

Innovation in Teaching– “An Encouraging Environment for Education”



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ABSTRACT: The development of an economy is marked by its education system and the ability of teachers to bring innovative teaching methods. Innovation has been recognized as the primary strategy to attain a competitive edge in education. The current implications in education system have impelled institutions of higher education to build innovative teaching learning methods to enhance skill development and practical knowledge. The role of a teacher is indispensable in contributing to the success of a student. A teacher inspires, motivates, and imparts knowledge to the students by finding new and innovative methods that makes education simple and easy. Reinventing teaching methods and experimenting different pedagogical techniques in curriculum enhancement ensures the highest standards of quality in a student. Innovating teaching methods leaves a permanent mark of interest on the subject and the teacher. Visualising concepts and reciprocating the same is possible only through the innovative teaching methodology, as it draws curiosity and the potential to question on related topics. Innovative teaching methods set groundwork for skill enhancement and stimulates a zest to teach and learn. Development of new teaching learning methods leads to increased student efficiency and ensures a pragmatic approach of students to have a hands-on experience on practical cases. Case studies, group activities, practical classes, live projects, brain storming sessions are few of the teaching methods that gives students an opportunity to discover their potentials and develop critical learning techniques.

In consideration of the above concept a research is undertaken on “Innovation in teaching” to evaluate students’ perspective on innovating teaching pedagogy. This study will thus establish the importance of Innovative teaching methods among students.

KEYWORDS: Innovation, Teaching Methods, Skill Development, Teaching and Learning Sustainable strategies.

INTRODUCTION

With the speed of change and innovation happening around the globe there is a need to redefine and redesign teaching methodology amongst children to meet their skills and knowledge. Mr. Fred Swaniker mentions that to prepare the people for the future one must design an education system that is looking forward rather than backward. For this all educators must acknowledge that the world is changing and all of them need to adapt to the change to strengthen the generation with what is hand for them.

To meet the challenges of the present generation, teachers need to be constructive in understanding the possibilities of the generation that would be mastered by the development of technology. Innovation is a vital component that signals development and growth across various sectors. Education sector is no way is different from this. Industry and educational institutions need to work in collaboration so as to strengthen the student community with the knowledge and skill that will facilitate to the developments in the future.

Innovation in teaching learning helps a teacher to work with the potential to achieve great success. It redefines the need to produce a generation that is independent, confident, and innovative. Children are the backbone of the nation and the onus is on the teacher to develop skills and update their knowledge on what should be important for them and how they can see success in their future endeavours. When the child is taught with examples and a demonstration there is scope for better understanding and concept application.

Teaching is profession that creates a better tomorrow. Technology is not the only factor that creates innovation, Teaching methodology, innovative strategies and involvement by a teacher can seemingly create a difference in the attitude of a student. Bloom 1984; Cohen et al 1982 views that interest in discussion based learning in Artificial Intelligence in education is motivated by the human tutors who are successful in teaching and educating the students.

With this as the base, a study was conducted to identify the students’ perspective and opinion on Innovation in education. The level of acceptance of students in the innovative strategies adopted by the teachers, the opinion of students on the innovative methods in teaching learning process and the learning outcome of innovative strategies on the students are discussed as a part of the study.

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LITERATURE REVIEW

Brockbank and McGill 1998 opines that educators have an expectation of students' thought process and reflective practice . This indicates that teachers expect students to take up the responsibility to self learning. .

(Thierry Volery 2000) mentions in his research paper about the importance of technology and the role of technology in imparting education. He emphasises that success factors for online education are technology, the instructor, and use of technology. These factors are responsible for an uninterrupted teaching learning process. Teaching learning process will be success by the major role played by the teacher who will act as a catalyst and knowledge navigator.

Jorge Larreamendy 2006 argued that, to understand and identify the potentials and limitations of online education, one needs to address the issues of online education. He says that democratization, liberal education, and educational quality are the triangular points that may be an initiative to promote online education and also sponsor student scholarship.

Lee Harvey et al 2008 researched to identify a quality culture that can be a fundamental process of teaching and learning. He opined that enhancing the quality in culture will support development and improvement in processes.

Petlz (2008) explained that the source