope is thus an easy to use, affordable and efficient 'frugal science' educational tool for student and citizen science endeavours.

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Contextualizing Chemistry for Non-Science Majors at St. Xavier's College

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Abstract

This paper discusses the pedagogical approaches taken to contextualize Chemistry for non-science majors at St. Xavier's College, Mumbai and its impact. The goal was to inculcate scientific literacy in non-science majors and encourage them to understand and reflect on scientific issues that are encountered in everyday life. Considering the importance of understanding the basic concepts in Chemistry and analyzing them in the broad context of chemical interactions happening around us the course intended to enable students to make informed decisions. The study explores the effectiveness of a context-based approach to enhance learning and improve motivation. It gives an overview of why the need for using this approach was felt, the learner profile, the way the curriculum was designed, successive iterations done on the basis of feedback received and the effectiveness observed due to the change of approach.

Keywords: Chemistry, Curriculum Development, Context-Based Approach, Scientific Literacy

Introduction

The 'Chemistry in Context' course is designed with the aim of appreciating the application of Chemistry in daily life and using the knowledge of Chemistry when dealing with real life scenarios. When the Chemistry curriculum was introduced, the goal was to create a curriculum useful for non-science majors but on the basis of feedback received from students, the curriculum which majorly focused on the aspect of Chemistry as a central science was further contextualized in each successive iteration.

The key learning was that greater the contextualization the better was the success rate in achieving the end objective of helping students.

Key take aways of this study are-

- Reflections of teaching Chemistry with a contextualized approach
- Why students prefer the contextualized approach to the traditional ways of learning?
- Why 'Typical Assessments' act as a barrier to contextualized learning and how to design assessments which gauge the students understanding of the subject as well as help improve learner experience?
- Scope of extending this approach to other courses.

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Area of study

To contextualize Chemistry curriculum for non-science majors which is Second Year B.A., B.M.M and B.M.S students with the objective of

A. Developing strategies to refine the curriculum further to improve its effectiveness.
B. Helping learners achieve a meaningful relationship between the 'Chemistry Curriculum' and its context to daily life.
C. Studying the effectiveness of the context-based approach versus the traditional approach and how it can be incorporated in other courses as well.

Target Group:

A. Second Year Arts Students
B. Mass Media Students
C. Management Studies Students

NOTE- All the students of the courses mentioned above have to study any branch of science in the fourth semester (This is referred to as the Cross-Faculty course).

Overview of the Learner Profile this course is catering to:

A. Learners have not studied pure sciences for quite some time.

B. Last exposure to have studied science as a specialized field of study was only till school/ at the X + II level.

C. Our interaction with students in class points to low interest levels in studying Science.

D. Students have a general phobia towards studying Science. Greater focus is on rote learning and clearing the exam.

E. Anecdotal evidence suggests that students find the study of Chemistry to be unnecessary, abstract and difficult.

F. On the basis of an essay written at the beginning of the course it was realized that Chemistry has a negative association for many students, chemophobia is common and chemicals are generally associated with danger to life and the environment. They hold Chemistry responsible for environmental disasters and risks around the world.

G. Students study Chemistry concepts in isolation. They find it difficult to link the theory to real life scenarios and hence are unable to appreciate the intent with which the course is designed.

Contextualization- An overview

Contextualization is the use of real-life situations as a starting point to introduce or study a scientific concept. Context-based approaches are known to help students to see the importance and relevance of what they are studying. Integrating contexts which are familiar to students into chemistry curriculum attempts to bridge the gap between the abstract nature of chemistry and the 'real world' (Kortland, 2005). Globally it is expected that students must be able to connect science to issues like energy conservation, environment and ecological balance. (Pinar et al., 1995; van den Akker, 1998). With an emphasis on sustainable development and ethical, social and environmental implications of science, attempts to reform science syllabi are being carried out in various countries in the world.The Salters approach in the UK, the 'Chemie im Kontext'in Germany, Industrial Science in Israel and the ChemCom in USA are some such attempts.

A study done on Swazi school students who have been taught a contextualized science course explored the ability of the students to use relevant science concepts to solve everyday problems and suggests ways to increase the effectiveness of contextualized teaching in dealing with everyday situations.(Campbell, Lubben, 2000)

Regarding the Salters approach, Benett and Lubben point out that context helps students appreciate the contribution of chemistry to their lives and provide a way to acquire a better understanding of the world. A survey of teachers on the Salters curriculum vs the traditional teaching method shows that a context-based course is more motivating to study and teach, although it is more demanding. (Bennett, 2005) Another study evaluates introductory chemistry courses in two institutions and finds students taught via contextual approach outperformed the control group on conceptual problems in chemistry and scientific thinking problems.

Although the narrow view of contextualizing a curriculum gets limited to sharing of examples which help the learner relate to the content covered, contextualization is not about providing real life examples and then moving to teaching the relevant core concepts. Kasanda et al. (2005) identify three ways in which everyday contexts may be integrated in science curricula:

- Context-Infused curricula: science courses that refer to issues in society, often presented as examples or applications of the science concepts;
- Context-Focused curricula: courses about science-based issues in society. Some scientific literacy courses fall within this category;
- Context-Based curricula: science courses taught through issues from society. The issues are presented at the beginning of a topic to identify the science concepts to be studied.

Parchmann et al. (2006) mention a German Chemistry course Chemie im Kontext (ChiK), and point out that “a

context should enable students to see the relevance and possible application of their learning results on the one hand, and to tie the new topic into their pre-knowledge, interests, and ideas to enable successful learning processes, in the light of constructivist learning theories, on the other hand". They suggest three different aspects of context as: Context as content, Context as learning stimulation and Context as a frame for situated development and application of knowledge and competencies.

Blanchard shows how contextualized learning ascertains that learning needs of different learners are met through strategies such as problem solving, encourage students to learn from each other, teaching and learning in a variety of contexts such as home, community, and work place and encouraging students to become self-regulated learners.

To make learning context based, Berns and Erickson (2001) define some crucial factors:

- In planning lessons, teachers should take into account the pupils' social, emotional and intellectual development.
- Students should be encouraged to work in groups to enable peer learning.
- Individual differences of students should be kept in mind, especially when choosing contexts to reduce bias between students.
- Activities should target a wide range of intelligence types since students vary in their abilities.
- Questions should be involved in every step of the lesson to enable students to reflect and solve problems.
- The assessment should evaluate the ability of students to apply concepts rather than present regurgitated facts.

Our focus of contextualizing the curriculum was to help students understand the connections between concepts of Chemistry and their application in the real world. This helps learners move beyond the concept of 'studying Chemistry' to understanding how Chemistry is an integral aspect which permeates various aspects of life. The context-based approach also results in improvement in attitudes towards science which is otherwise looked upon as vague, abstract and irrelevant.Contextualizing the curriculum entailed blurring the lines of learning concepts for clearing the exam to appreciating the concepts of Chemistry as it impacts various aspects of life.

Need for a contextualized approach for the current learner group:

1. B.A., B.M.M and B.M.S students are supposed to study one subject of science as mandated in the syllabus. Some students enroll in the course because of their interest in the subject but many of them join because of the compulsory requirements that necessitate them to attend. Students do not see the relevance of science to their careers or recognize the study of Chemistry as important to their field of study but complete it because it is 'the next step in the curriculum'.
2. While the Cross-faculty course was designed with the intent of helping students appreciate the application of Chemistry in daily life, with greater weightage on year end exams students are focused more on clearing the exam.

Mechanism / Mode adopted to contextualize the curriculum:

A. Deployment of the first curriculum in 2013when the cross-Faculty course was introduced for non-science majors

- The focus of the subject was to create awareness of Chemistry fundamentals with the intent of appreciating the application of Chemistry in daily life.
- Students of B.A., B.M.M and B.M.S courses were interviewed to understand their expectations from a cross functional course, their challenges, apprehensions etc. were discussed so that the course would cater to the needs of this target audience.

- Hence, the first version was created and introduced in the year 2013 as a pilot study.

B. Empirical evidence collected when the curriculum was administered during the pilot and in the subsequent deployments

i. Feedback taken from the students who undertook the curriculum, after the course was completed, some of which is mentioned below:

  - Students like the topics that were touched upon. However, they still felt that the courses were taught at a higher level of understanding.
  - Students found it difficult to grasp certain concepts and it was still too abstract after the initial linkage to real life.
  - Students enjoyed the sessions which were more hands-on and showed clear use in daily life scenarios etc.
  - The evaluation modalities were not appreciated. The students felt the curriculum was interesting and had a context in real life but the exam still focused a lot on testing of theoretical concepts which involved a lot of rote learning.

ii. Feedback based on formal and informal assessments administered to the students during the deployment of the curriculum

  - Curriculum assessment was divided into internal assessments (which comprised of Projects, Hands-on activities and tests) and Course end exams (Theory exam). Students performed better in projects and hands on activities. They showed greater engagement and better levels of understanding in these assessments as compared to the final exam.

iii. Feedback taken from Faculty on whether the Curriculum helped achieve the objective with which it had been set

  - Faculty administering the curriculum felt that students engaged better and showed greater levels of understanding in learning activities that were designed around a particular real-life situation as against teaching a concept and then trying to build a link through examples.
  - Use of documentaries/ videos/ case studies as a hook helped contextualize concepts better. Students wanted to learn more about topics where they could understand its relevance to daily life. For example, the documentary 'Fire in the Blood' revolves around blocking access to low cost drugs and how CIPLA helped save millions of lives. This struck a chord with the learners and they wanted to understand more about the way the Pharmaceutical industry functions and the difference between low cost drugs and high cost drugs for the same illness.
  - Hands on activities were appreciated greatly.
  - The moment the link to real life scenarios dropped, students displayed low engagement levels, boredom and difficulty in understanding the context.
  - Curriculum Modifications.
  - Based on the feedback collected every year the curriculum has undergone various iterations.
  - The current version (Version 3) of the curriculum is being deployed.
  - Positive aspects of this curriculum will be incorporated in other courses as well.

C. The curriculum will be modified further based on its impact in the current curriculum.

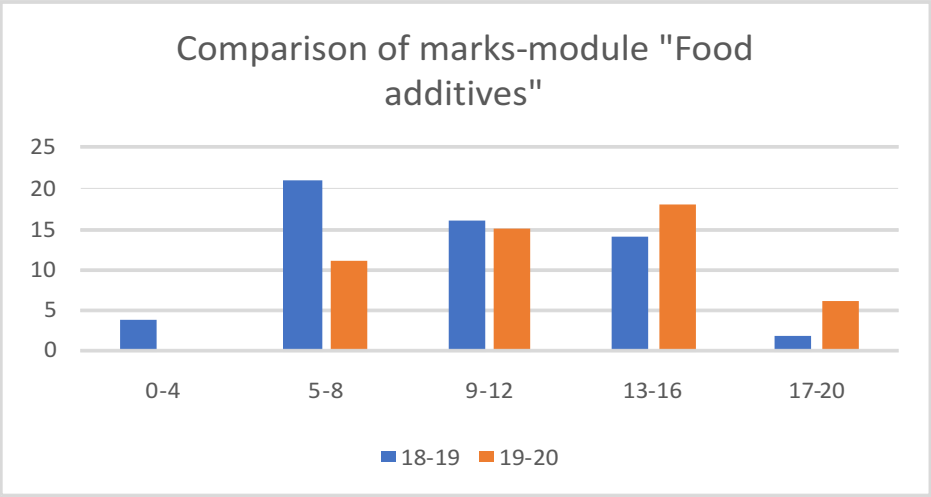
Examples of contextualizing Chemistry

A. Topic - Overview of food additives and sensitizing learners about harmful food additives

Initial Approach	Current Approach (Post Contextualization)
• Context setting was done with the help of examples of food additives • Classes of additives were explained • FSSAI regulations were outlined • ASSESSMENT: Understanding of concepts through multiple choice questions	• Context setting via discussion on food additives initiated • Learners asked to select a processed food product and study the ingredients listed on them. • Research information on why the additive was added, impact on health, FDA regulations on the additive in various countries • ASSESSMENT: Report on the findings to be submitted

Effectiveness

1. Students displayed better conceptual understanding of food additives when they researched the topic as compared to the initial approach where they were explained the same via the primary mode being use of lectures, videos and other teaching material to aid the learning. Comparison of marks for a short answer test conducted at the end of the module on 'Food Additives'in the class of 2018 19 and students of the current batch shows a trend of improvement in performance in the current students



2. Learners did not want to limit their study to specific food products but went beyond the project requirements. Some learners explored additional processed foods (much more than what was mandated in the project).

Contd.

3. They showed greater levels of engagement in the project. A group of students went on to the difference, if any, in costlier processed foods that were accessible to the rich as compared to food products sold in the regular market.

4. Greater levels of collaboration and discussion were observed among the students when they were researching additives in different food products which led to greater peer to peer learning.

5. A lot of reference material-videos, articles and case studies were shared between the students. This was not the scenario when the initial approach was used.

6. Retention of concepts was much better when a contextualized approach was adopted.

7. Students displayed a greater understanding of the FSSAI and FDA regulations and why they are laid out the way they are and could relate on a better basis to their study of the use of additives in food products.

Key Highlights of the Curriculum

1. No concepts are introduced to the learner without linking them to real life scenarios.

2. The contextualization does not get limited to listing out the application at the end of teaching a concept or at the start of the concept being introduced.

3. In contrast, the entire learning is to be derived from a real-life scenario/ context. The real-life hook should direct the learner to understand the 'chemistry' behind it.

4. The major focus is on getting the 'human element' into the teaching of Chemistry which is otherwise perceived as a very abstract area of study.

5. Assessment/ Evaluation is aligned to the 'Contextualization'of the subject. Assessments do not encourage memorizing of concepts, checking retention etc.

6. The Assessments are designed in such a manner that they aid the learner to research the subject further.

B. Use of Chemistry in improving performance in the field of Sport

1 Learners are asked to select a favorite sport.

2. They are then asked to study how the equipment and other sports accessories evolved over the years.

3. They further explore how this research has helped improve the performance of sports persons.

4. This hook helps learners understand the various materials used and then gradually introduces them to various materials, their properties and how it helps improve performance- the Chemistry angle.

Chemistry in Context- Curriculum Overview

The curriculum below gives an overview of the broad areas covered in the subject- 'Chemistry in Context'.

Sr. No.	Broad Areas of topics covered in the Curriculum
1.	**Chemistry- It's all around us** - Everything we see, smell, touch or taste is chemistry.
2.	**Chemistry- Touching all aspect of our lives** - Contributions of Chemistry impacting various aspects of our life - Food, Clothes, Drugs, Cosmetics, Energy & Transport etc.
3.	**Using Chemistry to conserve scarce resources and protect our natural environment** - Alternatives/ Substitutes that help protect dwindling resources.
4.	**Learning Chemistry to help make wise decisions-** - Do cosmetics really offer what they claim? - Is there a difference in cleansing property of very costly and moderately priced toilet soaps? - What types of unwanted, non - nutritive chemicals are present in packed food items and soft drinks available in the market?
5.	**Chemistry in Art** - Colours and the chemistry behind it. - Historical perspective of their usage in art - How knowledge of chemistry has helped create many art forms - Interactions of chemistry that help conserve and maintainartefacts.
6.	**Establish a relationship of chemical principles with significance to social, political, economic, and ethical issues**

Iterations made to the curriculum based on the feedback received during each deployment

Curriculum (2013 to 2017)- Version 1
Approach used in Version 1 for teaching key concepts- *i.* Each concept/ topic was introduced with the help of real -life examples followed by explaining of relevant concepts related to Chemistry. *ii.* A Blended approach was adopted - Lecture Method+ Video based teaching+ Case Study+ Exhibition etc.
Summative Approach used for Evaluation- - Internal Assessment 40 marks - 20 marks were allocated for a project which focused on Chemistry in everyday life- This segment focused on Hands On activities and group projects. - 20 marks were allocated for a written exam where the learner was tested to gauge understanding of key concepts covered. *i.* End Semester 60 marks - written exam assessing the learner's conceptual understanding of topics covered through the year.
Curriculum (2017 to 2019)- Version 2
Approach used in Version 2 for teaching key concepts- *i.* Greater focus on explaining of concepts by linking to real life scenarios. *ii.* A Blended approach continued to be adopted- Lecture Method+ Video based teaching+ Case Study+ Exhibition etc.
Summative Approach used for Evaluation - *i.* Internal Assessment 40 marks - Based on feedback received from students and the evaluation results, the entire internal assessment marks are allocated for activities such as projects, discussions, individual and group assignments etc. which give the learner an opportunity to appreciate and understand the diverse ways in which chemistry touches our lives. *ii.* End Semester 60 marks - written Exam assessing the learner's conceptual understanding of topics covered through the year.
Curriculum (2019-2020)- Version 3 (Current Version)
Approach used in Version 3 for teaching key concepts - *i.* Each topic has to be contextualized around a real life scenario as opposed to just listing down the context at the beginning/ end of teaching a concept. *ii.* Lecture method to be adopted only for context setting. *iii.* Learning to be derived through a 'Hands-On' approach where the trainer becomes more of an enabler who provides the appropriate atmosphere to help set the context for the learning.

Radical change of approach in Evaluation-

i. As the objective of teaching Chemistry as a cross faculty course is to help learners develop an understanding of fundamental concepts, understand their linkages to normal and challenging real life contexts and develop greater enjoyment and engagement when studying the subject, the typical assessment format-through the year and end of the year exam was removed after much deliberation and analysis of previous years assessments.

ii. Current assessments are designed keeping in mind the objective of introducing Chemistry as a cross functional subject. Hence, assessments revolve around creating learning experiences which help achieve a greater understanding of the subject in a more engaging manner.

NOTE-

I. The curriculum iterations have been done based on careful study of the trends observed during each deployment.

ii. Feedback from students was taken regularly. This too formed a major basis for the changes made in successive roll outs.

iii. The major highlight of the current curriculum was the change in the assessment patterns. Typical objective type/ long answer questions which focused more on retention were done away with completely. This was in line with the end objective which the curriculum needs to fulfill.

iv. On the basis of feedback taken from students at the end of the course, we would review the course and make changes accordingly. Key learnings would be incorporated in other courses as well.

Observations on the effectiveness of 'Contextualizing Chemistry' basis the iterations made to the successive curriculum

1. The approach of the course was converted from a context-infused to context based syllabus. Students who underwent the course displayed greater appreciation and interest towards Chemistry compared to students who did not undergo this course.

2. Students were able to make better real-world connections to the way Chemistry touches various aspect of their lives.

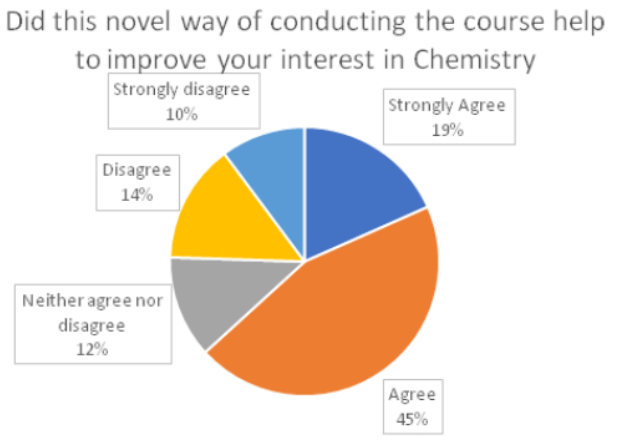
3. Retention of concepts was much greater when contextualized to known scenarios.

4. The contextualized approach helped students understand concepts better as compared to the more traditional ways of teaching.

5. Students showed greater engagement and motivation when the learning was based around scenarios which impacted their lives. It also brought out the fact that when real life contexts are used, the issues did not remain restricted to the domain of chemistry but overlapped with other branches of science. In the discussion on endocrine disrupting chemicals even though the focus was on Chemistry, to understand hormones, their role in the body etc. a lot of discussion revolved around biology.

6. The contextualized approach helped meet the needs of students from non-science backgrounds better as compared to other traditional ways.

To assess students' interest and attitude towards the subject a questionnaire was used. Sample size= 49. The result is as follows:



Way Forward

1. As version 3 of the curriculum is currently being deployed, the effectiveness of this curriculum will be studied further.

2. Study on how this approach can be incorporated for mainstream Chemistry courses will be explored.

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Enrichment of Technical Inhabitants with Soft Skills: A Review

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Abstract

This paper uncovers the idea of Soft Skills. It attempts to unfurl the viable utilization of soft skills by technical individuals belonging to technical fields. Data and Technology has moved the world at a more prominent degree. It has become an integral part of life. The vast majority of the employability was made by Information and Technology. Money went to the hands of common men with the significant use of technology at large scale. These developments made the world proceed onward so quickly. Eventually, our materialistic advancement brought forth pressure, strain and so on. To conquer these pressure and strains of life we have to procure the soft skills which help to move the life easily and viably.

Keywords : Soft Skills, Technology, Enhancement etc.

Technical people in general face the hazards even more as frequently as conceivable during regular times. So, it turns out to be significant to become familiar with the soft skills to each professional in direct or indirect way. Hence, to gain proficiency with soft skills has become the prime need of 21st century.

In spite of the fact that technical skills or information has the more noteworthy qualities at a work place, they cannot be drilled successfully except the utilization of soft skills at the same time. It appears that we are presently caught by technical abilities and technical advancements. It is even true that we are losing fulfillment, inspiration, ethical quality and thus, numerous valuable things throughout everyday life. This has come about into the utilization of soft skills alongside the technical skills. Not one or the other soft skills nor technical skills can become an assurance of achievements alone.

It is seen that technical people have the majority of the technical recognitions and an extensively decent work understanding. We can see the skill of these individuals in the field of programming, network administration and so forth. We even observe the astounding technical exercises, quick attainment and transmission of information in the field of Information and Technology. However, the acknowledgment, advancement and openings can't be accomplished alone by technical skills. So, soft skills as well, are significant with technical skills. Our correspondence with the executives, customers, managers and partners gets conspicuous while we make progress. It is indeed the vital part of soft skills.

Soft skills assume a crucial job for professional accomplishments; they help us to exceed expectations in the working environment and their significance can't be precluded right now in this age of technical advancement. Great soft skills which are actually rare in the exceptionally serious corporate world help to hang out in an environment of habitual job searchers with pedestrian skills and abilities. These abilities are personal and social skills which mirror our character and normally help in character advancement.

Importance of Skills more than qualifications:

For the support in the reign of information and technology along with the understanding of crucial basics, it is very much important to have influential communication skills as well as sound technical knowledge. It becomes a need to have sound knowledge of basics and conversational skills to be proficient in IT industry. The tools such as books, preparations, confirmations, and internet have proved to be the assets for long lasting learning in this global scenario which readily equips us to move on. However, sometimes it is observed that, we think

about soft skills a little bit but we may not know about these fundamental abilities. It appears that we don't take any rigorous efforts to improve our non-technical capacities which are the integral parts of soft skills.We can get numerous prospectuses with the knowledge and practice of soft skills in our regular lives. There is no any utilization of technical skills except if we can present those and someone realizes that we have such skills. Education has a definitive objective of generating job openings for growth of and individual. Soft skills fabricate the openings on a large scale. Technical ability isn't the main instrument of life and soft skills make us to keep the correct point of view towards looking at life.

Progression in Career :

Execution of any work or an undertaking any project requires collective efforts. It gets fundamental to include IT experts in numerous non- technical exercises. This prompts to carry the incentive to association and customers. It is the prerequisite of IT experts to do non-IT exercises for their IT jobs. So, it gets fundamental to convey the skills that the compelling result can be accomplished. It doesn't make a difference that how great one thinks yet the amazing correspondence with customers and partners is the need for an IT proficient. At the point, when he collaborates better with the individuals he needs to work with, his exhibition will, in general improve and it leaves with a positive effect. This turns into more prospects and more accountability.

Soft skills provide advantages to make an interpretation of technical skills into esteemed resources. Soft skills are valuable for making the most prospects of employments, profession and business. It is not significant how IT professional is proficient in technical skills. However, it makes a difference at a great deal to explore and attain the job opportunities. Else other people who may not be as competent as technically sound IT professionals, can have better promoting skills and may beat him to the employments or work he needs. There are huge openings in IT which generates enmity among the competitors. In such a serious situation, soft skills help the technical inhabitants to move with confidence.

Corporate area requires the division into skills. In the event that our technical competencies are comparative to those of different competitors how might we separate ourselves? Our accreditations and past work experience are significant. In any case, the issue in question is this: would we be able to persuade the interviewers, clients or customers that we will tackle their issues and convey esteem?

Career Progression with Individual Growth:

Securing of soft skills enables us with building adaptability into our future IT profession plans. Generally, soft skills are viewed as transferable skills, for example correspondence, venture the board, business and collaboration, which are required in about all parts of life, not only for our profession alone. We have to develop as a good human being with soft skills as well as an individual with technical skills.

Essentials of Imperative Sense

As IT proficient, we need to have certainty in our technical capacities. However, is our technical artful culmination worked to last? Technical skills are significant, yet such capacities are no assurance of professional satisfaction. It is highly unlikely we can continue an IT vocation with just technical skills. We take care of business yet what is our effect and impact? What truly is our point in obtaining the technical certifications? Is certification an end in itself? However, it should be understood that it is for circumstance and for vocational development. It's acceptable to secure abilities, however we have to be reasonable at the same time. Indeed, a large number of us appear to stress having a larger number of abilities than sense. Key abilities that have any kind of effect incorporate correspondence, authority, collaboration, critical thinking, venture the board and business. Having the required relational abilities gives an unquestionable requirement which have establishment to vocation development. They enable us to exploit of difficulties and openings that will come our way. At the point when we enable ourselves, we remain in front of the swarm.

Expansion Further than Money

It's important to dispose of the sole technical approach. How genuine we are about our impact, effect and vocation development matters a great deal. Our technical skills don't prevent us from creating administration what's more, inspirational abilities. Furthermore, how far would we be able to do without a positive outlook? When confronting difficulties, we need to quit being a object or; rather we have to build up some backbone. We have to develop ourselves beyond money motivation. We can be self motivated and furthermore persuade everybody around us.

Augmentation as the Authority in the Field

If we are seen as being troublesome and antagonistic, of what worth are our Linux skills when nobody is prepared to work with us? Are we putting forth a valiant effort in our general vicinity of specialization? However, to individuals that connects with us colleagues, customers, teachers, administrators what is their observation of us? It might be as an extraordinary resource, an awesome supporter, just somebody who does IT things or the geek from hellfire. It's a hard unavoidable truth. However, it should be recognized that the book can be judged by its cover and hence, it is substantial to develop ourselves as an expert and to develop in business, we should likewise develop as an individual.

To sum up, there is no standard strategy or recipe for guaranteeing IT achievements. There is a wide range of professional approaches and alternatives. However, supporting and building a fruitful IT career ought not be left to risk. IT experts regularly need to manage an assortment of circumstances that could either compromise or support their vocations. Soft skills help to an IT expert to upgrade his vocational openings with the individual development and expertise in the field.

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A Study of Attitude of Teachers towards ICT in Relation to Burnout

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Abstract :

Information and Communication technology (ICT) can be used effectively to enhance the teaching learning process. ICT not only facilitate learning but also helps the teachers to improve instructional strategies by active engagement by minimizing physical and emotional exhaustion. Burnout is a consequence of prolonged stress that leads to mental and emotional fatigue. The burnout teachers want to escape from his teaching on the contrary use of ICT in teaching create the interest in teaching learning process. Teachers burnout has been widely studied with various variables such as gender, experience in teaching, age, discipline etc. The present study aims at investigating the correlation between attitude of teacher towards ICT and their burnout. The sample used for the present study comprises the 65 Pre-service teachers and 60 In-service teachers from different schools and college of education in Mumbai and suburban areas. Thus study involves total 125 teachers. This is a correlational study between attitude of teachers towards ICT and burnout. The researcher used the self-prepared tool for determining the attitude of teachers towards ICT and Maslach Burnout Inventory which is recognized as a leading measure of burnout. The findings of study show that there is no significant correlation between the attitude of teacher towards ICT and their burnout. Thus the teachers who have shown favourable attitude towards use of ICT or rather those who are prone to use ICT in their teaching have not shown any significant correlation with Burnout syndrome.

Keywords: In-service teacher, Pre-service teacher, ICT, Burnout

Introduction

National Education Policy 2019 designates teacher as torchbearers of change. The paradigm of teaching is completely shifted form chalk and talk pedagogy to ICT enabled pedagogy. ICT has become an indispensable part in every walk of our life. Teacher, teaching-learning and teacher education programme is not at all exception to this. Today ICT is playing a very crucial role in teaching. It has changed the traditional way of teaching.

In-service teacher Vs Pre-service teacher:

In-service teachers are already certified teachers teaching in classroom who seek opportunities for their professional development whereas Pre-service teachers are those who are in process of preparing to become a teacher.

In-service Teacher Education: In the words of M.B.Buch"In-service teacher education is the programme of activities aiming at the continuing growth of teachers and educational personal in service." In the words of Cane (1969) In-service teacher education is "all those activities and courses which aim at enhancing and strengthening the professional knowledge, interest and skills of serving teachers." Thus In-service teacher education is primarily meant for regular working teachers.

In this context various universities in the country offers In-service teacher education programme for teachers who are already in service. For example, in Maharashtra Yashwantrao Chavan Maharashtra Open University (YCMOU) offers In-service teacher education course i.e. two years Bachelor of Education (B.Ed.) for the teachers who are already teaching in school and having Diploma in Elementary Education (D.El.Ed.) degree.

Pre-service Teacher Education: Pre-service teacher education is a regular two-year course (Bachelor of Education) offered by various universities in the country. During Pre-service programme pupil teachers gain the theoretical as well pedagogical knowledge of his subject of specialization.

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For the purpose of present research Pre-service teachers means teachers pursuing B.Ed. degree from college of education affiliated to Mumbai University where as In-service teachers means teachers who are working teachers having D.El.Ed. degree and pursuing B.Ed. degree from Yashwantrao Chavan Maharashtra Open University (YCMOU).

Burnout: Burnout has become a very common word in today's stressful life. Teaching communities are also victim of the same. The term was first coined by American psychologist Herbert Freudenberger in the year 1970. Burnout is a psychological construct. It is a state in which the person is physically mentally and emotionally exhausted due to prolonged stress and does not necessarily due to long working hours. Number of factors such as poor classroom management, huge paper work, incompetency in teaching, handling uninterested subject, facing disruptive students' etc. causes teacher burnout. It is obvious that the Burnout teacher is unable to create the interest in teaching so as to motivate the learner for learning. Burnout rate is very high amongst teachers.

Burnout of teachers has been studied in reference to various variables. A research by Suleyman Sadi Seferoglu, Hatice Yldlzand Ummuhan Avcl Yucel published in Education and science signifies that burnout symptoms were more found in teachers who worked as an Information and Communication (ICT) teachers.

The present paper study the correlation between the Attitude of teachers towards ICT (AICT) and burnout. The following is the broad aim of the study.

Aim of the study:

To study the attitude of Pre- service and In-service teachers towards ICT in relation to burnout.

Objectives of the study

1. To ascertain the difference in the attitude towards ICT of the Pre-service and In-service teachers.

2. To ascertain the difference in the burnout of the Pre-service and In-service teachers.

3. To ascertain the relationship between attitude towards ICT and burnout of Pre-service and In service teachers.

Hypothesis of the study

1. There is no significant difference in the attitude towards ICT of the Pre-service and In-service teachers.

2. There is no significant difference in the burnout of Pre-service and In-service teachers.

3. There is no significant relationship between attitude towards ICT and burnout of Pre-service and In-service teachers.

Scope and delimitations of the study

The scope describes what researchers want to study & delimitation describes what is beyond the control of the researcher. The present research examines the relationship between attitudes of Pre- service and In-service teachers of schools in Mumbai and suburban in relation to burnout. The study does not include junior and senior college teachers. The study does not include University teachers. Further the study is carried out on total 125 teachers.

Methodology of the Study:

The present investigation aims to study the “Attitude of teachers towards ICT in relation to burnout”. It is a correlational study between the attitude of teachers towards ICT and burnout.

Sample: The total sample included 60 In-service teachers (who are working teachers pursuing B.Ed. course from Yashwantrao Chavan Maharashtra Open University) from various schools in Mumbai and suburban areas and 65 Pre-service teachers from various colleges of education affiliated to University of Mumbai.

Tools used in the present study:

1. Attitude of teachers towards ICT (AICT)

The researcher used the self-prepared tool.The questionnaire comprises 30 items that measures the attitude of teachers towards ICT. The validity and

reliability is tested using standard statistical procedure. The validity and reliability of the tool is as follows.

Reliability coefficient of Attitude towards ICT (AICT)

Scale	Types of Reliability		
AICT	Cronbach's α	Split-Half Reliability	Spearman-Brown Prophesy Coefficient
(AICT)	0.76	0.75	0.81

From the above table it can be concluded that the attitude towards ICT (AICT) scale is reliable, internally consistent, homogeneous and stable over time.

2. Maslach Burnout Inventory

The researcher used the Maslach Burnout Inventory which is recognized as a leading measure of burnout. It has 22 items that measures the burnout as defined by World Health Organization (WHO). The tool is reliable, internally consistent homogeneous and stable over time.

Testing Hypothesis: 1

Null Hypothesis: There is no significant difference in the attitude towards ICT of the Pre-service and In-service teachers.

The following table shows relevant statistics of attitude towards ICT scores of the Pre-service teachers and in service teachers.

Relevant statistics of attitude towards ICT of Pre- service teachers and In-service teachers

Variable	Group	N	Mean	t	l.o.s	$100\,\omega^2$ estimate
AICT	Pre-service teachers	65	123.73	1.19	N.S	--
	In- service teachers	60	126.61			

Tabulated 't' for df = 123

= 1.96at 0.05 level of significance

= 2.57at 0.01 level of significance

reliability is tested using standard statistical procedure. The validity and reliability of the tool is as follows.

Interpretation of 't'

1. The obtained t-ratio for differences in attitude towards ICT of the Pre-service teachers and In service teachers is 1.19 which is not significant at 0.01 level of significance for 123 degrees of freedom. Hence the null hypothesis was accepted for attitude towards ICT.

Conclusion:

1. There is no significant difference in the attitude towards ICT of the Pre-service and In-service teachers.

Testing Hypothesis: 2

Null Hypothesis: There is no significant difference in the burnout of Pre-service and In-service teachers.

The following table shows relevant statistics of burnout scores of the Pre-service teachers and in service teachers.

Relevant statistics of burnout of Pre-service teachers and In-service teachers

Variable	Group	N	Mean	t	l.o.s	$100\,\omega^2$ estimate
Burnout	Pre service teachers	65	59.50	0.59	N.S	--
	In- service teachers	60	61.13			

Tabulated 't' for df = 123

= 1.96 at 0.05 level of significance

= 2.57 at 0.01 level of significance

Interpretation of 't'

1. The obtained t-ratio for differences in attitude towards ICT of the Pre-service teachers and In-service teachers is 1.19 which is not significant at 0.01 level of significance for 123 degrees of freedom. Hence the null hypothesis was accepted for attitude towards ICT.

Conclusion:

1. There is no significant difference in the burnout of Pre-service and In-service teachers

Testing Hypothesis: 3

There is no significant relationship between attitude towards ICT and burnout of Pre-service and In-service teachers.

The following table shows the significance of 'r' between attitude towards ICT (AICT) and burnout of of Pre-service and In-service teachers.

Significance of 'r' between attitude towards ICT and burnoutof Pre-service and In-service teachers

Group	N	df	r	l. O.S	100 r^2
Pre service teachers	65	63	0.02	N.S.	--
In service teachers	60	58	0.06	N.S	--
Total Sample	125	123	0.01	N.S	--

Tabulated 'r' for df = 63

= 0.235 at 0.05 level of significance

= 0.305 at 0.01 level of significance

Tabulated 'r' for df = 58

= 0.254 at 0.05 level of significance

= 0.330 at 0.01 level of significance

Tabulated 'r' for df = 123

= 0.139 at 0.05 level of significance

= 0.182 at 0.01 level of significance

Interpretation of “r”

1) The obtained value of 'r' = 0.02 for Pre-service teachers is less than the tabulated value of 'r' which is 0.235 at 0.05 level of significance. The obtained value of 'r' is therefore not significant at 0.05 level and hence the null hypothesis is accepted.

2) The obtained value of 'r' = 0.06 for In-service teachers is less than the tabulated value of 'r' which is 0.254 at 0.05 level of significance. The obtained value of 'r' is therefore not significant at 0.05 level and hence the null hypothesis is accepted.

3) The obtained value of 'r' = 0.01 for total sample of teachers is less than the tabulated value of 'r' which is 0.139 at 0.05 level of significance. The obtained value of 'r' is therefore not significant at 0.05 level and hence the null hypothesis is accepted.

Conclusion:

1. There is no significant relationship between attitude towards ICT and burnout in case of Pre-service teachers.

2. There is no significant relationship between attitude towards ICT and burnout in case of In service teachers.

3. There is no significant relationship between attitude towards ICT and burnout in case of total sample of teachers i.e. Pre-service teachers and In-service teachers.

Discussion:

The research finding suggests that the use of ICT or attitude of teacher towards ICT is not correlated to burnout of teacher. ICT may be very useful for making teaching learning process active and dynamic. Use of ICT in teaching may be useful in transferring the content knowledge faster from teacher's end to learner's end, it may be useful in sharing of the knowledge on a large scale, it may make just in time information available to learner and might have created revolutionary advances in teaching learning. The research finding shows no correlation of attitude of teachers towards ICT with the burnout of teachers. However, the teachers' burnout may be minimized by various means such as taking time for oneself, seeking professional help, getting connected with fellow teachers, doing new things, refraining from negativity etc.

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Motivation with respect to mLearning Material in Higher Education Teachers

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Abstract :

Mobile devices are being used in formal as well as informal settings of learning. Learning should be designed such that it motivates learners. Motivation stimulates and sustains learning behaviour and directs learners towards success in performance. The current research studies the reaction of participants of the mLearning programme with respect to their motivation towards the mLearning material. 33 teachers teaching undergraduate programmes participated in this study. The mLearning material was in the form of videos, PDFs, podcasts, quizzes and tasks. It was developed by following instructional design principles and theories. WhatsApp was used as a platform to deploy the programme. The mLearning material was small-sized so that it could be downloaded easily on individual data package as well as Wi-Fi. Each video was small and was based on a single concept. Text (PDF) files could be viewed on small screen of mobile devices without much scrolling. Podcasts were used to introduce new topics. The tasks guided the participants to do activities relevant to their real-life performance. The knowledge needed for doing the tasks was given by the mLearning material. Quizzes were designed to be used for formative evaluation. A Motivation Scale was developed by the researcher by adopting Keller's ARCS model of Motivational Design to measure the reaction of participants with respect to motivation towards the mLearning material. The research revealed that the participants demonstrated a very high level of motivation towards the mLearning material. The participants found the mLearning material to be clear, lucid, coherent, appealing and built complete understanding. Participants were highly confident that they would be able to transfer the skills to their professional life. It was observed that a few participants had difficulty in learning due to the language barrier, which affected their motivation. This research also reveals that instructional material with sound instructional design motivates participants to learn.

Keywords: mLearning, Mobile Learning, Motivation, Motivation Scale, Development of mLearning Material

Introduction

The mobile device, which is primarily a communication device, is being widely used for learning. Its small size, steady and inexpensive connectivity to the internet, ubiquitous instant access to information and resources, quite large memory and decent durability of battery life has made it a dependable tool for personal, official as well as academic work. Mobile devices are being used for learning in formal as well as informal learning environments. Ownership of a mobile device and its ability to interact with instructors and fellow learners is one of the major factors for it being used as a very effective and efficient tool for learning (Traxler, Koole 2014; Traxler 2018; Ally, 2009). The concept of mLearning has evolved over time. O'Malley et al (2005) explained mLearning to be any learning where the learner takes advantage of the learning opportunities offered by mobile technologies and continues to learn even when he or she is on the move. This explanation for mLearning underwent many changes. UNESCO (2013) made it comprehensive by stating that “mLearning involves the use of mobile technology, either alone or in combination with other information and communication technology (ICT), to enable learning anytime and anywhere. People can use mobile devices to access educational resources, connect with others, or create content, both inside and outside classrooms.” mLearning enables intellectual, cognitive and social support to the learner. The learner can virtually connect with the instructor, acquire guidance and feedback, and be engaged in the process of learning. The mobile device can perform a function of human and non-human assistance in contexts of both formal and informal learning situations (Kukulska-Hulme A., 2018).

The design of learning materials for mobile devices must follow good learning theories and proper instructional design for the learning to be effective

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(Ally, 2009; Koole, 2009). The mLearning material needs to be designed such that it is highly motivating for the learners. Motivation stimulates and sustains learning behaviour. Stimulating and sustaining learner motivation and driving their learning is challenging for every educator (Keller J., 2009). It is essential to explore the factors in mLearning that cause high motivation in learners. This paper reports findings of a study conducted by the researcher regarding motivation towards mLearning material that was developed by her.

Motivation in the mLearning Environment

Learning material is a very important part of any course. Instructionally sound learning material gets and sustains learner attention and its relevance to the learner's real life establishes its importance. Learning that content develops confidence and all these aspects create a great sense of satisfaction in the learner. Learning material as well as pedagogical strategies used to deliver the material, motivates the learner. Here are reviews of some researches that throw light on motivation with respect to mLearning material.

Huang et al (2016) experimented with a group of students who learned using the combination of a mobile based app, developed based on a vocabulary improvement strategy tool and tasks demonstrated higher motivation as compared to the learners who did not learn using the app and tasks. They also found a positive relationship between motivation and achievement. Camilleri and Camilleri (2020) found that primary students who played mobile games developed by school enjoyed playing those games. The qualitative analysis revealed that math and story-telling apps improved the students' cognitive skills. Jeno et al (2018) developed a mobile application – ArtsApp – based on the textbook of the sample. It was found that the students who used the mobile application reported significantly higher levels of perceived competence, autonomy and intrinsic motivation and were able to answer the questions more efficiently using the app as compared to the ones using only the textbook.

Hwang and Chang (2011) found that a pedagogical approach with mLearning activities connected to the subject matter motivated students to learn since it was engaging, meaningful, organized, and enjoyable. Another similar study by Nikou, Economides (2018) found that mobile-based micro Learning and Assessment where micro or very small homework activities given to students to be done using their mobile devices caused higher motivation and satisfaction. Li et al (2019) found that learners were more satisfied with the usability of their mobile device and its capability of supporting their activities.

Pedagogical approaches or strategies, alignment of the course with real life and its benefits in professional life are some of the factors that play a central role in learning. It is important that the learning material is designed and developed using appropriate instructional design theories. It is important that the learning material is able to get and sustain the learner's attention; it is relevant to the learner's goals, develops understanding about the content and about what is expected of him/her and leads to improved confidence.

A. Development of mLearning Material

Teachers design learning objectives and set test papers based on those objectives. This mLearning programme was developed for teachers of undergraduate colleges on “Learning Objectives and Types of Questions” which was relevant for the real life performance. The content included information on designing learning objectives as per Revised Bloom's Taxonomy and creating various types of questions based on those learning objectives. Detailed Content Analysis was done. The content was divided into small chunks appropriate to be consumed in mLearning environment. The content had sufficient number of examples familiar to participants.

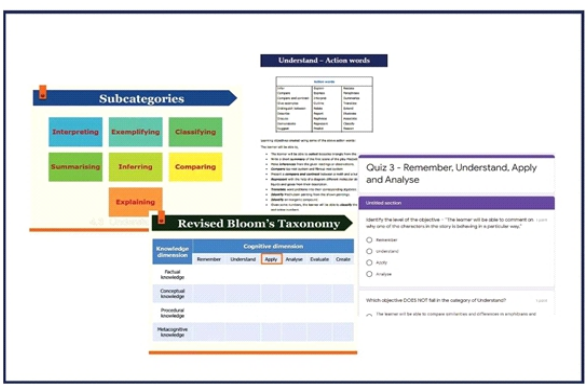

Fig 3.1: mLearning material in the form of videos, PDF files and quizzes

Fig 3.1 shows some sample visuals of mLearning material. The researcher designed and developed mLearning material in the form of videos, PDF files, podcasts, quizzes and tasks. ADDIE approach of instructional design was followed for the development of mLearning material. All the media was designed specifically for the small screen of the mobile device. Videos were used to explain important concepts of the content that demanded explanation. They were MP4 files of approximately 5-10 minutes duration and were based on a single concept. PDF files were developed supporting the videos that gave the gist along with many additional examples of the concepts. E.g. In the video on the level of Revised Bloom's Taxonomy, 'Understand' would explain the cognitive activities and give examples of learning objectives and question items at that level. The PDF file for the Understand level would include a list of action verbs on the same level with multiple additional examples which were not covered in the video. The PDFs were not more than 2 pages long as people do not like to scroll. Podcasts were MP3 files and were used to introduce topics. Quizzes were used for formative evaluation, which were developed on Google Forms. Tasks were small activities learners could do on their mobile devices. The knowledge needed for doing the tasks was given by the mLearning material.

Research Method

A. Purpose of the study

The present study was aimed at measuring the reaction of participants of the mLearning programme with respect to their motivation towards mLearning material. A Motivation Scale was developed by the researcher based on Keller's ARCS model of Motivational Design for this purpose. For this study, Motivation is considered to be participant's willingness, need and desire to learn using the mLearning material with respect to the factors Attention, Relevance, Confidence and Satisfaction as suggested by John Keller's ARCS Model of Motivational Design.

B. Sample

The sample comprised 33 teachers teaching undergraduate programmes from Humanities, Social Sciences and Commerce faculties. They all possessed either a smartphone or a tab on which WhatsApp was installed and had access to internet connectivity via mobile data or Wi-Fi. They were from the cities of Mumbai, Pune, Dhule and Jalgaon from the state of Maharashtra.

C. Development of Motivation Scale

Motivation Scale was created to measure how motivated the students were with respect to the mLearning course. It would measure the reaction of the participants towards the mLearning material. Instructional Materials Motivation Scale (IMMS) from Attention Relevance Confidence Satisfaction Model (Keller, 1983) was referred to for designing the Motivation scale. The criteria of motivation, namely Attention, Relevance, Confidence and Satisfaction were considered for creating the scale. Statements from the original scale were made specific as per the context of the mLearning environment and mLearning material. The Motivation Scale thus created consisted of 24 statements, 6 for each of the categories of the ARCS model, of which 3 were positive and 3 were negative statements. The 5-point Likert Scale with options – Very True, Mostly True, Moderately True, Slightly True and Not True - was used.

D. Reliability of the Motivation Scale

The validity and reliability of the Motivation Scale was established by the researcher. The tool was validated by experts in the field of motivation and eLearning. Item analysis was performed for internal consistency by computing the discrimination index for each statement. The discrimination index of all the items was greater than 0.7. All the items were retained without any modification. Internal consistency was established using Cronbach Alpha as well as Split-Half method. Cronbach Alpha was found to be 0.83 and split half value was found to be 0.88. Both the values were found to be significant, indicating high reliability of the Motivation Scale. The Motivation Scale was administered to the participants of the mLearning course. The tool was scored. Positive statements were given scores of 1-5 and the negative statements were scored in a reverse manner.

E. Research Design

It was an experimental research with single-group Pretest - Post test design. WhatsApp was used as a platform to deploy the programme. All the learning material along with tasks was shared on WhatsApp group. Links of quizzes also were shared on WhatsApp. The programme was delivered for two weeks. The Motivation Scale was developed in Google form of which the link was given in WhatsApp. The participants could do all the activities on their mobile device through WhatsApp.

Results and Discussion

To study the level of motivation of the participants, the central tendency - Mean - was calculated. Short meaningful descriptors were assigned to mean scores that fell in a certain range. The mean score of 1-1.9 was given a descriptor of Low Motivation, 2 - 2.9 was given a descriptor of Moderate Motivation, 3 - 3.9 was given a descriptor of High Motivation and mean score of 4 - 5 was given a descriptor of Very high Motivation.

A. Level of Motivation

Mean scores of Attention, Relevance, Confidence and Satisfaction are given in table 4.1.

Table 4.1: Level of motivation on the scale of 1-5

Categories Of Motivation	Mean	Descriptor
Attention	4.58	Very high Motivation
Relevance	4.56	Very high Motivation
Confidence	4.43	Very high Motivation
Satisfaction	4.54	Very high Motivation

It can be seen in Table 4.1 that Motivation of participants towards the mLearning material was very high. Please note that negative statements were scored in reverse manner. Hence high scores of negative statements indicate a positive response towards research and mLearning material.

B. Attention

The statements pertaining to Attention and their Mean scores can be seen in Table 4.2.

Table 4.2: Mean of Attention

Statements	Mean
1. The information in the mLearning sessions was arranged in the manner that helped keep my attention.	4.6
2. The quality of interactions in th e mLearning environment helped to hold my attention.	4.7
3. The variety of resource materials in the form of videos, podcasts and text files and tasks helped me to be engaged with the mLearning sessions.	4.7
4. The mLearning material was so abstract that it wa s hard to keep my attention on it.	4.2
5. The mLearning material looked dry and unappealing.	4.7
6. The mLearning material was so text heavy that it was irritating.	4.6
Mean	**4.6**

It can be concluded from the scores given by the participants that they found the mLearning material to be clear, lucid, coherent, interesting, appealing and built complete understanding. The participants opined that they found the sequence of information in the mLearning content and resources in the form of videos, PDFs and podcasts to be engaging, less time consuming to learn and non-text-heavy. The tasks ensured active participation. The participants who have rated their attention low were mainly observed to be less comfortable with English. Probably due to the same reason, some of the participants felt the content to be abstract.

C. Relevance

The statements pertaining to Relevance and their Mean scores can be seen in Table 4.3.

Table 4.3: Mean of Relevance

Statements	Mean
1. Tasks were aligned with what I do or need to do in profession al life. Hence completing the Tasks successfully was significant for me.	4.6
2. The matter and style of writing in the mLearning material convey the impression that it is worth knowing/learning.	4.6
3. There were explanations or examples of how the people use the knowledge of this material.	4.4
4. It was difficult for me to relate to the mLearning material as I have never seen its use in my professional life.	4.5
5. The content of these sessions will not be useful to me.	4.9
6. These mLearning sessions were not relev ant to my needs because I already knew most of it.	4.5
Mean	**4.6**

Participants rated their Relevance of mLearning material to be Very High. They believed that the mLearning course was related to their goals, their past interests, future job and academic requirements. Participants believed that the tasks were highly aligned with their professional life; the content was valuable to them, which they found worth learning and useful for their professional growth. Statements 10 and 12 indicate that the participants have seen the content of mLearning being used in their professional life and hence they believe in its importance.

D. Confidence

The statements pertaining to Confidence and their Mean scores can be seen in Table 4.4.

Table 4.4: Mean of Confidence

Statements	Mean
1. After reading the introductory information, I felt confident that I would be able to fulfil expectations as a participant.	4.2
2. As I went through the topics, I was confident that I could learn from the mLearning material.	4.5
3. The good organizat ion of the mLearning sessions helped me to master the skills.	4.4
4. I am not confident that I will be able to perform these Tasks in my professional life.	4.6
5. Many videos had so much information that it was hard to pick out and remember the important points.	4.4
6. This mLearning material was more difficult to understand than my comfort level.	4.6
Mean	**4.4**

The Motivation Score of Confidence is 4.4, which is Very High. Participants are very highly confident that they will be able to transfer the skills learned in the course to their professional life. The scores of statements 13 and 14 are very interesting. The participants were a little apprehensive in the beginning about the new mode of learning, their expectations and responsibilities. As the programme progressed, they could understand the content, do the tasks and solve the quizzes. Statement 16 shows that they developed the confidence of applying the learned knowledge in their professional life. They also found the organization of the course and size of mLearning material to be appropriate.

D. Satisfaction

The statements pertaining to Satisfaction and their mean scores can be seen in Table 4.5.

Table 4.5: Mean of Satisfaction

Statements	Mean
1. It felt good to successfully complete the sessions.	4.8
2. The w ording of feedback after the tasks or other comments in these sessions helped me feel rewarded for my effort.	4.8
3. Understanding the material and completing the sessions gave me a satisfying feeling of achievement.	4.8
4. Completing the tasks wasn't a fulfilling experience.	4.5
5. I would have preferred learning in a classroom setting.	3.9
6. I didn't enjoy learning in mLearning environment. Hence, I wouldn't like to learn in mLearning environment again.	4.5
Mean	**4.5**

The satisfaction of the participants was very high. Successfully completing the course made them feel rewarded for their efforts. The means of statements 23 and 24 are thought provoking; mLearning offers anytime-anywhere access to material, classroom-like environment, freedom of communication at any hour and flexibility of time and place. It is interesting to know that adult professionals are moving away from classroom-learning and heading towards flexible learning. Participants were highly satisfied with immediate, constructive and personalised feedback. Personal reminders, little extension of time for tasks, solving of doubts and appreciation of efforts seem to have led to a very high level of satisfaction.

Conclusion

The present study was aimed at measuring the reaction of participants of the mLearning programme with respect to their motivation towards mLearning material. The sample comprised 33 teachers of undergraduate programmes. The mLearning material was in the form of videos, PDFs, podcasts, quizzes and tasks. Instructional design principles and theories were followed for developing mLearning material. WhatsApp was used as a platform to share mLearning material along with tasks. The level of Motivation of participants with respect to mLearning material was Very High. Clear, lucid, coherent, appealing mLearning resources built complete understanding. The course being related to their goals, their past interests, future job and academic requirements made them value its learning. Tasks which were highly aligned with their professional life made them practice what they had learned thereby developing confidence of transferring skills to their work life. Constructive, personalised and immediate feedback was a very

important factor in motivation.

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Language and Game-Play in Teaching Theory - A Synthesis of Tools from the Communicative Approach of the CEFR in conjunction with Bloom's Taxonomy to ensure Better Acquisition of Theoretical Concepts in the Humanities.

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Abstract :

Foreign language and second language teaching requires educators to transmit epistemologies of culture, politics, society, and economy through the transmission of the two commonly seen structures of vocabulary and grammar. It then encourages a deconstruction, application, and creation through independent and co-opted manipulation of these tools to legitimize new ideas in their own words. As Wittgenstein's ideas of language games play out, educators perform the language of their discipline in a more and more refined manner and teach students to do the same – essentially playing with words, terms, concepts, tools in circles of simplifications and complexifications. This paper postulates that using techniques of the Communicative Approach, as taught through the Common European Framework of Reference (CEFR) for Languages, one could effectively improve upon the standard set by Bloom's Taxonomy for education in under-graduate studies in the humanities, particularly for the meta-language of teaching of theory and theoretical concepts. It also provides an illustration of the sustainability of conceptual understanding when delivered through the communicative approach through the idea of language games and also through game-play - that is of using a manufactured setting to introduce, fix, experiment with, critically assess and create new ways of thinking and expressing as the result of games.

Keywords: Inter-Disciplinary Pedagogy, Millennial Goals, Gen-Z Goals in Education, Accessible Meta-language.

Introduction

At my first Young Teacher's Seminar at St. Xavier's College- Autonomous, Mumbai, in 2017, and for any teaching workshop I have ever attended since in this college, Bloom's Taxonomy is a system of teaching that is always presented as a go-to tool to frame syllabi, conduct classes, or generate effective questions for examinations. Through the three years of learning at an undergraduate course in the humanities, syllabi in college are framed through the progression of: Remember, Understand, Apply, Analyze, Evaluate, and Create – which differs marginally from the initial taxonomy suggested by him – Know, Comprehend, Apply, Analyse, Synthesize, and Evaluate. This idea of 'creation' is what becomes a key overlap between Bloom's Taxonomy and the Communicative Approach, and it is the build-up to this which will be analyzed further at a later stage. The research centres primarily on participant observation from an etic and emic perspective where an educator within the pedagogical set-up is evaluating the "Other" – consisting of the students in a second and third year theory class in the BA course – particularly the courses on Classical Sociological Theories and Anthropology: Theories, Perspectives and Frameworks.

These six steps of the Taxonomy are meant to equip a student to then reproduce this cycle of non-plagiarized knowledge effectively in any area of their interest. As conceptual tools of progression, these steps are useful. But for a teacher to learn how to effectively execute these tools in a classroom set-up, furthermore, a structural-functional classroom set-up, one needs to have a more detailed break-down of how each unit of teaching – whether this be a journal article, a concept, a book or a complete unit within the syllabus – can be executed in class and in peripheral spaces (peripheral to the humanities) like laboratories. This is where the Communicative Approach as provided by foreign language teaching or second language teaching as given by the CEFR (Common European Framework of Reference) as given by the Council for Europe's Language Policy can be effective

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as a training tool for educators. The paper proposes that this approach be incorporated into the teaching of the taxonomy to actually set up a manner in which the taxonomy can be effectively executed in classrooms more efficiently at the micro (per lecture), meso (per unit, per semester) and macro (at the level of the under-graduate course) level.

The Communicative Approach:

The Communicative Approach emerges in a set-up where “culture institutes”, like Goethe Institute, Instituto Hispania and Alliance Française, of West-European nations are attempting to market their languages better to a Third-World in face of the threat they are posed due to English being the language of globalization. As a general trend, it is seen through the last 30 years that the demand for language learning has gone up but there is a paucity of trained professional teachers. Not too many youngsters in France, Germany, and Spain feel the need to acquire a Master's degree in their own languages. A parallel to draw, and an unfortunate one perhaps, would be that not too many Maharashtrian children would be willing to acquire an MA in Marathi Literature to be able to teach Marathi because there is no “glory” or “status” seen in that job market, not unless you enter core-academia or make it in performance arts, is there seen to be economic viability to a career in the so-called “vernacular”. Language learning for a career is often treated as a corollary skill to having a “real” career. This perception is often noted from throw-away comments during table-talk or social chatter amongst college-going students and their parents alike.

In a situation like this, while the demand for foreign language labour, in a fast-globalising economy's labour market, goes up, the time-frame for acquiring fluency remains gate-kept by a demand for expertsand hence it takes longer to get diplomas and degrees certifying that one can teach in this market. The rigor expected of the student – who wants to perhaps learn it as a casual hobby without the literary and academic rigor, is equally long and perhaps even discouraging in the face of academic elitism. For the European Union, the way to address this issue was to revamp the approach to teaching suited to the time-crunch a millennial or Gen-Z learner faces and the instantaneous result-manifestation that education today demands – a Communicative/Actional Method that made students autonomous in their learning (at a micro-level), by breaking down language into a set of executable tasks so that they could acquire language autonomously, albeit imperfectly, within a span of six months to a year – an endeavor that took two years at the very least, in the 1990's.

The Communicative Approach and Bloom's taxonomy: A Synthesis

The Communicative Approach has ten steps to executing the act of creation through a micro-task:

1. Sensitization,
2. Warming-up,
3. Introduction of an authentic document,
4. Global comprehension
5. Detailed comprehension,
6. Conceptualizing,
7. Systematizing,
8. Confirmation,
9. Evaluation
10. Production.

The objective, of each micro-task that is introduced, is not particularly to check how perfectly the student speaks, reads, writes, or listens, but if they are able to effectively complete the task, in spite of the imperfections in their articulation. There is no singular perfect end-result. This condition is in fact what makes the approach so well-suited to Bloom's Taxonomy – teaching “how to set up what you want to create”- something with which educators may sometimes struggle. The idea then is to blend the uni-linearity of Bloom's Taxonomy and focus on a single-skill approach with the Communicative Approach- a setting up of micro and meso-level tasks that actualise and implement how knowledge is actually acquired using all the senses at each level of learning – without doing what the taxonomy does – use only a few cognitive capacities at each moment or stage of learning.

A common example given to understand this idea of imperfection in articulation but achievement of objective is as follows: An infant who does not yet have the power of speech expresses that it is hungry by pointing at food or making a phonetically incorrect sound and miming a gesture that is comprehensible to its caretaker. If the caretaker gives the child food, upon understanding the gesture, the infant has communicated effectively. It is later, as grown, able-bodied adults, we are perhaps made to understand that pointing at food plates is impolite and that is not "appropriate" body language because we have learnt more "refined" ways of communicating our objective. In formal company, we would perhaps use the conditional tense with articulators of politeness, "Could you please pass me the salt?"

We have, implicitly, always used these methods in Secondary School Certificate (SSC) based education to under-graduate studies in the humanities and physical sciences. In school we would learn "the atom is indivisible" (5th standard- Science) but then later learn that "certain" atoms can "lose" their structure and become changed elements over time through a transformation (9th standard-Physics.) And now, as a student of Arts or Humanities learning about the collaborative projects at the Large Hadron Collider, I see that we purposely split atoms into sub-atomic particles to learn more about the universe through undetected yet presumably present God-Particles. So, how then does an educator manipulate to their advantage, this term, "indivisible"? The communicative approach would state here that what we have in fact done as educators is make knowledge into a spiral with segments – each growing larger and comprehensive of more rules, but around the same word- "indivisible".

We do the same thing with grammar rules – there is a rule, then there are exceptions, and then there are layered manipulations with the acquisition of more refined and nuanced concepts that are taught. Initially, exceptions seem contradictory to the rule, but we learn eventually, that they are often appropriate manipulations of the initial rules. Sometimes, when we test only certain areas of the Taxonomy – like information and comprehension in exactitudes, it stops us from moving on to the next step, application. This is because, if we have exact information, then presumptuous logic would encourage us to apply the rules of the initial word or structure- perfectly or exactly. But application itself is usually nuanced and gives us responses that are not consistent. I might memorize a theoretical statement in a discipline in a certain manner, but application and observation of experimental results are often far more layered, nebulous and diffused. And unfortunately, the Taxonomy and its isolated use does not equip students adequately to manipulate and use this new information and establish new rules to make this data functional in the creative process – at least not if it is applied through isolated singular steps. We cannot possible think it possible to provide holistic education if we give students information in the first year of under-graduate studies, application skills in the second year, and expect them to generate authentic material in the third year of their under-graduate programmes.

Doug Lemov in fact has been a constant critic of the taxonomy on precisely this point – it does not adequately allow nor represent how learning has to and does happen. As we and our students learn, we are simultaneously using memory, generating schemes and also creating. If we stop doing this simultaneously – with "simultaneously" being the key word, we, in a Marxist sense, would be alienating ourselves and our students from the process and the product of education. Effectively, using Bloom's Taxonomy alone is comparable to using a Fordist model for production – inherently isolating. This is particularly evident when First Year students are expected to memorize and describe and are thus woefully unprepared to tackle a dissertation or a research paper in their Third Year of an under-graduate course. In my opinion then, the Taxonomy does more harm than good, particularly if it is used to fit the first two layers of the pyramid in first year, the next two in second year and the last two layers in third year. Students need to be taught to assimilate data, create, break down, re-assimilate with more information from the early stages of under-graduate study – knowledge with all its contradictions and lacunae which allow for generation of new schemes of thought and thus, creation – without its unilinear polarisation – a polarisation which humanities would ideally like to avoid as a moral principle in inclusive education.

The fitting in of this contradictory information, or spiral-knowledge building, is possible under the importance given by the communicative approach to creative imperfection rather than perfectionist application and regurgitation of each stage of an outdated taxonomy. One way to look at this would be to look at a child, or adult, using a "Paint-by-numbers" kit. A person using a paint-by-numbers image would know how to apply exactly the right colours to the right shape, but would not be able to create a new way of perceiving that image, or a new image by itself. Of course, with the Taxonomy, you'd initially get the child to memorize which colour is which, then associate and apply the colours correctly, but they have not learnt to create a shape and colour it in contextually at the same time. So, in a sense, the Communicative Approach when blended with the idea of application in the Taxonomy, opens it up further and allows an easier path to creation and therefore, more engaged educational practice.

Theory, Language Games and Communication:

The teaching of theory or rather, theoretical concepts as building blocks to ideation and epistemological creation, in any discipline is essentially a method of acquiring a new language and then using this new language in new ways. This new language helps us to fit into the parameters of our discipline of choice. As a student starts to acquire more conceptual vocabulary, they start to assign new meanings and start using these concepts more and more appropriately while also challenging the hierarchy of existing, and perhaps outdated knowledge. This is the point at which they often start asking questions that make educators wonder how they are going to finish the syllabus in the time allotted to them – "But we are now seeing a situation where this concept does **not** work. So how is the concept itself appropriate?"

The Thomas Theorem states this: "If men define situations as real, they are real in their consequences." (W. I. Thomas and D. S. Thomas, 1928). The Communicative Approach here tells us how to push past an absolute application into a critical space, and allows us to criticize but also to push past the criticism, which still remains valid, but apply the rule effectively – with a valid criticism and still generate results. So, in the Communicative Approach, as the end goal, educators set up a task – simulating a real life situation, which by co-opted or individual appropriate or inappropriate manipulation of concepts and tools, if we are to achieve the creation or establishment of something, we have generated a holistic successful cultural scheme. We are getting students to simultaneously execute the following: understanding, application, critical analysis, and therefore create and achieve a viable result all at the same time.

What this does for students is give an immediate feedback on what they have learnt – they can see a tangible result emerge which brings about a measure of satisfaction in learning and this immediate success – as imperfect as it may be or at as much of a micro-level it may be, is what encourages students to learn more and learn more comprehensively from multiple sources of knowledge. It is also instant feedback to the educator about their task-setting and their methodology being geared correctly or not. If there is a higher level of imperfection in the creation, the more corrective mechanisms one must deploy to orient the students better to the goal - something that now does not require us to wait till the end of the semester to gauge.

A Class Experiment with Game-Play:

Here is an example of class experimentation that makes theoretical texts accessible to students. One from the CEFR model and its application to two theories – Erving Goffman's work on Dramaturgy and the concepts of Front-Stage and Back-Stage and Victor Turner's idea of Liminal Spaces and Social Drama from the syllabus for Anthropology: Theories, Perspectives and Frameworks- II, a compulsory course in Third Year Bachelor of Arts.

One type of a communicative task is using appropriate linguistic tools to rent a house at a mid-level proficiency in language learning. The other task for the anthropology course is to understand the concept of liminal space.

In my classes, I declare openly, "Our objective today is to learn about this and achieve this by the end of 2 or three lectures." This approach of a definitive time-line brings time-based achievement into focus and

increases efficiency and attention focalisation. In the Communicative Approach, the task of renting a house would be broken down into the following steps: revising vocabulary and grammar structures acquired earlier – this in a sense warns the students of the theme (sensitization), putting up images of different types of housing structures - which tells them there are multiple ways to engage with the idea of renting or buying (warming-up), a website page like 99acres.com that would display rental rates, kinds of housing and variations in this (introduction of an authentic document), generating and giving vocabulary around the objective but based on the document – some key new words can be introduced here (global comprehension), exploring the layers and meanings of all new words that appear in this new authentic document (detailed comprehension), building a consolidated word list or sentence list of new contextually useful sentences (conceptualizing), revising the meanings and operational situations of using this new vocabulary related to renting a house(systematizing), doing a micro-exercise to check if their acquisition of vocabulary is contextually appropriate by applying it to samples of houses. For example, they could write a small two sentence market-pitch/advertisement in Classifieds sections of a newspaper for the house they want to rent out (confirmation), at this stage, one takes away the authentic document and checks recall and ability to make complete sentences without peripheral documents in the picture. It is thus one step closer to autonomous thought (evaluation), and finally, one perhaps asks the students to engage in a simulated dialogue whereby they have to enact – with one person as proprietor and another as a person searching for housing and perform a scripted or non-scripted dialogue within the contextual parameters of the task (production – coincides with creation in the Taxonomy).

In Communicative Language-Learning, this activity results in something that Bloom's Taxonomy would in effect have possibly needed over a year to achieve-confidence building, real life engagement with abstract concepts like grammar and syntax, appropriate use of vocabulary and thus a cultural connection and almost instant micro-results. In an incentivised and result oriented 'autonomous college', this approach functions to make students feel a relatively impactful validation of understanding and of relating with a lot more immediacy than the Taxonomy.

There were multiple instances when for me, subverting the rigour and fragmentary method of the Taxonomy and engaging with micro-task setting was more effective and impactful for student-centric learning. Two of those illustrations are from a course I have been teaching for three years, since January 2017.

Applying the Communicative Approach to Teaching Theory:

The first case-study of applying this approach was to Erving Goffman's theory of Dramaturgy – particularly the ideas of front-stage self and back-stage self. To understand and see the application of and then learn to manipulate these concepts in real life was thus the first objective of the micro-task in class. How does this break down in terms of execution? Goffman's contribution in brief to the discipline of sociology and cultural anthropology was delivered in a lecture-style manner (sensitization), asking students about how they change cultural codes and linguistic codes – without evoking the terms I was to teach them – while speaking to different people- and people who are different from them (warming-up), the seminal work of Goffman on Dramaturgy as a textual document was introduced (introduction of an authentic document), basic ideas he worked on and what was the preliminary understanding of his conceptual introductions was evoked through general discussions (global comprehension), argumentation and synthesis of the layers and nuances of the front-stage self and the back-stage self were evoked (detailed comprehension), students were then asked where they would see their own selves applying these and actionalising these ideas of Goffman (conceptualizing), the students were asked to put together a simulated situation where others would be forced to be something different from what they wanted to be (systematizing), through a question-answer session followed by a debate on the concepts, the teachers, in this case me, would try to gauge the depth of their understanding of the concepts (confirmation), evaluation, and production. The last

two stages of evaluation were turned into self-evaluation and production where with explicit instructions; students were to engage in a speed-dating game where they had five minutes to get to know two people in class that they had not interacted with as much before. They could thus see themselves becoming the performers and connect to the theories being taught immediately.

Often times, as an educator, when the term theory is stated, the reaction from a large part of the class is a groan – it's too inaccessible. But if one teaches them how to crack the language of theory, they can manipulate the concepts a lot faster and more easily – much like the communicative approach would facilitate. The general reaction to such game-play and to theory is favourable and in terms of end-semester evaluations and also their second internal assessment term papers, one sees a definite rise in quality – particularly where theorists' work has been taught through game-play and where theorists work has been communicated without game-play.

The second example of this is Victor Turner's idea of liminal spaces and social drama. Again, these are heuristic devices – concepts but also, more importantly, lived realities that have been examined as patterned normalities. And what the Communicative Approach is doing is making these meta-linguistically expressed ideas more accessible through a micro-task that can be easily simulated in a structured classroom. But the magnification of this micro-task to a level of life-engagement is equally easily possible. And one sensitizes the student to the last part through discussion and evaluation – both simultaneously.

A liminal space is a space between heavily structured realities and social drama follows 5 stages when there is conflict. To simulate this, an activity was designed where students were made to “inhabit” spaces in college they normally would not. The position of relative authority of the educator allows them to inhabit these spaces with prior permission. In such a situation, they feel are in a space that is temporarily permissible given that they are supposed to behave in specific ways. This brings us to concepts of “communitas”, “liminal space” and “social conflict and social drama”. While Turner elaborates on this work through his study of the idea of Pilgrimages, in the college campus, this can be simulated at a micro-level by giving the students forty minutes of time to access a space that is considered sacred to them. This micro-task setting allows them to simulate the same conditions under which the participants of Turner's study lived and experienced reality. And thus, without breaking the communicative approach into steps again, but taking its idea of micro-task setting, it allows students to recreate a real-life environment where these concepts of theory are “felt” and lived, and acted upon. Something that took Turner years to study and write about can be effectively created and generated across a couple of hours of planned classroom game-play. This is where the Communicative Approach succeeds and where the Taxonomy would have limited impact.

Concluding Remarks:

One of the reasons for the Taxonomy being ineffective in teaching theory is that educators often presume that theory is theory- an abstract meta-language that goes beyond the lived. It is not lived – but thought of, intellectualised. But in reality, theory is constantly processed by the structures of the human mind as Bourdieu would postulate, theory and praxis are intertwined – one is not epistemology and the other ontology. They blend; they mix, and exist together. The taxonomy divorces the two forcefully to teach it in latent stages and presumes the inability of the student to create while he/she memorizes. The communicative approach makes theory “understood”, “lived”, and “manipulated” through task setting that one does for oneself in real life. What it gives students, are the tools to immediately start using the knowledge they acquire and have acquired before, instead of waiting for a few years or months to start applying themselves and start creating knowledge and reality in their discipline of choice. It makes for more engaged students in the classroom and it also makes for a more creative educator.

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A Study of Teacher Effectiveness in relation to Attitude towards Internship Orientation

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Abstract :

Teacher effectiveness is a generic term. It includes teacher's characteristics, qualities, competencies and behaviour of teacher related to teaching. It comprises several aspects ranging from teachers' own competencies to attaining desirable outcome amongst students. In the words of Dunkin (1977) it is a matter of the degree to which desired effects on students is achieved. Becoming effective teacher is an ongoing life long process. This process is deeply rooted in the internship programme. In the context of teacher education programme the pupil teacher at all the levels are expected to undergo exhaustive internship programme. Internship programme provides the opportunities to the pupil teacher to gain work experience and hands on experiences. These experiences are very useful to become effective teacher. The present paper studies the relationship between the teacher effectiveness and attitude of pupil teachers towards internship orientation. The sample used for the present study comprises 150 pupil teachers from various colleges in Mumbai and suburban areas. This is a descriptive research of quantitative type involving correlational study. The researchers used self-prepared tool for measuring the attitude towards internship orientation and Kulsum Teacher Effectiveness Scale (KTES) for measuring the teacher effectiveness. The finding of the studies reveals that there is a significant positive and low correlation of teacher effectiveness with attitude towards internship orientation in case of pupil teachers.

Keywords: Teacher Effectiveness, Internship, Attitude towards Internship Orientation, Pupil Teacher.

Introduction

Teacher Effectiveness:

Teacher effectiveness is very important in the field of education as only an effective teacher can make the students' learning effective. The quality of teacher is very crucial from learner's performance point of view. Teacher effectiveness is a general term. It has been defined differently by many scholars. In the words of Anderson (1991) the effective teacher attains the goals consistently by focusing directly or indirectly on learning of students. In the words of Dunkin (1997) teacher effectiveness is a matter of the degree to which a teacher achieves the desired effects upon the students. Teacher effectiveness includes the following

- Teachers characteristics
- Teachers knowledge and skills
- Teachers performance
- Teachers behaviour

Becoming an effective teacher is never by chance but it is possible through deliberate efforts and continuous evaluation of teaching practices.

Internship

Internship is the placement of aspiring teachers in a work environment to enable them to acquire professional experience. It gives the pupil teacher an opportunity to integrate career related experience in a planned and supervised work. Internship plays a very crucial role for becoming professional and effective teacher. It gives an insight about the knowledge and role to be performed by teachers in various settings. It provides a platform to apply the classroom knowledge into real setting. Interaction with the experts during the internship enriches the pupil teacher academically and professionally. Thus, the process of becoming an effective teacher is deeply rooted in internship programme.

The present paper investigates about the correlation between the teacher effectiveness and attitude of

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pupil teacher towards internship orientation.

Aim of the study:

To study the Teacher Effectiveness in relation to attitude towards Internship Orientation.

Objectives of the study:

1. To ascertain the difference in the following variables on the basis of level of education of pupil teacher.
    i. Teacher effectiveness
    ii. Attitude towards Internship orientation.
2. To ascertain the relationship between teacher's effectiveness & attitude towards internship orientation of pupil teachers on the basis of their level of education
    i. Primary pupil teachers
    ii. Secondary pupil teachers

Hypothesis of the Study

In order to attain the preceding objectives, the following null hypotheses have been framed.

1. There is no significant difference in the following variables on the basis of level of education of pupil teachers:
    i. Teacher effectiveness
    ii. Attitude towards Internship orientation
2. There is a no significant relationship of teacher effectiveness with attitude towards internship orientation of the following pupil teachers on the basis of their level of education
    i. Primary pupil teachers
    ii. Secondary pupil teachers

Scope & Delimitations of the Study

The scope describes what researcher want to study & delimitation describe what researcher does not want to study. The present research studies the relationship between the teacher effectiveness & attitude towards internship orientation with special reference to their level of education i.e. primary pupil teachers & secondary pupil teachers from various junior colleges of education (D.El.Ed.) and senior colleges of education (B.Ed.) in Mumbai and suburban areas. The study does not include B.Ed. & D.El.Ed. colleges & undergraduate college other than situated in Mumbai. Further the study will be carried out only on 150 pupil teachers studying in D.El.Ed. & B.Ed. course in various colleges of education in Mumbai and suburban.

Methodology of the Study

The present investigation aims to study “the teacher effectiveness in relation to attitude towards the Internship Orientation.” It is a descriptive research of the quantitative type.

Sample:

The total sample included 150 Primary & Secondary pupil teachers from various junior and senior college of education situated in Mumbai and suburban.

Tools used in the present study:

a) Attitude towards Internship Orientation Scale: The researcher used the self-prepared tool. The questionnaire comprises 10 items that measures the attitude towards internship orientation. The researchers ensure the validity and reliability of the tool. The validity and reliability of the tool is as follows. From the above table it can be concluded that the scale is reliable, internally consistent, homogeneous and stable over time.

b) Kulsum Teacher Effectiveness Scale (KTES): The researchers used the standardized tool constructed by Dr. (Mrs.) Umme Kulsum for measuring the teacher effectiveness. The reliability of the tool as given by the author is as follows.

The scale is reliable, internally consistent, homogeneous and stable over time.

Testing Hypothesis:1

i. There is no significant difference in the following variables on the basis of level of education pupil teachers

ii. Teacher effectiveness

iii. Attitude towards Internship orientation

The following table shows relevant statistics of teacher effectiveness &attitude towards internship orientation scores on the basis of level of education of the pupil teachers.

Interpretation of 't' :

1. The obtained t-ratio for differences on the basis of level of education in teacher effectiveness is 1.49 which is not significant at 0.05 level for 148 degrees of freedom. Hence the null hypothesis was accepted for teacher effectiveness.

2. The obtained t-ratio for differences on the basis of level of education in attitude towards internship orientation is 0.17 which is not significant at 0.05 level for 148 degrees of freedom. Hence the null hypothesis was accepted for attitude towards internship orientation.

Conclusion

1. There is no significant difference in the teacher effectiveness of Pupil Teachers on the basis of level of education.

2. There is no significant difference in the attitude towards internship of Pupil Teachers on the basis of level of education.

Testing Hypothesis: 2

There is a no significant relationship of teacher effectiveness with attitude towards internship orientation of pupil teachers on the basis of their level of education

i. Primary pupil teachers

ii. Secondary pupil teachers

The following table shows the significance of 'r' between teacher effectiveness & attitude towards internship orientation in case of Primary & Secondary pupil teachers.

Interpretation of 'r':

1. The obtained value of 'r'= 0.28 for Primary pupil teacher is greater than the tabulated value of 'r' which is 0.22 at 0.05 level of significance. The obtained value of 'r' is therefore significant at 0.05 level & hence the null hypothesis is rejected.

2. The obtained value of 'r'= 0.20 for Secondary pupil teachers is greater than the tabulated value of 'r' which is 0.18 at 0.01 level of significance. The obtained value of 'r' is therefore significant at 0.01 level & hence the null hypothesis is rejected.

3. The obtained value of 'r'= 0.24 for total sample of Pupil teachers is greater than the tabulated value of 'r' which is 0.13 at 0.05 level of significance. The obtained value of 'r' is therefore significant at 0.05 level & hence the null hypothesis is rejected.

Conclusion

1. There is a significant relationship of teacher effectiveness with attitude towards internship orientation in case of primary pupil teachers. The relationship is positive in nature and the magnitude of the relationship is low. 7.84 % variance in teacher effectiveness of primary Pupil teachers is due to attitude towards internship orientation.

2. There is a significant relationship of teacher effectiveness with attitude towards internship orientation in case of secondary pupil teachers. The relationship is positive in nature and the magnitude of the relationship is low. 4 % variance in teacher effectiveness of secondary Pupil teachers is due to attitude towards internship orientation

3. There is a significant relationship of teacher effectiveness with attitude towards internship orientation in case of total sample of pupil teachers. The relationship is positive in nature and the magnitude of the relationship is low. 5.76 %

variance in teacher effectiveness of total sample of pupil teachers is due to attitude towards internship orientation.

Discussion and Summary:

Internship orientation is very essential for becoming an effective teacher. The exposure and experience that the pupil teacher receives during internship are unmatched with any other activity in pupil teacher's life. The internship not only prepares the pupil teacher academically but also trains the pupil teacher professionally.

Reliability coefficient of Attitude towards Internship Orientation Scale (AIOS)

Scale	Types of Reliability		
(AIOS)	Cronbach's α	Split-Half Reliability	Spearman-Brown Prophesy Coefficient
	0.80	0.64	0.72

Reliability coefficient of Kulsum Teacher Effectiveness Scale (KTES)

Scale	Types of Reliability		
(KTES)	Test-Retest Reliability	Split-Half Reliability	Spearman-Brown Prophesy Coefficient
	0.63	0.68	0.94

Relevant statistics of teacher effectiveness & attitude towards internship orientation by level of education of the pupil teachers

Variable	Group	N	Mean	t	l.o.s	100 ω^2 estimate
Teacher Effectiveness	Primary Pupil teacher	77	449.44	1.49	N.S.	--
	Secondary pupil teacher	73	409.30			
Attitude Towards Internship Orientation	Primary Pupil teacher	77	48.89	0.17	N.S.	--
	Secondary pupil teacher	73	49.09			

Tabulated 't' for df = 148

= 1.96 at 0.05 level of significance

= 2.57 at 0.01 level of significance

Significance of 'r' between teacher effectiveness & attitude towards internship orientation by level of education of pupil teachers

Group	N	df	r	l. O.S	100 r^2
Primary Pupil Teachers	77	75	0.28	0.05	7.84 %
Secondary Pupil Teachers	73	71	0.20	0.01	4%
Total Sample	150	148	0.24	0.05	5.76 %

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Learner - Centred Curriculum Design Difficulties and Remedies in ELT for ESL/EFL in India

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Abstract :

In an educational system, the meaning of curriculum is wide-ranging since it deals with syllabus, projects, assignments, evaluation etc. The prime focus of a learner-centred curriculum, is the needs, interests, desires, lacks, wants, learning styles etc., of the learners. Stake holders, target people, society etc, and play a vital role in designing a new curriculum. In the context of ESL/EFL in India, designing a learner-centred curriculum is a difficult process. Since the Indian educational system focuses only on the educational excellence of the students, it will be very difficult to convince the stakeholders, target people etc., to design a learner-centred curriculum. The need of the hour is to have qualified teachers who are ready to accept and implement innovations, and adapt their teaching methods to fulfill the needs of the students. The students arrive from different socio-economic backgrounds and some of them may be the first generation to enter a school or college to learn English. The possible remedies are that, the teachers can provide a stress-free, positive classroom atmosphere and incorporate interesting, joyful language games and learning activities that fulfill the needs of the learners. The teaching provided in a classroom should develop the overall skills of a learner, instill a drive to learn and mould him into a better person to face the challenges of the outside world.

Keywords: Learner-Centered Curriculum, Needs Analysis, Situation Analysis, ESP, Language Games, Learning Activities.

Introduction :

The term curriculum refers to the lessons, content and syllabus taught in an educational institution. In a broader sense, it refers to the knowledge, skills, discipline, values etc., learned by the students; academic standards and objectives the students are expected to achieve; the lessons, text books, materials, assignments, projects, audio, video, field work and other activities used in a course. It also includes assessments, examinations and other methods used for evaluation.

In the context of English language teaching, various authors have defined the term curriculum in different ways. Richards et. al. state that, first curriculum should have a purpose, then it should focus on the content, teaching procedures and learning experiences to achieve the purpose and finally an evaluation to find out whether the goals achieved. But Christopher Candlin goes one step ahead of Richards in defining the term curriculum. Christopher Candlin's definition of the term curriculum is the follows,

"Curricula are concerned with making general statements about language learning,learning purpose and experience, evaluation and the role of relationships of teachers and learners".(Foneska 440)

It is important that a curriculum should not revolve around education alone, it should also focus on a healthy teacher-student relationship. A friendly, trustworthy relationship between teachers and students, play a vital role in the successful completion of a course. A teacher should be humanistic enough to understand the needs, problems, difficulties of a student in learning the target language. The above mentioned factors are essential in designing a learner -centred curriculum. Jack C. Richards describes curriculum development as the following,

.....an inter-related set of processes that focuses on designing, revising, implementing and evaluating language programmes. (Richards 4)

So a curriculum design becomes part and parcel of the curriculum development. Ilka Kostka and Luccy Bunning gives us a beautiful definition for curriculum design,

"Curriculum design is the process of working on an

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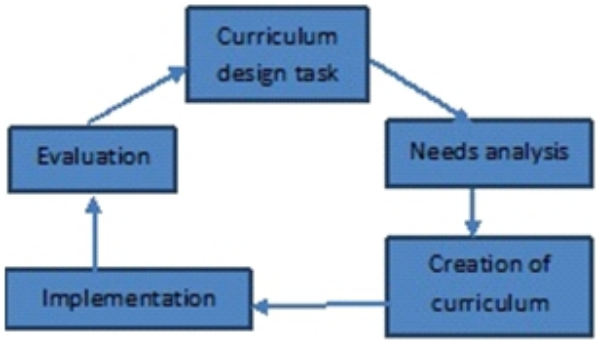
informed plan for teaching and learning and it is an essential undertaking wherever English is taught and learned in an organized setting". (Kostka 4)

The word setting may refer to an intensive English program for schools, colleges or universities, or a spoken English program, or an adult education program etc., Teachers, policy holders, government officials, administrators etc., work together to identify the particular program's mission during a curriculum designing process. There are many approaches to a curriculum design. For example, Linguistic based curriculum, subject-centred curriculum, learner-centredcurriculum,learning-centred curriculum, problem - centred curriculum, etc.,

Learner - Centred Curriculum Design:

The needs, interests, goals, difficulties, problems and backgrounds of each and every student become the core centre in designing a learner-centred curriculum. In a learner - centred education, the methods of teaching will shift the focus of instruction from the teacher to the student, thus it becomes a learner-centred teaching. The subject or the content of a syllabus should cater to the needs of the learners. Learner- centred curriculum can be designed in such a way that it can be holistic in its approach towards students' overall learning and well being. This kind of approach will focus on everything a learner needs. The teachers or the curriculum designers, can frame an ELT curriculum with a holistic perspective that caters to the development of every student's intellectual, emotional, psychological, social, physical, artistic, creative and moral potentials. Iika Kostka and Lucy Bunning state that there are different stages in a curriculum design process and they are the following,



(Kostka 4)

According to Ilka Kostka and Lucy Bunning, situation analysis can be added, if necessary, in a curriculum design. As the figure shows, each phase is connected to the next phase, and the previous phase can be revisited, if necessary. Needs analysis plays a vital part in designing a student-centred curriculum. Richards C. Jack states that, "The goal of needs analysis is to collect information that can be used to develop a profile of the language needs of a group of learners in order to be able to make decisions about the goals and content of a language course". (Richards 90)

The term 'Needs Analysis' refers to the procedures and methods that are used to collect information about the learners and their needs in learning English as a second language. Nation and Macalister created a model that categorizes needs analysis into three types. They are 'needs' 'lacks' and 'wants' of the learners. According to Nation and Macalister the term 'needs' can be defined by asking,"What is necessary in the learner's use of a language." (Kostka 12)

In the context of ESL/EFL in India, the following 'needs' can be listed,

1. The ESL students need to learn English to write without grammatical errors and spelling mistakes.

2. They need to learn to talk fluently so that it will be helpful for them to communicate with the outside world.

3. Most of the ESL students' needs, is to learn English to pass the English Examination.

4. To get good jobs, because learning English ensures them a bright future.

5. Nation and Macalister then describe 'lacks' as "….the knowledge and skills that students do not presently have, which may include skills that they have not acquired while learning, either in their first or second language." (Kostka 12)

The information about the students 'lacks' can be found out by either assessing the work produced by the students in the target language or directly from the mouth of the learners. A stress-free, negative criticism-

free classroom atmosphere and friendly teachers, encourage the learners to open up about their difficulties in the target language. In the context of ESL/ EFL learners in India, the following 'lacks' can be listed,

1. The students socio-economic condition may not be good.
2. They may come from poor family backgrounds where English does not exist.
3. No English outside the classroom.
4. Lack of self-confidence due to past learning experiences and negative criticism.
5. Lack of interest and motivation, shyness and fear of the target language.
6. Difficulty in understanding lectures in English
7. Difficulty in translating their thoughts from their native language to English.
8. Difficulty in reproducing the target language in exams.

Finally Nation and Macalister describe 'wants' as,“Learners own ideas about what they believe will help them learn.” (Kostka 12)

A learner - centred curriculum may include student's autonomy and independence, where they may have their own assumptions about teaching and learning. The students can even select their own activities, projects and assignments that are suitable for them. But the students' ideas and wishes may not perfectly align with the classroom activities performed by the instructors. But the learners wishes should be respected. So the instructor can address this issue to the higher authorities which may be helpful in framing a learner - centred curriculum. The teacher can change her teaching methods to satisfy the 'wants' of the learners.

In the context of ESL /EFL in India, the following 'wants' can be listed,

1. Stress-free atmosphere.
2. Encouraging, friendly teachers.
3. Good teachers who can build up a trust between themselves and the students. This helps to motivate and accelerate the students' progress in the target language.
4. Interesting activity based teaching and learning methods.

Jack C. Richards introduces ESP in needs analysis and it plays a vital part in designing the content for learner-centred approach of curriculum.

Needs Analysis In ESP

ESP means English for Specific purposes. It is a learner-centred approach to teaching English as a second or foreign language. The ESP approach to language teaching mainly focuses on the purposes for which a learner needs a language rather than the syllabus that revolves around the subject and structure of general English in a English course. Instead of designing a course by analysing a language, ESP approach begins with an analysis of the needs of the learners. Learners arrive from various socio-economic backgrounds and they have different needs in the target language, so what they are taught in a class room should be restricted to what they need. Jack C. Richards states that, “These needs are fairly specific, they can be identified and they should determine the content of any course.”(Richards 33)

Jack C. Richards later adds that Steves (1977) points out the restrictions that are involved in framing a student- centred content for a curriculum. They are the following,

(i) restriction: only those “basic skills” (understanding speech, speaking, reading, writing) are included which are required by the learner's purposes; (ii) selection: only those items of vocabulary patterns and grammar functions of language are included which are required by the learner's purpose; (iii) themes and topics: only those themes, topics, situations, universes of discourses etc., are included which are required by the learner's purposes; (iv) communicative needs : only those communicative needs…..are included which are required for the learner's purposes. (Richards 33)

In the context of ESL /EFL in India, the content of a target language syllabus should have interesting activities and games to teach the four basic skills. Since the ESL students have difficulties in all the four skills (LRSW), the content of a syllabus should focus on improving them. For example, for an elementary school children, vocabulary can be introduced that are useful for their day to day uses. Simple grammatical structures can be introduced through which they can learn to frame their own sentences. The lessons, themes, topics etc., in a text book can be framed according to the wishes and interests of the learners. Different students may need to learn different kinds of communication skills for different purposes. For example, a tertiary learner may need to learn a particular style of speaking skill to attend an interview, a high school student may need the target language for a telephonic conversation. The needs of the students change according to their grades and their situations. Framing a student-centred content for a curriculum is the most difficult job. A survey has to be performed and data should be saved about the needs of ESL learners in the target language. This should be done grade wise, district wise and state wise in all the educational institutions of India.

Needs analysis can be conducted through surveys, questionnaires, interviews etc. In a needs analysis, information should also be collected about the policymakers, Ministry of Education officials, teachers, employers, parents, influential individuals, academic specialists, etc. This will help to find out their ideas and whether they will be co-operative in framing a new curriculum. Different stakeholders have different ideas about the curriculum. One may be interested and favourable and the other may be disinterested and hinder the process. The information collected about the stakeholders and the target people can be helpful during the situational analysis. Pratt's definition about situational analysis is the following,

“The designer should estimate both the direct and indirect effects of a proposed curriculum that will have on students, on other programs, and on other people in and outside the institution. These effects must be taken into account in the design and made clear to decision makers when the curriculum proposal is submitted”. (Richards 90, 91)

According to Richards, factors such as societal factors, project factors, institutional factors, teacher factors, learner factors and adoption factors can facilitate or hinder the successful designing and implementation of a curriculum. Information gathered during needs analysis actually complements the information collected in situational analysis.

Societal factors: Government officials, policy makers, parents, community groups, students, citizens etc.

Project factors: These help to find the following,

1. The Number of members and the qualification of the members of the curriculum design group.
2. Mode of selection.
3. Experience of the team members
4. The resources and budget available for the new curriculum etc.

Institutional Factors:

Educational Institutions play a major role in promoting or hindering the changes in a curriculum.Some Institutions may give importance only to text book approach but other institutions may welcome innovations in education. It has to be found out whether the institutions have enough resources for the new curriculum.

Teacher Factors:

Teachers are essential for the successful implementation of curriculum changes by the new curriculum design. Exceptional teachers can create innovative teaching strategies and compensate the poor - quality resources available in the institution. But inadequately trained teachers may not be able to effectively use the highly designed teaching material.

Learner Factors:

The students may have their own ideas, desires, believes and expectations of what they want to learn. This has to match with that of the stakeholders and

target people.

Adoption Factors:

The introduction of a new curriculum design may affect an instructor's pedagogical values and beliefs, their understanding of the target language or the use of classroom resources. Some of the new changes may be readily accepted while others may be rejected.

All the above mentioned factors play a crucial role in designing and implementing the new curriculum. Once the new curriculum is established, problems may arise during the implementation process. Lets see the following example,

A new English curriculum is prepared for general English at High School level in an ESL context. The new one is a communicative curriculum and downplays the importance of grammar which was given more focus in the old curriculum. When text books supporting the new curriculum are published, the parents are dissatisfied and express their concerns by stating that the text books do not provide sufficient preparation for the school exams and their children are not being taught the basics.

The needs analysis and situation analysis also show the difficulties and challenges in framing a curriculum design, that is suitable for the learners. Once the new curriculum is created, implementation of the curriculum takes place and later an evaluation is done to see if the new curriculum has successfully achieved its goals.

Difficulties in Framing A Learner-Centered Curriculum In India

We already witnessed in needs analysis and situation analysis, that the target people and stake holders should join together and work in harmony to design a new curriculum. In Indian context, it is very difficult to create a learner-centred curriculum because the parents, the teachers, educational institutions, society etc., expect the students to achieve high marks. A sudden change of curriculum may have catastrophic effects on the stake holders andon the target people. The learner-centred curriculum is very good but it will take a lot of time to reap best results from it. So without the co-operation of the parents, teachers, Government officials, educational institutions, and community groups, pressure groups etc., it is difficult to design a learned-centred curriculum in a country like India. Private English coaching classes can design a learner-centred curriculum for its students.

REMEDIES

This paper presents the possible remedies to accelerate the proficiency levels of ESL/EFL students:

1. The teachers can conduct a needs analysis in the class and collect the details from the students.
2. Innovative, useful, interesting language games and learning activities can be incorporated in the classroom.
3. Stress free atmosphere should be nurtured.
4. A trust should be developed between the teachers and the students.
5. The learning activities should build self confidence in the learners and instil a sense of self-worthiness in them.
6. Each learner should be respected and treated well despite their different proficiency levels in the target language.
7. The learners lacks should not be criticised, and their errors in the target language should be rectified in a gentle manner.
8. The teacher should undertake a holistic teaching approach towards the overall well-being and development of the students.

Language Games And Activities

Language games create a joyful atmosphere in which the learners can learn the target language. W. R. Lee's opinion of language games are the following,

“Games are enjoyable. The essence of many games lies in out-stripping, in friendly fashion, someone else's performance…as in the world of sport…In a group or team activity, rivalry and co-operation go hand in hand.

There are other groups and teams to surpass and friends to help surpass them….In spite of all the effort - and sometimes, when attention is sharply focused and the learner's energies stretched to full in a game, it is hard to see any difference between 'work' and 'play'- there is a pleasant ,informal and often relaxed atmosphere, favourable to language learning". (Lee 1)

Language games banish boredom and create an interesting atmosphere for the learners to look forward for language lessons. W. R. Lee has designed variety of interesting language games for improving vocabulary, spelling, pronunciation, reading, writing etc. The following are some of the games that follow Lee's pattern of language games.

VOCABULARY GAMES

Uncle Jack's Dog

Level: Secondary, Senior Secondary and advanced

Age: Any

Group Size: Whole class or groups

Use: Vocabulary Improvement (adverbs and Adjectives)

This is an old game played by kids and adults together. The adults can help the children in using the adverbs while framing sentences. The title of the game can vary, they are the following, My Sister's Rabbit, My Father's Monkey, My Mother's Parrot etc, The first player can begin the game, with the letter 'a' and can perhaps say, Uncle Jack's dog is an alarming dog. The second player has to use an adjective beginning with 'b', e.g. Uncle Jack's dog is a beautiful dog. The third person may continue, Uncle Jack's dog is a careless dog. This game can be continued through the following alphabets. A teacher can conduct this game in the class by dividing the students into groups or pairs. Depending upon the proficiency level of students, the game can vary from easy to hard.

Adverbs can be added to the adjectives: Uncles Jack's Dog is an alarmingly fierce dog, Uncle Jack's dog is a well- behaved dog, Uncle Jack's dog is a carelessly fed, thin dog.

Cast Away Lists

Level: Secondary and Senior Secondary

Age : Any

Group Size: Whole class and groups

Use: to improve the vocabulary of food, drinks, clothing and tools.

The students are asked to imagine that they are cast away on an island with a wrecked ship. The students are asked to write a list of things from the ship that is necessary for their survival. The class can be divided into groups. Each group should have a paper and a pen, the other members of the group can suggest names of the items and the leader should write. First, the names of the food can be written and three or four minutes can be allocated for this work.

Then the students can be asked to write the names of the drinks, clothing and tools. First, the leader of group A reads his list, the members of other groups should cross those items that are read by him. Later the leader of group B reads his list and others should cross those items. The game continues in this manner with all the other groups and the final winner is the group who has a list of items that are not crossed.

SPELLING GAMES

Hearing And Writing

Level: Elementary, Secondary, Senior secondary and advanced

Age: Any

Group size: Whole class and groups

The students can be divided into four or five groups. The words which the students find difficult either from the text or non-text can be shortlisted. This can be done either by the teacher or by the students. When the teacher announces the word, each student from all the groups should come forward and write the word on the board. The student who writes the word correctly wins a point for his or her group and others should write down the words in their note books. The team

which gets maximum number of points is announced as winner.

Note: If a student makes a mistake on the board, it should be erased immediately and the teacher should write the correct spelling.

SCRABBLE

Level: Elementary, Secondary and senior secondary,Advanced.

Age: Any

Group size: Pairs, Wholeclass or groups

Board games such as Scrabble and lotto provide excellent spelling practices. Here, we can witness a few simplified versions of such games to improve the students' spelling.

Word-Squares: Each student should draw a big square that is ruled into 36 small squares in his note book. Otherwise the students can have a board ruled into 36 small squares. They can have small letter tablets to use on the board. The instructor should write thirteen alphabets on the black board. For example:

A ,E, S, O, T, H, C, F, I, K, L, R,U

The learners have to fill in their squares to form words. Three different learner's square may look like the following.

Fig 5.1

		T			L
H	A	I	R		
		C	O		
		K	S		
			E		

(A)

A					L
		C			U
		H	O	T	
		E			K
		F	U	S	

(B)

L	O	S		F	
		H			
	E	A		I	
C	L				
K			T		

(C)

A has already framed three words (A is probably after 'ticket', and perhaps 'cost'), B has two(and may find 'fuss' and 'luck'), C has nothing so far(but with luck may find out 'fair', 'shake', 'clear' etc). Thirty six letters can be written on the board or called out and points can be given according to the number of words formed by the students.

VARIANT:

We can see a different variant of the game. In a class of 24 students, they can be divided into six groups, 4 students in each group. Each group should have a board ruled into squares, and each player should have an identical set of letters (say 36). The goal of the game is to get rid of one's letters as early as possible by forming words on the board. The first player can start the game by forming a full word on the board. The other players in the group should frame their words by attaching letters to some parts of the words on the board and not placing them separately.

Thus, if the first player frames the word ROUND in the board, the second player can frame HOUSE using the 'O' from the word ROUND. The third player can frame DANCE using 'D' from the word ROUND and the fourth player can add 'S' to the word HOUSE and make it.

				R				
		H	O	U	S	E		
				U				
				N				
				D	A	N	C	E

Fig. 5.2

PRONUNCIATION GAMES

HOUSES

Find Out Same or Different

Level: Elementary, Middle and Secondary School

Age: Any

Group Size: Whole Class

We can play this game with sounds, words or sentences. The instructor says two sentences, the students decide whether they are same or different.

Teacher : Jack gave him a cap

: Jack gave him a cake

: Are they same? Or Shall I repeat it one more time?

Rita : The second one was different.

Teacher : Correct, listen again.

Teacher : The cloud is dark.

: The cloud is dark.

John : Different

Teacher : listen again(repeats it)

John : Same

Teacher : No, listen again

: Raj saw a frog.

: Raj saw a frock.

Mira : Different

Teacher : Good. Now listen!!

: Sam took leave today.

: Sam took a leaf today.

Geetha : Same.

Teacher : Now, Listen again!!

: Sam took leave today.

: Sam took leaf today.

Geetha : Different.

Teacher : Correct.

The above given dialogue continues like this until the end. The teacher should always use the word 'Listen again', even when the answer is correct. It is very important that each sentence of a pair should be spoken with exactly the same stress and intonation.

Same Rhyming, Different Meaning

Level: Secondary, Senior Secondary and Advanced

Age: Any

Group size: whole class

This is a kind of a pronunciation game, in which the words have close connection between sounds but they have difference in meanings. The learners are given instruction that they can either draw or perform an action(miming can be included) for the following pairs of words. The teacher can announce a pair of words to each student. For example:

Sea/See, Pin/Pen, Cup/Cap, Sun/Son, Ship/Sheep, Blue/Blew, Days/Daze, Read/Red etc

Later students are asked to frame sentences from these pair of words. We just witnessed a few set of games now, many more games on listening, reading, writing etc., can be incorporated in the class room.

Many teaching and learning activities can be incorporated in a class room to improve the proficiency level of the learners in English. This paper presents two such activities. Joana Baker and Heather Westrup give us interesting teaching and learning activities, for the four skills in the target language. The following are the activities for listening and reading.

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ACTIVITIES OR IDEAS FOR IMPROVING LISTENING SKILLS:

An instructor should motivate and create a drive in the students, when he is going to introduce a new lesson in the class room. Colourful pictures, charts, real life things etc., can be brought to the class room either by the teacher or by the students. The teacher should make the students unknowingly involve and participate in the three sub skills of listening: predicting, listening for the main idea and listening for specific information. The listening activities have three phases. They are the following,

1. Before - listening activities - Prediction
2. During - listening activities - listening for main idea, specific ideas
3. After - listening activities - follow up activities.

LISTENING ACTIVITY

Hazards Of Using Mobile Phones

Before - Listening activities:

The teacher can give clues about mobile phones and ask the learners to predict the topic of the lesson. Once the prediction is over and the topic is out, brainstorming can be done in the class. The students can discuss the topic and can write their views on the black board. The students should be encouraged to talk anything related to the topic. Appreciation should be given to the student who poses questions.

During - Listening activities:

The students can be divided into groups. One group opposing the use of cell phones, the other one supporting the use of cell phones. Once the students become involved, the topic can be unfolded and easily explained to them. To help students practice listening for general idea, questions that are following can be posed to them.

a. Which mobile phone has zero radiation?

b. Does a mobile phone tower release radiation?

To help students practice listening for specific information, they should be requested to listen the class carefully to answer specific questions.

	Health hazards caused by mobiles	Uses of mobile phones	Nuisances caused by mobiles	Mobiles for education
1				
2				
3				
4				

(Fig 6.1)

The students can record the information in a notebook by copying the black board.

After - Listening activities:

In real life, we do something after listening to a discourse or a discussion. So follow up activities after listening in a class are important. Students can write small notes about their ideas on what has been taught in the class. They can even write to a local newspaper about the topic.

ACTIVITIES OR IDEAS FOR IMPROVING READING:

The following reading activities aim to encourage, improve, and practice the skills that students need, in order to read and understand English. The main sub skills of reading are the same, as that of the writing. There are three phases in reading skills. They are the following.

1. Before - Reading activities - Prediction
2. During - Reading activities - Reading for main and specific information.
3. After - Reading activities - Follow up activities.

The three components of before – reading activities are, brainstorming, discussion and questioning.

Brainstorming:

The students should be encouraged to share their ideas regardingthe title or topic of the text they are going to read. Either the teacher or the student can write their ideas or words related to the topic on the blackboard. This will later help thestudents to recollect the words and they can look out for these words while reading in the book.

Discussion:

The students can be divided into pairs or small groups. They can discuss about the story line.

Questioning:

Students can take a look at the picture from the story, or at the title and then can think of the questions, they would like to be answered about the story. This kind of thinking later becomes a practice in question formation and creates an interest in them to read,so that they can find out if their questions are answered.

During - Reading activities:

Silent reading and reading aloud among the class members should be encouraged. The teacher can circulate interesting books to the students and can encourage silent reading. A time limit should be allocated, this makes the readers to read fast without stopping at unknown words. Reading aloud can be best for fluency improvement and it improves the confidence of the students. The following are some of the topics for activities to improve reading.

1. Reading for the main idea.

2. Finding key words and topic sentences.

3. True or false sentences.

4. Reading for specific

Reading For the Main Idea

The teacher should ask the students to find out the main idea of a topic. A time limit should be given to them. This helps the students to practice reading quickly to find out the main idea of the given topic.

True or False Sentences

Some true sentences and many deliberately false sentences of the story or the topic can be written on the blackboard, either by the teacher or by the student. This motivates the students to read the text silently and find out the answers that are correct.

After – Reading activities:

The students can write a note of what they have written and bring it to class the next day. The teachers can check them.

This paper has presented only two learning activities however there are many interesting activities for practising writing skills, speaking skills, vocabulary, grammar etc.

Conclusion

Both teaching and learning are beautiful experiences and complement each other. The teaching and learning activities discussed above will have a lifelong impact on the students' personal as well as professional lives. A curriculum should focus not only on the academics of a learner, but it should also try to take care of the overall well being and development of a learner. Positive classroom atmosphere, friendly instructions, interesting and useful class room activities etc. all play a vital role in developing a complete human being.

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Internship for Transformation and Training Reflections and Modifications

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Abstract :

The article is based on the School Internship as proposed by the NCTE and the syllabus proposed by the University of Mumbai. The paper highlights the problems faced by the colleges of education. The ever-growing isolation of colleges of education and schools have caused more problems in the effective implementation of the internship program. The conflicts in the minds of school teachers which are not tackled by the teacher educators have added to the problem. The features of school internship appear objective based and result oriented but are faced with a number of challenges which is now been handled by each college of education single handedly. This then requires a much more collaboration from authorities, colleges of education and schools so that the student teachers and schools gain from the entire program. The paper also brings to light a number of suggestions which could be looked into for positive outcomes.

The Two year B.Ed. curriculum has introduced school internship with an intention to improve the teaching –learning experience in prospective teachers. The major focus of internship has been a long teaching practice in the schools, exposing the student teachers to all the teaching requirements in the school. The crux of school internship as proposed by NCTE has been better partnership with the schools. It is proposed for development of student teachers in order to provide better prospects in their teaching career. The student teachers are expected to be more confident and better prepared for all teaching situations.

The isolation of the schools and B.Ed. colleges has been a concern for the authorities and from time to time policies have elaborated how his association will enhance the teacher education program. This isolation still exists and steps have to be taken to bridge the gap. Schools have to be communicated with the objectives of internship, as their whole hearted participation is important for the success of the program. In order to bridge this gap the following steps are proposed:

1. Preparation of the Internship Program Schedule for the year: The schools heads could have a meeting with the Principal and teacher educators of the concerned colleges of education and discuss the program schedule and the manner of implementation. They could discuss the give and take conditions along with the deliverables from the B.Ed teachers. There are a number of problems that schools face, like lack of teachers, discipline problems, which can be taken care of by the B.Ed. colleges through their student teachers. Thus they could suggest a solution and participate in the solution of these problems.

2. The guidelines of the NCTE must be clearly stated with the objectives and requirements of the program and should be handed over to the school. Each teacher must also be oriented with these guidelines which is not the practice now. In most programs only the Principal and the Supervisor may be aware of the guidelines and they pass on this information to the teachers. It is highly possible that the information does not reach the teacher concerned.

School teachers are the main points of contacts through which much learning can take place. A school teacher can pass on the experiential knowledge to the student teacher. This could help the student teacher a great deal in planning her lesson. The student teachers need a total grip of the school context and the culture of each class, this would help in customizing the lesson plans for each class and will also help in classroom management. The knowledge of the subject can also be diversified and intensified through the school teacher's experience with the subject/topic. School teachers need to give their expertise to the apprentice student teacher so that teaching learning in

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classrooms is understood in totality. Without the involvement of the school teachers the internship program is not of much use.

Teacher educators do not have the expertise of managing school classrooms. They do have a theoretical knowledge but the practical knowledge lies with the school teacher. Therefore it is important that school teachers must partner with the teacher educators and join hands in the process of teacher education. Teacher educators have not practiced their teaching skills and merely predict certain situations in the school classrooms. The times have changed and the classroom also has changed in all spheres. A teacher educator must also practice her skills in a classroom situation in the experimental schools attached to B.Ed. colleges. This will help them understand the student's minds and student's skills. The era of globalization and knowledge explosion has changed the student's perspectives to a great extent which the teacher educators cannot imagine. It is necessary that teacher educators remain in touch with school education the student characteristics and the curriculum. The observation of lessons is a learning experience for the teacher educators, where the context of the school is well assimilated and also the student's reactions to different questions helps the teacher educator to understand the mind of the student. This knowledge if ploughed into the teacher preparation can help the student teachers.

The student teachers are prepared through the method of coaching by the teacher educators. This coaching is preceded by introduction of teaching skills and methods, along with a format of a lesson plan. Each college of education have their tailor made lesson plan. A lesson plan is made to prepare the student teachers with the lesson s(he) is going to deliver. It gives a mental preparedness and also clarifies the concepts and enumerates the learning resources for the lesson. What happens during the coaching session? It is an encounter with an experienced teacher educator and student teacher. The student teacher discusses the lesson plan and the teacher educator checks the content and the methodology used to transact the unit. The teacher educator discusses the context and the content of teaching coming up with possible ideas of improving the lesson plan to enhance the teaching-learning experience. The student teachers are motivated to use current teaching methods which could lead to cooperation, collaboration and constructivism.

Classroom management is a major problem that B.Ed. student teachers are facing. In some cases the lessons are planned beautifully with much effort but it cannot be transacted effectively due to classroom management problems. All skills given to the student teachers in colleges of education become useless when it comes to disciplining school students in their classrooms. The psychological methods of classroom management of focusing on individual students and listening to their problems and accordingly providing solutions fail when it comes to schools. All school students are used to the measures used in the schools. It is observed that most teachers resort to regressive methods of screaming, shouting and banging the duster. This achieves good results than requesting students to remain attentive. The classrooms are always interactive as student teachers are advised not to expect pin drop silence. The 'pin drop silence theory' does not result in a good participative class. The student teachers face a challenge when the classes are not manageable. One way of managing the class is to request the school teachers to participate in the class. Sometimes the classes cooperate better when the school teachers are present in the class. Thus training for classroom management becomes really difficult as the school students do not respond positively most of the times. The lesson plans suggest activity based teaching but this can only be achieved if there is considerable classroom management.

Different schools have different teaching methods. Some schools still practice the chalk-talk method of teaching. It is surprising to see that most schools do not have full-fledged technology equipped classrooms. Most agencies assume that teachers are using technology in their teaching but the reality shows that technology is not yet the handmaid of the teacher. In some schools technology is provided but teachers are not at all motivated to use it. The student teachers in this situation appear more progressive than the school teachers which cause resistance in the school teachers. Sometimes it is seen that the school

teachers mentor the student teachers in the use of technology. The student teachers prepare lesson plans in the colleges of education without the full knowledge of the context of the learning situation in the particular classroom and this could backfire on the students. This is where the school teachers intervene and modify the lesson plans to suit the classroom needs. This flexibility must be accepted by the teacher educator for marking the student teacher.

The transaction of the lesson plans in schools is done under the supervision of the teacher educator. The teacher educator is a non participant observer in this case and records her observations, highlighting the strengths and weaknesses of the student. The results are then communicated to the student teacher with a discussion on the context of the situation. It is observed that the lesson transaction is viewed with different aspects – steps of the lesson, content understanding, evaluation methods executed to understand the achievement of lesson objectives, a small assignment is given for a follow up on that unit. In addition to this the teaching skills used, classroom management, problem solving methods adopted, and the overall outcomes of the lesson. It is a practice in most B.Ed. colleges to provide a written and oral feedback to the student teachers. The written feedback sometimes is elaborative and sometimes sketchy. There being no agreed format of the written/oral format of feedback a sense of confusion exists on the standards of teaching expected. Teacher educators sometimes motivate student teachers and sometimes the feedback style discourages them. Teacher education colleges have also used rubrics to provide an idea of the effectiveness of the lesson. The internal assessment grades given are still not revealed to the student teachers. The student teachers require to know their strengths and weaknesses which could clearly communicate to them where they need to improve. It is noted by student teachers that there are different standards maintained by different teacher educators while giving feedback, this poses a lot of conflict in the minds of the student teachers who then try the trial and error method. The focus now shifts to better grades from particular teacher educators than to concentrate on the teaching - learning process. Student teachers then try to modify their teaching skills and the content to suit the teacher educator who has come to observe the lesson. Thus, it is seen that the focus on learning shifts and ultimately the overall gain reduces out of an intensive internship program.

The time available to the student teachers in the class is quite less when it comes to training in giving a lesson. As trainees have just embarked on the teaching journey their time management is initially poor and this demotivates them. The time management skills develop in the course of their practice sessions. Initially every step of the lesson is curtailed and speeded up in the race of time; later due justice is given to the parts of the lesson which needs importance. The time available to the students affects the quality of the lessons which varies from 40 minutes to even 20 minutes sometimes. The student teachers are required to suit the lesson delivery to the time available. When they are informed in advance, they manoeure their lesson according to the time given. It is difficult when they have already planned and reach the school fully prepared only to be told that the available time is cut short due to some problems. In such cases assessing the student teacher's performance becomes very difficult. The other problem arising at the time of giving lessons is the swapping of the periods to adjust to the timetable. Sometimes the P.T., Craft, Music classes are given for the B.Ed. lessons. The lessons in these classes are not well accepted by the school students, and student teachers are faced with unusual situations of handling disgruntled students and force them to pay attention and have to see to it that they are interested in the class. This is also a time when the teacher educator faces a conflict of how to grade the student teacher as the context was out of bounds from the arena of the student teacher.

Most student teachers are encouraged to use learning resources in their teaching. Technology has replaced the static learning resources and they are now using dynamic learning resources. The point here is not that whether they are using the physical resources or technology based resources, the outcome as a result of that is important. Sometimes it is seen that students use videos, film clipping in the class and it has not been quite effective to cause learning. Does the learning resource help in positive discussions and more questions in the class? Does the learning resource bring in deeper understanding of the

students? This is what the student teachers need to understand, than using it just for the sake of using. Sometimes Science lessons suffer due to non availability of chemicals and apparatus. The A.V. room in which technology is available in some schools are not available at the time the student teacher has to give the lesson and this affects the quality of the lesson, and sometimes technology fails the student teacher and the backup is not ready.

Teachers often say that they have to complete the portion. Student teachers often have a problem in getting units from the school teachers; they are faced with lot of conflicts with the teachers because of the units and classes they have to procure to give their lessons. The lesson units given are sometimes covered by the school teacher by the time the student teacher is given a chance to transact the lesson. This affects the classroom participation and the interest of the students. The length of the unit given is always a problem faced by the student teachers. Some school teachers give very long units to teach in a span of 35 minutes and some teachers give very small units which need to be stretched unnecessarily. Thus there is no standardization in terms of units given to the student teachers. School teachers do not trust the student teachers fully in curriculum transaction and most of them re-teach the unit given to the student teachers. This is double effort put in for the same unit/lesson and a practice followed by most schools as they are more responsible to the school authorities, students and parents for the effective completion of the syllabus and do not want to entertain any complaints. The number of lessons prescribed in the new NCTE two year program of the B.Ed. also has increased and this is not accepted by the school teachers. The college of education does not take any responsibility for the units covered by their student teachers. This gives a wrong impression to the schools that colleges of education come to satisfy their need and do not want to shoulder their responsibility. This is one of the reasons why teachers are sometimes indifferent to colleges of education in the internship program.

The new internship program as the 'Shadowing of a School Teacher', this program may be technically correct but when it comes to a practical side it needs a lot of input to the shadow teacher as to what is her role in the whole process. Most of the times, the shadow teacher would dump some routine work on to the student teacher, keeping herself free for other work. This has not led to any higher gain for the student teacher other than knowing how to do a few routine school tasks. Shadowing thus has to be carried out in the true sense, where the shadow teacher is involved in the planning and execution of the lessons is involved in the training of classroom management in schools and other tasks which a regular teacher is engaged in. The objective of teaching is to further provide a deeper insight into the school teaching-learning process. It has been noticed that without clear directions of shadowing in some schools, student teachers are not involved in the school tasks and are often seen pleading with the shadow teacher for some work. Thus a clear communication is required with the school teacher. Moreover the school teacher often feels that the work of the teacher educator is being dumped on them and they treat such tasks of internship as additional work on them and detest it. In such circumstances efforts must be made to motivate them to be partners in the internship program.Teacher educators can undertake skill training of the school teachers on a regular basis which could help in better collaboration between the teachers and the college of education.

The records to be maintained by all colleges of education need to be standardized. It is seen that most B.Ed. colleges follow their own pattern of maintaining records of student's work. The record keeping could be quite a cumbersome exercise. Thus the focus must be more towards enhancing the lessons and teaching skills than maintaining records. Colleges must adopt e-record keeping so that the much paper and space is conserved.

The present internship program is prescribed by the NCTE in Government and Non governments chools; a component of internship also has to be complete at a community centre. The colleges of education find it difficult to get schools and getting different contexts/community centers could still pose a bigger problem. In this situation intervention of higher bodies to motivate schools to render help in the internship program would be beneficial. The context of co education and single sex schools also could be considered to provide an experience for teaching. It

must be mandatory for all colleges of education to provide rural experience to their students. This could change their perspective.

The feedback is an important component of practice teaching. The student teacher has to first understand the feedback, accept the feedback and then put it into practice in the following sessions of practice teaching. This must be followed up in the college of education. Each student teacher must have a mentor teacher educator who is just responsible for better performance and follow up. A strong mentoring program is essential in colleges of education supported by an even strong counselling program as student teachers face constant stress during the internship program. A complete feedback system would give a holistic picture to the student teachers helping them to put in her best. The levels of feedback could be direct and indirect feedback. The direct feedback could be from the teacher educator and the peers who have observed the lesson, and the school teacher if present for the lesson. The indirect feedback could be from the students, the supervisor and the principal about the general behavior of the student teacher. All this would help in the overall growth and help in achieving the objectives of the school internship program.

NCTE in its guidelines for school internship 2016 has described the assessment of student teachers by school principals, mentor teachers and teacher educators. This has to be converted into a reality. The duties of student teachers in internship schools are listed in the guidelines but each university has modified it to their needs and contexts which brings down the intensity of the internship program as viewed by the NCTE. A study could be conducted on the criteria of internship in different universities as proposed by the NCTE. Much has to be intensified in terms of internship otherwise it just seems to be extension of time at the internship schools where student teachers are engaging in their own work rather than being involved in school related activities.

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Employability - A Challenge to Higher Education in India

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Abstract :

The Gross Enrolment Ratio for Higher Education in India is continuously showing an increasing trend over the last few years. India is expected to be the youngest country by 2030 and is expected to enjoy demographic dividend. Over the period, the government is withdrawing its support to higher education. The role of private sector is increasing in Higher Education. The decrease in the funding from the Government and entry of private sector in higher education resulted in increase in the cost of Higher Education. There is a threat that the higher education may go beyond the reach of middle class and poor class people. Education Loans look to be presently the best source of financing higher Education. India is expected to be youngest country, having maximum population in the working age group.

The real challenge is to employ the educated youth. The pace at which the educated young graduates, post graduates and professionals are increasing, without corresponding demand from the economy and industry, it is going to be a big challenge to employ them. A young graduate is already indebted before he starts his earning. At a time when he is in need of a supporting hand, he is burdened with the Education Loan and its interest. The unemployment and under employment of educated youth may render these Education Loans as NPAs.

Keywords : Education Loan Scheme, Higher Education, Non-Performing Assets, UGC

Introduction

Over the recent past expenditure on Higher Education was looked as an investment. Parents were ready to spend major part of their earnings on the higher education of their child in expectation of attractive returns from the employment thereafter. With the withdrawal of government support for higher education and increase in the role of private sector in the field of higher education the cost of higher education is going beyond the reach of middle class and poor people. The major source for them to finance their higher education is Education Loans from the banking sector.

Table 1 shows the continuous increase in the enrolment of students for Higher Education in India since 2010-11.

Table 1 : All India growth in students' enrolment

Year	Total enrolment	Increase over the preceding year	Percentage increase
2010-11	27433749		
2011-12	29184331	1684582	6.13%
2012-13	30152417	968086	3.32%
2013-14	32336234	2183817	7.24%
2014-15	34211637	1875403	5.80%
2015-16	34584781	373144	1.09%
2016-17	35705905	1121124	3.24%
2017-18	36642378	936473	2.62%
2018-19	37399388	757010	2.07%

Source: https://www.ugc.ac.in/pdfnews/3060779_UGC-ANNUAL-REPORT--ENGLISH--2018-19.pdf accessed on 02.02.2020

Table 2 shows the Gross Enrolment ratio of the students enrolling for Higher Education in India is also showing increase every year from 2012-13 to 2018-19

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Table 2 : Gross Enrolment Ratio in Higher Education during 2012-13 to 2017-18

Year	Gross Enrolment Ratio
2012-13	21.50
2013-14	23.00
2014-15	24.30
2015-16	24.50
2016-17	25.20
2017-18	25.80
2018-19	26.30

Source: https://www.ugc.ac.in/pdfnews/3060779 _UGC-ANNUAL-REPORT--ENGLISH--2018-19.pdf accessed on 02.02.2020

The Government has shouldered the responsibility of financing the primary education through Right to Education. However, they have gradually started withdrawing their support for Higher Education. The Birla-Ambani Committee has recommended Government's withdrawal of support for Higher Education. The Government started withdrawing its support for Higher Education by reducing grants and subsidies and reducing the setup of new Higher Education Institutes.

Table 3 shows the number of colleges recognised by UGC under section 2(f) and 12 B of the UGC Act 1956, during the period 2012-13 to 2016-17.

Table 3 : Colleges recognized under Section 2(f) and 12B of the UGC Act, 1956

Colleges	2012-13	2013-14	2014-15	2015-16	2016-17
Number of colleges	37204	39613	40760	41435	42338
Colleges recognized under Section 2(f)	8929	9360	9940	10451	10966

Source: https://www.ugc.ac.in/pdfnews/9764381_Complete-AR -2016-17-English.pdfaccessed on 10.03.2019

On the one hand increase in the demand for Higher Education from student fraternity and on the other hand lack of initiative from the government in setting up of new Higher Education Institutes created favourable atmosphere for the entry of Private Sector in Higher Education.

The entry of Private Sector in Higher Education and withdrawal of financial support from the Government has resulted in increase in the cost of Higher Education. There is a fear that only the rich can afford the Higher Education.

Government Grants and Subsidies, Fees from students, Donations, Charities, Social Responsibility Scheme funds from corporates, Education Loans etc. are generally the sources of finance for Higher Education. With the withdrawal of financial support from the Government for Higher Education it becomes essential to find out an alternate source for financing Higher Education.

One of the alternative sources of financing Higher Education was recovering the cost from students in the form of Fees. It leads to starting various self-financing courses in colleges and universities. New private unaided colleges were set up. The result was Higher Education going out of the reach of middle class and poor students due to its high cost.

The Donations, Charities and the Social Responsibility funds of corporates were not enough to satisfy the requirement of funds to finance Higher Education. On the advice of the Government, Indian Bank Association (IBA) drafted Education Loan Scheme with the objective that no deserving student should be deprived of higher education for the want of money. The Scheme was launched in 2001. The Scheme was modified and revised from time to time to make it transparent and to remove the difficulties faced by the students and banks in implementing the Scheme.

Table 4 shows the increase in Education Loans and NPA from Education Loans during the period 2012-13 to 2017-18.

Table 4 : Growth in Education Loans and its NPAs

Particulars	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
Outstanding (Rs. in crores)	48382	59834	62244	68133	72818	72839
NPAs	2615	3439	3385	5006	5339	5939

Source:https://indianexpress.com/article/business/banking-and-finance/education-loan-flat-growth-in-portfolio-as-defaults-rise-5320009/ accessed on 10.03.2019

The share of Public Sector Banks in providing Education Loans is more than 90%. The Private Sector Banks and Foreign Banks have not shown interest in financing the education sector. The Private Sector Non-Banking Finance Companies like HDFC Credila Financial Services Private Limited and Avanse Financial Services Limited are financing only for Higher Education and they are showing growth in Turnover as well as profitability.

Statement of Problem

The Government's withdrawal of financial support to Higher Education and the entry of private sector in the field of Higher Education has increased the cost of Higher Education. For the middle and poor people only remedy left out was to resort to Education Loan for financing their higher education. It is necessary to ascertain whether there is a demand from the economy for so many higher educated youths for the education which they are undergoing. The pace at which the students are enrolling for higher education should have matching demand from the economy.

The increasing cost of Higher Education will take Higher Education out of the reach of middle class and poor class students. With the objective of providing financial assistance to the deserving students, on the advice of the Government, the IBA drafted the Education Loan Scheme. The Scheme is implemented by the member banks. The success of the Scheme depends not only on deserving students getting the Education Loan but, on their earning, enough income after completing Higher Education and repaying the Education Loan.

Objective of the study

To study the employability of the student pursuing Higher Education.

Review of literature :

- Varghese, M. (2019, November 11-17). Employability and Entreprenureship in Higher Education Programme. *University News, 57(45),* 12-24. Employment depends on the demand side whereas employability depends on supply side. To improve the employability of the students, the author suggested strategies like developing innovative curriculum for Higher Education and restructuring or modifying existing curriculum wherever it became irrelevant. Providing the knowledge and skill of entrepreneurship can solve the problem of unemployment.

- Chaudhuri, B. (2019, November 11-17). Employability and Entreprenureship: A Fusion off Reality and Uncertainty. *Uniiversity News, 57(45),* 30-33.There is an imbalance of jobs in the market and number of students getting degree certificates from the Universities. The student needs new set of skills to get employed.

- Anandkrishnan, M. (2019, November 11-17). Employability and Implications for Higher Education. University News, 57(45), 34-36.The employability and job performance need certain skills. The Higher Education Institutes should introduce subjects on employability skills either as a compulsory or as an elective subject. Industry internship should be made mandatory for students. The teachers should be trained accordingly to impart employable skills to the students.

- Raghavan, H. (2019, November 11-17). Developing Employability and Entrprenureship in Higher Education. *University News, 57(45),* 47-50.The Higher Education Institutes need to change its approach to courses of study. Apart from teaching the assessment methods need a change. Dissertations and practical can be introduced to assess the students which will give them the necessary experience.

- Verma, H. L. (2019, November 11-17). Developing Employability and Entrepreuneship as Cornerstones in Higher Education: Initiative at Jagan Nath University, Haryana. *University News, 57(45),* 51-53. The fastdeveloping country needs skill oriented youth. The Higher Education Institutes need to provide necessary knowledge, skills, training to the students.

- Dorairaj, A. J. (2019, November 11-17). How to make our curriculum Conducive to make students employable. *University News, 57(45),* 54-55.The Higher Education Institutes need to maintain a proper balance in the theory and application. The University should continue with knowledge based education whereas the colleges can pursue job oriented courses.

- Dwivedi, G. (2019, November 11-17). Enhancing Entrprenureship and Employaability through Education. *University News, 57(45),* 56-58.New educational programmes and disciplines are the need of hour. Tech proficiencies have become essentials. The benefit of science and technology should reach the masses. The students need to be encouraged for experimental learning.

- Chhaya Goel, D. G. (2019, November 11-17). Higher Education in India: Entreprenureship. *University News, 57(45),* 59-64.Education needs revival and rejuvenation. Need based programmes must be identified and introduced in Higher Education. Progressively the education system should aim at learner designed and learner driven pedagogy.

- Upinder Dhar, S. D. (2019, November 11-17). Skills and Employability- A challange for Engineering Institutions. *University News, 57(45),* 65-67.The engineering institutes need to focus on development of soft skills among the students along with imparting technical skills. The parameters of employment include these skills as essential for recruitment. These institutes need to work closely with the industry.

- Kulwant Singh Pathaania, M. R. (2019, November 11-17). A sustaainable Future: Role of Industry, Education System and Society in Creating the Workforce for Tomorrow. *University News, 57(45),* 68-72.Productive employment needs quality education with practical skill. The problem of employability is not only related to the education system. It needs to be solved by the joint efforts of education institutes and the industry.

- Gupta, M. S. (2019, November 11-17). Effective Skill Learning for Enhancing Employabilitty. *University News, 57(45),* 73-77. Indian education system need change in learning as well as evaluation skills. The objective of National Skill Development Policy needs to be attained with speed, quality and sustainability.

Research methodology :

The study was conducted on the basis of primary as well as secondary data. The primary data was collected by using structured questionnaires. The data was collected from the 325 students who have taken Education Loans from the banks and 40 Higher Education Institutes in Thane district. The sample size was determined with the help of statistical formulae. The responses collected from the students and higher education institutes were tabulated and analysed with the help of statistical techniques.

Hypothesis :

Ho : Higher Education provides adequate employment opportunities.

H1 : Higher Education does not provide adequate employment opportunities.

Data analysis:

Qualitative analysis:

Table 5 shows the analysis of the responses received from the 325 student respondents regarding campus placement on completion of study.

Table 5 : Campus employment from the perspective of students

Particulars	Strongly Agree	Agree	Disagree	Strongly disagree
Students get campus placement on completion of study	19	173	111	22

Source: Primary data

192 (59.08%) students responded that the students get campus employment on completion of study.

The Table 6 shows the analysis of the responses received from 40 Higher Education Institutes.

Table 6: Campus employment from the perspective of Higher Education Institutes

Particulars	Always	Mostly	Rarely	Never
Students get campus placement on completion of study	4	19	15	2

Source: Primary data

23 (57.5%) Higher Education Institutes responded that there is more probability of their students getting campus placement on completion of study.

The Table 7 shows the descriptive analysis of the responses received from 325 student respondents and 40 Higher Education Institutes

Table 7: Descriptive statistics:

Particulars	Students get campus placement on completion of study - Students perspective	Students get campus placement on completion of study-Higher Education Institutes' perspective
Mean	2.581538462	2.625
Standard Error	0.039112814	0.117055
Median	3	3
Mode	3	3
Standard Deviation	0.705116291	0.740322
Sample Variance	0.497188984	0.548077
Kurtosis	-0.070085432	-0.16797
Skewness	-0.371662368	-0.05613
Range	3	3
Minimum	1	1
Maximum	4	4
Sum	839	105
Count	325	40

Source: Primary data

The mean of Students getting campus placements on completion of study from Students perspective and from the perspective of Higher Education Institutes is 2.58 and 2.63 on 4 point scale.

Results & Findings

- Only 59.08% of the student respondents who had taken Education Loan for pursuing their Higher Education studies believe that Students get campus placement on completion of study.
- Only 57.5% of the Higher Education Institute respondents believe that Students who had taken Education Loan for pursuing their Higher Education studies get campus placement on completion of study.

Conclusion :

Getting the educated youth employed is a real challenge than getting the youth educated. Higher Education must produce the employable youth with the necessary knowledge and skills.

Recommendations :

- Higher Education studies must include practical training in the curriculum so that the youth will have necessary skill required for the employment.
- Higher Education Institutes should develop entrepreneurship skills among students.
- The Higher Education institutes should tie up with industries, banks to provide on campus employment opportunities to the students.

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An Investigation into the Awareness of Differential Learning Needs of Students among Pre-Service Teacher Trainees

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Abstract :

The Sarva Siksha Abhiyan (SSA) programme makes education a fundamental right that should be freely and compulsorily available to children including those with special needs between 6 to 14 years of age. Such reforms necessitates the development of teachers proficiency to address the challenges posed by inclusivity in education. It is known that a student's academic success is a direct reflection of the teacher's professional prowess. Students learning outcomes can be positively impacted if lesson planning is designed and implemented according to the learning levels of students. In Mumbai (Maharashtra, India) the teacher training is offered as a two-year degree course i.e. Bachelor in Education or a two-year Diploma in Elementary Education. Both courses mandate that prospective teachers complete an internship period. The Muktangan teacher training course integrates classwork with internship in Muktangan-mentored inclusive schools as part of the pre-service training. This is followed by two years of in-service training. Evidence indicates that the teachers whose pre-service training prepares them to deal with students requiring special educational needs are better equipped to positively impact the learning outcomes of such students.

The present qualitative research compares the perspectives and experience of prospective teachers from a reputed teacher training institute with those from the Muktangan teacher training centre. Curriculum followed by both training centres is also investigated. The authors recommend certain good practices from that the Muktangan teacher training curriculum to strengthen the current B.Ed. course, that will not only equip teachers to deliver content with versatility and fluency but also develop skills in planning and implementing in ways that will help students reach their maximum potential.

This study discusses the importance of integrating teacher training with schools and an internship programme for prospective teachers in inclusive schools to prepare them to deal with challenges of working with students with diverse learning needs.

Keywords: Teacher Training, Pre-service Teachers, Learning Needs, Inclusion.

Introduction :

Government of India's Sarva Shiksha Abhiyan (SSA) is a programme, driven towards achieving universal elementary education. Through the programme, the government institutes education as a fundamental right that should be freely and compulsorily available to children between 6 to 14 years of age *(Sarva Shiksha Abhiyan Government of India, All India Council for Technical Education,* 2017). Ten years after the RTE Act's implementation, India now has over 90% of children in the age group of four to eight years enrolled in some type of educational institution. In Mumbai (Maharashtra, India), the teacher training course is offered as a two-year degree course i.e. Bachelor in Education (B.Ed.) or as a two-year Diploma in Elementary Education (D.El.Ed). The diploma course is designed to train prospective teachers to develop skills required as subject-teachers in language, mathematics science and social science (Bharti, 2016) up to middle-school certified by the designed by Maharashtra State Council of Educational Research and Training (M.S.C.E.R.T.) *(Maharashtra State Council of Educational Research and Training, 2020).*

State governments are working in tandem with the central government to cover close to 200 million children under the ambit of the SSA. Therefore, to accomplish it, government-run schools need to include children with varied developmental and cognitive needs. There is an urgent need for school

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authorities to recognise the different learning levels of students within the classroom and likewise for the teacher training curriculum to be re-designed to mentor trainees to be versatile and address this emergent need.

Pre-service teacher training in Maharashtra

Student's academic success is a direct reflection of the teacher's professional prowess (Hanushek, 2011). Teacher competency plays a vital role in provoking efficient and effective learning from the learners (Markley, 2004). Learning outcomes can be positively impacted if lesson planning is designed and implemented according to the learning levels of students. This design will help in developing a positive attitude and also reflect in an increase in academic scores of students (Hanushek, 2011).

Teacher training courses are aimed to equip prospective teachers (referred to as trainees henceforth) with personal and professional skills needed in schools and other teaching-learning contexts *(Pre-service teacher training, 2011).* Trainees are student-teachers enrolled in these professional courses. The course curriculum, both B.Ed. and D.El.Ed. is designed to empower trainees with programme skills, work culture, professional competency and they are simultaneously entrusted with an opportunity of real-time classroom exposure to understand the link between theoretical concepts and practical experiences and prepare them to work in public and private schools that cater to the general public. In the state of Maharashtra, the trainees enrolled in Bachelor in Education (B.Ed.) follow a two-year curriculum designed by the National Council for Teacher Education (N.C.T.E). The course framework is summarised later in the paper.

Muktangan Schools and Pre-Service Teacher Training

The Muktangan Education Trust works with the under-served communities in central Mumbai and mentors seven English-medium municipal schools under the Mumbai Public School scheme and affiliated to the Secondary School Certificate Board (Maharashtra State Board of Secondary and Higher Secondary Education, Pune). Muktangan schools are inclusive, with over 10% of students identified with some form of learning difficulty by the Learning Resource Group Department (internal communication). Muktangan-mentored school teachers follow the active-constructive pedagogy and use the dual-language approach as a medium of instruction. The schools cater to students belonging to varied levels of socio-economically disadvantaged conditions, housing environment, linguistic and ethnic backgrounds.

MTTP is a three-year programme based on D.El.Ed course, consisting of one-year pre-service (foundation course) for 36 weeks of an academic year, followed by two years of in-service training in Muktangan mentored schools. MTTP focuses mainly on the topics of different philosophies in education, child development, learning and cognition, development of curriculum content knowledge and pedagogy, understanding the relation between teacher-learner-society, pedagogy of different subject languages, foundational skills in mathematics, English proficiency, basic health sciences, physical education, conduction of library sessions, information and communication technology training, and development of performance arts skills.

A Muktangan classroom has several designated resource areas. Especially the classrooms for students of grade one to four have areas marked as a quiet area, block area, and others. For students in grades one to eight, each core subject has a designated classroom separate for elementary and middle-school level. Each room has a subject-specific resource cupboard, IT equipment, audio system, three chalkboards and bulletin boards, around three walls to display children's learning outcomes and has charts and models displayed pertaining to the subject. Students grade are grouped according to their different learning levels and needs. Each group has a teacher assigned who is trained to plan according to the emergent needs of the group. Trainees from the MTTP observe and teach students from any one of these groups twice a week during their course as an ongoing internship. Thus, the MTTP offers an integrated model of teacher training and classroom experience.

Learning Needs and Inclusivity

Inclusivity is now globally regarded to be the norm in schooling (Ainscow et al., 2006) and schools are perceived as places to educate and include students with diverse needs in the least restrictive learning environment. Implementing the inclusive approach in schooling, worldwide, is imperative if we are to achieve the sustainable development goals in education by the year 2030 *(Education 2030: Incheon Declaration and Framework for Action for the implementation of Sustainable Development Goal 4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all, 2015).*

Different learning needs of students may emerge from time to time. To address this, teacher training and teacher professional development should be designed not just to equip the teacher to deliver content with versatility and fluency but also to develop their skills. This will develop a mindset in teachers helping them in planning and implementing various ways that will help learners in reaching their maximum potential. However, there is yet no evidence that suggests pre- or in-service teacher professional development could improve academic scores of students with special education needs. There is also a paucity of data linking the training of teachers to the improvement of student outcomes. Nevertheless, it is imperative that teachers be abreast of their student's learning needs. Dellinger et al., (2008), defines self-efficacy beliefs of teachers as a belief that they know how well students learn and the level of influence they exert on their students learning in a specified situation. Evidence indicates that the teachers whose pre-service teacher training course prepares to deal with students requiring special education needs are better equipped to positively affect their learning outcomes (Feng & Sass, 2013).

Rationale of the Study

In 2007 Maharashtra reported the lowest gross enrollment ratio (GER = 101.830) (India | Gross Enrolment Ratio: Maharashtra: Primary School | Economic Indicators, 2016). However, the implementation of the RTE in 2009 and SSA nationwide should have led to a surge in student enrollment in schools. Currently, in the state of Maharashtra, there are over 1150 municipal schools. of which in Seventeen are for specially challenged students and 68 are listed as Mumbai Public Schools that teach till grade 10. These schools admit over 200,000 students yearly. Additionally, Mumbai has 412 private primary schools aided by the government (Civilian dairy 2020, Annual publication year 42), 2019). Maharashtra has 552 government-aided B.Ed. colleges (Recognize institutions of WRC course-B.Ed. State = Maharashtra, 2018) and 1020 government-aided D.El.Ed colleges (Recognized list of D.Ed. Course, 2017). However, the Economic Survey of Maharashtra (2017-18) revealed that enrolment of students at the primary level in Maharashtra has been sliding (Qazi, 2018). Likewise, the Education Development Index (EDI) of the state has also declined in both the primary and upper primary level, as per the latest available report (2011-12). A later report was not available to the researchers during the writing of the manuscript, but a news article in a newspaper reported that the state fared miserably nationwide, ranking 31st in primary school enrollment and 28th level in the upper primary with regards to access to education in 2013-14 (Shinde, 2014). However, a recent report released by the state government indicates an improvement in student enrollment and teacher recruitment along with a decline in student to teacher ratio (Economic Survey of Maharashtra 2018-19, 2019; Tandon, 2018).

If this apathy has to change, the state not only needs to build new schools to increase accessibility, improve infrastructure and resources but besides accommodating students belonging to socio-economically disadvantaged conditions, also need to include students with different learning levels and needs, so that the SSA is implemented in its truest intent. Additionally, regular public and non-government or private schools in the state would also need to become inclusive, acknowledge the different learning levels in the same classroom and address the differential needs. In lieu of teacher professional development, pre-service and in-service teacher training should be perceived to be indifferent from each other. It is recommended that it be conducted over a period of time and in a range of different settings, providing teachers, a diverse learning

experience to address the foreseen and unforeseen challenges and emerging needs of students (Pre-service teacher training, 2011). Considering these circumstances, it would be imperative to understand whether the teacher training curriculum as well, sensitises trainees to acknowledge the different learning levels of students in the same classroom and equip them to address their differing and emergent needs.

Objectives of the Study

In the present qualitative research, the researchers investigate, if modules in the present Muktangan Teacher Training Programmes' (referred to as MTTP henceforth) curriculum can be recommended to strengthen the current B.Ed. course, and whether this could address the foreseen need for empowered teachers to work in inclusive classrooms with students at different learning levels. To deduce to this proposition the present research investigates the following :

1. Are the trainees equipped to conduct classroom sessions with students at different learning levels?

2. What modifications to the lesson plan, if any, do they make to ensure better learning outcomes?

3. What do trainees think about factors that affect students' academic progress?

4. What do trainees perceive as a better method to monitor and evaluate the progress of students they teach and/ or observe?

Methodology

The study was devised to answer the following research question: Is there awareness about different learning levels of students in the same classroom, among trainees? Investigating their perspective and preparedness to address the different emergent needs was also the underlying aim of the study.

1. Data Collection

a. Demographic data and other details were collected through a form that was administered online.

b. Interviews: This study explores teachers' awareness through a semi-structured interview approach using a questionnaire instrument designed by the researchers. The questionnaire was designed to assess the general attitudes and awareness of the trainees toward different learning levels of students. The interview method for data collection was appropriate because it gives teacher-trainees an anonymous way of voicing their attitudes and perceptions related to lesson planning, classroom problems and awareness about the students' different learning levels. The results of the study were analyzed on the basis of the grounded theory of qualitative research.

c. An attempt was made to introspect the curriculum of each course to highlight whether they attempt to address the presence of different learning levels among students.

2. Participants of the Study

Purposeful sampling method was selected to include study participants. These were pre-service trainees from the MTTP and a teacher training institute in Mumbai that is affiliated to Mumbai University who were doing their internship in Muktangan-mentored school at the time of the study.

3. Consent

Oral permission was first obtained from the respective training centre heads to consent to be part of the study. Thereafter, each participant was explained about their voluntary participation and purpose of the interview. Consent was obtained on paper to which the participant and a research team member are signatories. A copy of the consent document was given to the participant and one has been retained by the research team.

4. Data analysis

Each interview has been transcribed, coded, thematised and analysed qualitatively by the research

team. Data obtained from the online survey is summarised and presented. The course content (theory, assignment, internship, field visits, and projects) of each is discussed.

Interview responses were analysed using codes and themes. Data was coded and prepared for analysis using the R package for Qualitative Data Analysis (RQDA) (Huang, 2018). Qualitative responses were analysed by means of content analysis, that included data reduction, data display, and conclusion drawing or verification phases (Miles et al., 1994). Recorded interview sessions were transcribed for analysis. Data reduction activities included coding to represent, classify and organize data under pre-identified categories and themes. Conclusion drawing and verification require researchers to draw meaning from the displayed data. This final phase included noting comparing and contrasting, clustering, triangulation, and propositions. A synthesis of the collected data was reviewed and discussed by the researchers.

The interview questionnaire probed the following themes:

- Personal strengths recognition by the prospective teacher.
- Process of lesson planning and topics-focused during lesson planning.
- Challenges faced by the teacher in the classroom.
- Role of the teacher training programme in grooming trainees.
- Awareness among teachers about different learning needs.
- Trainees' perception of factors that affect the academic achievement of students.
- Modification to lesson plans to cater to students with special or differential learning needs.
- Practices perceived by trainees to improve students' scores.
- Practices perceived by trainees to efficiently monitor student progress.

Results of the Study

Sixteen trainees 10 were from the MTTP and six from a government-aided teacher training centre in Mumbai-participated in the study.

1. Demographic Data Collection

The age of Muktangan trainees ranged from 18 to 42 years, while that of trainees from the other teacher education institute ranged between 22 to 33 years. The MTTP enrols candidates with a minimum qualification of the higher secondary certificate (HSC) while one can pursue B.Ed. only after completing their Bachelor degree. The highest qualification of participants from both training centres was a postgraduate degree (Master in Education).

None from the MTTP received subject-specific training and expressed comfort in teaching grades first to fourth. Conversely, trainees from the other training institute wee expected to select their preferred subjects (namely: Mathematics, English, Science, other languages and Social Science). These trainees expressed comfort with teaching at the middle school level. All trainees from MTTP do an internship in Muktangan meored schools at the elementary level twice a week for 36 weeks, while those from the other institute do it at the middle school level five and a half working days a week for three months in their third semester. These students are required to fulfil other internship requirements as mandated by their curriculum in each of the four semesters. All survey participants have observed class-groups of under-performers and high-performers.

2. Interviews

Responses of all participants have been discussed under the themes listed below.

I. Personal Strengths Recognition by the Prospective Teacher:

Muktangan trainees fell short of identifying their strengths (in terms of professional skills) despite the fact that they were in the seventh month of training having completed about 50 days (400 hours) of

internship integrated with about 25 weeks of coursework. The other trainees identified their strengths in 3 areas: Most identified communication with the students, while creativity, versatility and confidence were the other skills they could identify themselves with. One prospective teacher said, “I go beyond the textbook and I try to teach in a way that is interesting for the students”. Another expressed the need to be able to switch to different methodologies as per the need of the students to sustain their level of interest. Recognising this need she said, “I switch to different methods, so that's one of the strengths (I take to my class)”.

ii. Process of Lesson Plannnig and Focus Area during Lesson Planning

While most Muktangan trainees expressed the need to spend at least a week on lesson planning, none of them directly mentioned focusing on active-constructivism while planning lessons. The trainees from the other institute said they required less than a week for planning and none spoke about focusing on active-constructivism while planning lessons as well. Overall, it was noticed that Muktangan trainees focused on 'inclusion' and differential instruction during planning. Although, just two participants mentioned upfront about focusing on child-centric activities. Muktangan trainees, on the whole, focus on planning activities appropriate to keep students constantly engaged and on the overall structure of the lesson plan i.e. including schema activity, activities to introduce concepts from those known to unknown, reading, recording, formative assessments and others. A prospective teacher is quoted saying “Yes activity should be there, students learn only through activities. *I think that active-learning is very important for the children because it gives them practical knowledge (to build their concepts)”.*

Two among these had not begun planning for lessons yet, at the time the interviews were conducted. One of the trainees said that she focused on assessments for learning, while two said they focused on child-centric activities. In this context, a prospective teacher can be quoted saying “ *(at times) I begin with a story. Students listen to the story first, it attracts them and it is easy to understand. Like when I teach addition with the help of a story, the students understand better and then I teach them through numbers.* Although trainees from the other institute stressed focusing on the overall structure of the lesson plan, their focus on child-centric planning and differential instruction were not evident in their responses.

iii. Challenges Faced by the Teacher in the Classroom

All trainees stated behaviour issues affecting classroom management among the prime challenges they face in the classroom. Among other challenges, three Muktangan trainees mentioned that the limit of 45 minutes of classroom time posed a challenge to execute and implement the complete lesson plan. trainees from Muktangan and from the other institute also mentioned language (to communicate with students) as a challenge. Few trainees from the other institute additionally state lack of infrastructural problems such as unavailability of information and communication technology as a challenge.

iv. Role of Teacher Training Programmes in Helping Trainees

All Muktangan trainees stated that the training programme was beneficial in providing teaching experience. They stated that more specifically, the training helped in identifying and in dealing with students who have special learning needs in a better way. One prospective teacher is quoted saying “subjects such as Inclusion, Child Development and School Curriculum, Learning and Cognition are beneficial as they provide an understanding of the learning needs of the child”. Some trainees even stated that the training helps them in understanding different classroom situations and teaching methods or pedagogy, while few also mentioned that it equips them with an understanding to implement differential learning strategies in the classroom.

All but one prospective teacher from the other institute stated that in general, the training programme benefits them. Some credited the training received to help in better management of classroom situations. On the other hand, stated that the theory taught does not connect with the practical experience they received during the internship and that the training did not focus

on child-centric pedagogy. One of the trainees clearly stated that they did not find the training very helpful. She is quoted saying *"To be honest, ...what we learn through theory in our college is way different from what we face (in internship). It is incomparable. You might be learning about a child's psychology, but that is not exactly what the child is showing in the classroom. So sometimes it's not that helpful when we are actually going there (during the internship) and dealing with the children (in the classroom). I think that it (internship) would be more helpful than learning B.Ed. in a four-walled classroom in a B.Ed. institute. Yes, we get to know many concepts about education, but if you talk about children, in particular, I think that's not what we are learning about in a B.Ed. college".*

v. Teacher Awareness about the Different Learning Needs of Students

Muktangan trainees were aware of the different learning needs and different learning abilities of students. These respondents credited the training programme for developing their ability to identify students with special needs or different learning abilities. Routine classroom observations during the internship were identified as the key component for such capacity building. One of the participants replied saying, "There are three groups A, B and C and the learning levels are different for each. For the C group child, I observe, I can see progress only because I observe him and am there observing him from nine to four twice a week".

The trainees from the other institute expressed that just the exposure during the internship was not sufficient to build their capacity to identify such students. Just two among those interviewed were aware of differential learning needs of students. Few others mentioned that they would consider students who repeatedly ask questions as those who might have some learning disabilities.

vi. Factors that Affected the Academic Achievements of Students

Muktangan trainees and those from the other institute regarded classroom teaching and teacher's pedagogy to have the most influence on the academic achievements of students. They regarded home-work, classroom participation, and teacher appreciation to be of lesser importance.

vii. Documenting and Modifying to Meet Learning Levels

Apart from those trainees from MTTP who had not yet begun preparing lesson plans (about 25%), all documented their plan on paper. All participants required a week to prepare lesson plans. It was also evident, during the interviews that since they were at the beginning of their professional careers they could not sense an exact estimate of the time required or planning lessons. Most Muktangan trainees (60%) admitted to receiving guidance on lesson planning from their assigned mentors. While one of the trainees stated that she did not feel the need to modify her lesson plan to cater to the different learning levels of students, rest of the trainees were willing to modify their plans but did not feel fully empowered to do it independently at the present stage, for lack of experience. The teachers were aware of modifications but mentioned that these were generally recommended by their mentors. One prospective teacher could be quoted saying "suppose a child is unable to write a letter, then the teacher can introduce it through different activities like drawing some figure on the floor or with pebbles or counters".

All trainees from the other institute acknowledged that they document their lesson plan and would require less than a week to prepare it. Although half the number of these acknowledged that they need a better understanding of the concept of differential learning levels of students in a classroom to empower them to make subsequent modifications in their lesson plans, just one prospective teacher revealed to be taking guidance from her mentors. All agreed that they would modify their lesson plans if needed. A prospective teacher expressed "we do try to modify it because we have been taught in our B.Ed. that whatever you teach should be kept applicable for each and every child sitting in that classroom, that is the first thing". Two trainees also claimed that their present format of lesson planning has provisions to accommodate modifications to address the differential learning needs of students in the same classroom.

viii. Practices Recommended by Teachers to Improve Students Score

Among the more prominent strategies suggested for the improvement of student scores were the use of child-centric strategies such as classroom activities to keep students constantly engaged, using flashcards for English language and counters for Mathematics. Trainees also said that it was important to give students one-on-one attention and be flexible in modifying the lesson plan as per the emergent need of students as a strategy to improve students' scores. Parent engagement strategies in the child's academics and other activities received the least focus, while trainees also suggested giving homework as practice, for concepts that students may be weak in and strategies to develop self-motivation.

The trainees from the other institute recommended that it was important to first identify the level at which students in the classroom are, before implementing strategies. Among the practices, they suggested the use of remedial classes, modifying teaching styles to the level of the student and introducing activities as per the students learning level to ensure they are engaged, should be given priority.

ix. Practices Used by Teachers to Monitor Student Progress

All Muktangan trainees stated the use of formative assessment to monitor students that included giving tasks or activities at regular intervals and observing their progress. Similarly, most of the trainees from the other institute stated the use of a continuous formative assessment with similar implementation to what Muktangan trainees had suggested. However, one prospective teacher emphasized the use of summative assessment to monitor student progress.

3. Curriculum Introspection

The other institute adopts a curriculum prescribed by the University of Mumbai and will be referred to curriculum two (C2) throughout the rest of the manuscript. The Muktangan website endorses 'quality education' as one of the United Nations Sustainable Development Goals it aligns with (Guidelines for Inclusion: Ensuring Access to Education for All, 2005).

The training programme aligns with the curriculum prescribed by the National Curriculum Framework for Teacher Education, 2009 for the D.El.Ed course. The Diploma in Elementary Education (D.El.Ed.) is a two-year certificate level teacher training programme designed by the State Council of Educational Research and Training, India. This programme caters to elementary education teacher training. The minimum qualification required to enrol is a 12th-grade qualification in any stream from a recognised board with minimum 50% marks aggregate. The curriculum is designed to train trainees to be more reflective, versatile and effective teachers. The syllabus gives the trainees a brief knowledge in the subjects of child development, psychological perspective of education, education and society, curriculum pedagogy and evaluation, school leadership and management, educational technology, language education, mathematics education, social studies education, environmental education, health and physical education, work education, art in education. The syllabus also mandates internship of almost nine weeks in primary school *(Diploma in Elementary Education (D. El. Ed.) Curriculum and Syllabus Outline, 2014).*

The preservice training programme emphasizes the engagement of trainees with classroom routines with the objective to integrate knowledge to practice. Since the teacher training curriculum that is followed by the training centre was not available on the website, it was obtained from the head of the teacher training centre as personal communication. Our observations and reporting are based on a copyright reserved document titled “Teacher Education Curriculum Outline, Muktangan Education Resource Centre (MERC) - June 2015”. The curriculum has been redesigned to a 3-year integrated teacher education programme focused on training trainees from the underserved communities that the organisation caters to. The MTTP's curriculum entails papers such as 'Educational Beliefs and Understanding', 'Child Development', 'Learning and Cognition', 'School and Cognition', and 'School Curriculum and Pedagogy' that distinctly aims at educating the prospective teacher about how children learn, philosophies in education, helping them construct a more holistic view of learning and cognition, to help them understand the

significance of developmentally appropriate learning environment so as to equip them to design inclusive learning environments suited to the diversity of interests, learning styles and needs of students from elementary to middle school. Although the curriculum doesn't mention, it was conveyed internally through personal that the training centre has introduced a paper on inclusion (34 sessions) to keep trainees abreast with the changing dynamics of contemporary school classrooms. The curriculum endorses the integration of knowledge with classroom practice. Essentially, every prospective teacher does an internship two days a week (16 hours weekly) in a Muktangan-mentored school, while in-service teachers attend curriculum understanding and design meetings (1.5 hours) weekly alongside regular school duties.

Curriculum 2 (or C2) is a 2-year credit-based curriculum prescribed by Mumbai University with effect from the academic year 2017-18. In the first year, the focus is on topics of child development, contemporary education in India, pedagogy of school subjects, development of curriculum content knowledge, learning assessment and teaching. Whereas in the second year the focus is on learning the pedagogy of subjects selected by the students, understanding the applications of information and communication technology, educational management, creating an inclusive school, gender school and society, language across the curriculum. The course also mandates that students conduct activities like literacy awareness programmes in the community, organise co-curricular activities in school, maintain a reflective journal on internship activities and school-based action research *(Syllabus for Bachelor of Education (B. Ed.) Programme, 2016).*

Discussion and Conclusions

The MTTP enrols younger candidates as the academic prerequisite is passing the higher secondary certificate (HSC) examination. The B.Ed. course enrols only those aspirants who have successfully completed their bachelor degree in either the humanities, commerce or the science stream or more. Hence, it could be inferred that trainees from MTTP may have strong content knowledge, except for those who have a higher degree of academic qualification. To overcome this, Muktangan trainees attend weekly curriculum understanding and development meetings and subject-specific pedagogy modules, as part of their in-service training. The B.Ed. curriculum offers trainees a choice of elective papers in their field of specialisation. This could be the reason why trainees from the other institute confidently expressed a preference to teach higher grades while those from Muktangan expressed more comfort teaching in primary school students.

The analysis of the interview data revealed the pros and cons of both the training programmes. For the different themes probed, all trainees had similar strategies for most themes. However, there were some key differences in dealing with certain situations in the classroom. These are discussed below.

The underlying objective of a teacher training programme is to groom trainees with skills mandated by the teaching profession. The curriculum design and its implementation i.e. classroom learning integrated with practicum likewise provides trainees, an opportunity to gain knowledge and develop professional skills. Developing expertise in the content may be considered secondary to skill development. All study participants did an internship in Muktangan schools. While Muktangan trainees did it twice a week throughout the duration of the course, those from the other institute did their internship daily for three months. Integrating theory with practise not only gives trainees professional exposure but also helps them identify their strengths and areas for development, grooming them to be full-fledged teachers. Despite this, the Muktangan trainees fell short of identifying personal strengths, while those from the other institute were better able to project the strengths they would bring to their classroom as a teacher. They mostly identified their strengths as communication with students, creativity, versatility and confidence. This regardless of the fact that the course curriculum focuses on building pedagogical skills, self-development and understanding the teacher, learner and society perspectives with regards to school education.

All Muktangan schools are inclusive schools. An internship at Muktangan provides prudent exposure to trainees to deal with students at differing levels of

cognitive and non-cognitive development in classrooms. However, in the areas of lesson planning, there was a stark contrast between the areas of focus of the trainees from the two institutes. The study revealed that most trainees had no specific focus on actual learning levels of students while planning a lesson. While the trainees from the other institute were aware of inclusion in schools, their focus was mainly on the structure of the lesson plan. While differential instruction was not prioritised. Muktangan trainees, in contrast, focus more on including child-centric activities and on the inclusion component of their lesson plan. However, it is evident that trainees were not well aware of tracking student progress to understand their variable learning needs in the specific subject and that their lesson planning to address different learning levels was limited only to students with learning or physical disabilities.

It must be noted that the trainees from the other institute were trained to handle classrooms with student strengths of 40 or more. This circumstance may restrict teachers to give one-on-one attention to students. This could be the reason why their focus was more on the structure of the plan rather than the needs of the students. It must be also noted that schools focus on summative assessments (or end semester exams). Therefore teachers strive to complete the syllabus in the fixed time permitted in the time-table rather than cater to the learning needs of students. Hence, the focus is often shifted from understanding to that of performing well in examination. A similar situation was seen in USA, where the implementation of No Child Left Behind Act (2001) and the linking of teachers' salaries and merit with students performance in standardised examinations had a direct impact on the manner how teachers deliver instructions in classrooms. This led to the practice of rote-learning and memorisation. This led to teachers moving away from constructivist lesson design to a more teacher-directed traditional instruction regime, abandoning their efforts toward student-centred pedagogy (Causton-Theoharis et al., 2008).

All trainees prepared their lesson plan at least a week prior to their session. This permitted them time to seek guidance from their mentors. Almost all trainees from Muktangan were also aware of learning outcomes and active-constructivism. There were few trainees who mentioned incorporating extra activities or worksheets for students who performed well in class.

Newly appointed teachers find it an uphill task to concentrate on important areas of long term planning, and overall student development in the early years of their career. This is probably because newly appointed teachers are given the same level of work as experienced teachers. New teachers generally face challenges such as managing behaviour issues and diverse needs of students, time constraints and workload, and conflict with parents and other adults (Fantilli & McDougall, 2009). One must also acknowledge that students in municipal schools are from diverse cultural and linguistic backgrounds. There is sometimes a mismatch between the way teachers teach and the students' preferred way of learning (Byram & Kramsch, 2008). This diversity could be a compounding factor to this mismatch. Hence it is of no surprise that all trainees mentioned language as another challenge they face in schools. Mohanty et al., (2009) have shown that most of the minority children are admitted in dominant language classrooms that may negatively impact their native languages acquisition. Schools often impose homogenisation and standardisation of language of instruction and communication. At Muktangan, although English is the official language of instruction, teachers are given the freedom to use local languages whenever the need arises.

In this study, all trainees also viewed behaviour issues to be the biggest challenge in the classroom. Additionally, those from the other institute also sighted infrastructure issues like non-functioning of computers or non-availability of smartboards. However municipal classrooms in Mumbai, including Muktangan are now ICT equipped. Besides, Muktangan science classrooms at the middle school level are equipped for blended learning. Muktangan trainees felt that developing a stronger student-teacher bond was effective in overcoming challenges faced in the classroom, while infrastructure issues did not seem to hinder their work. While they also shared that they receive help from their mentors.

Teaching more than one student presents problems of

sustaining students' attention, giving individual students opportunities to respond, provide feedback to students' responses, monitor students' learning, and to deal with disruptive behaviour in a classroom(Twyman & Heward, 2018). An internship at Muktangan mentored schools provides trainees, an opportunity to observe and teach students with different learning needs who are categorically grouped in the same classroom according to their learning levels. This helps teachers identify their learning styles and specific learning requirements of students within a particular group. However, trainees admitted that they are unable to teach students with extreme learning difficulties as they were not trained to handle them. It is evident that the internship helped the trainees build an understanding about inclusion and they were aware of the requirements of students with special needs, whom they generally refer to as 'special kids'.

All trainees also faced problems regarding student behaviour issues. Muktangan trainees also reported that the time limit of 45 minutes for each session was a constraint for the effective implementation of the lesson plan. This could be attributed to student behaviour issues as substantial time is lost in classroom management. To overcome these challenges Fantilli& McDougall, (2009) have suggested quality mentorship for new teachers and decreased classroom time providing for better collaboration between mentor and new teachers to address challenges. Research suggests that if the individual issues are not addressed effectively mentors will not be able to guide effectively (Davis et al., 2006). In a stark contrast between the two teacher training institutes, the trainees from the other institute seldom sought guidance from their mentors while and after planning and implementing their lesson plan. While trainees at Muktangan were assigned a mentor each, at least 60% admitted receiving regular mentoring on lesson planning and handling classroom challenges.

The recent introduction of 'Sarva Shiksha Abhiyan' by the Government of India lays emphasis on inclusive education with a specific focus on students with disabilities (Inclusive Education for Children with Special Needs, 2019). Therefore, for the academic improvement of these students, teachers should be equipped and versatile in giving individual attention, delivering diagnostic measures and implementing differentiated instruction strategies (Saravanabhavan&Saravanabhavan, 2010). However, it is reported that pre-service teacher education programmes fall short of focusing on practical skills to teach students with different learning needs, including students with disabilities. This results in trainees having negative attitudes toward inclusion and lack confidence in dealing with such students. On the other hand, those who have completed special education courses face lesser challenges when dealing with such students (Sharma et al., 2009). Therefore it is imperative that trainees be trained to identify and teach students with learning disabilities. Systematic exposure in inclusive classrooms can improve trainees' attitudes and confidence in dealing with challenges that may arise while teaching such students. Thus teachers can design and implement plans that will impact their learning outcomes (Saravanabhavan & Saravanabhavan, 2010; Sharma et al., 2009). This is reflected in the results of this study. While most of the trainees from Muktangan were able to identify students with special needs or different learning abilities, they made necessary provisions to address these needs by consulting their individual mentors. The awareness of different learning needs of students and likewise the provisions to address these needs were limited in trainees from the other institute. This is because there is a special emphasis given for inclusion in MTTP's curriculum with an internship in inclusive schools. This was also acknowledged by trainees from Muktangan when asked about how the pre-service training programme helped them. The trainees from the other institute too stated that they benefited from the training programme but were not equipped to identify and address challenges in the area of differential learning needs. Their curriculum focused more on better management of classroom situations. This reflects the problem in most schools, that lean away from individual focused teaching as discussed earlier (Causton-Theoharis et al., 2008). These trainees received classroom exposure to such situations only during their internship at Muktangan. It must be noted that they were in the second year of training and had done internships elsewhere, earlier.

All trainees acknowledge the need to modify lesson

plans to better suit the learning needs of students, leading to an improvement in student scores. However, contrasting views were expressed by the two groups. While those from Muktangan recommended the use of child-centric strategies such as the use of concrete objects and simple activities, the others recommended remedial classes for such students. Literature indicates that many students find it difficult to understand isolated parts of a concept. However above-average students usually just depend on the completion of the syllabus rather than the teachers' explanation. Almost all schools have a rigid view of the curriculum, this prevents teachers from making modifications required to teach students with different learning needs. It is important to realise that knowledge cannot be passed intact from a teacher or book to a learner. Students need to construct new knowledge by following instructions that are guided by the constructivist learning method that helps enhance student engagement and learning. (Akpan & Beard, 2016).

With regards to monitoring student progress, most trainees from both the institutes proposed the use of formative assessments. The means suggested were informal in nature such as giving tasks or activities at regular intervals. This is in agreement with suggestions by Pijl, 1992, in which the authors report that evaluation should mostly have an informal tone and the results should remain within teachers' 'normal' programme of instruction.

This study highlights the importance of integrating an internship programme with the teacher training curriculum. Data indicate an urgent need for internship programmes in inclusive schools to prepare trainees to deal with challenges of working with students with diverse learning needs in a classroom. Besides, B.Ed. curriculum developers should also consider integrating internship in the weekly routine of the course rather than grouping it to specific periods within or towards the end of individual semesters. It also mandates upon a need for establishing a robust mentoring system wherein trainees could seek professional guidance on lesson planning and classroom strategies from experienced and seasoned mentors. It must be noted that though Muktangan emphasises on a robust mentor-mentee relationship for their trainees, just 60% of them actually received that level of mentoring. Besides, the MTTP's curriculum needs to include modules or integrate their existing modules with activities that will build, strengthen and identify key professional skills in trainees. Of immense importance is the outcome that trainees from the other institute felt that their internship pattern was not as helpful in grooming them to identify the different learning needs of the students in a classroom. A stark difference in the two internship programmes discussed is that at Muktangan it is periodic (i.e. twice a week throughout the course of the year) and not clustered toward any particular time. Another key outcome is the approach to lesson planning and classroom challenges. While a well-structured lesson plan is of utmost importance to a teacher, Muktnagan trainees additionally focus on child-centric activities and learner-engagement. Notably, certain papers offered by their curriculum and an internship in inclusive schools make it a unique and quintessential training programme for improving the quality of trainees.

One of the limitations of the study is the sample size. Apart from the limited number, there is an unequal representation in each group. However, the researchers have tried to include a maximum number of participants from each institute who agreed to voluntarily participate. Besides, a higher number of participants from the other institute and the inclusion of trainees from yet another institute following the same curriculum may have enriched the quality of data and given a broader perspective of the impact of the B.Ed. curriculum and internship on the awareness of trainees towards the diverse learning needs of students. The data available doesn't direct the researchers to identify a particular module or paper that may be suggested to B.Ed curriculum developers. However, it does highlight a need to introspect the curriculum in more detail. The study also falls short of actual inspection of a lesson plan and actual classroom session observations by the researchers. Instead, it completely relies on interview responses.

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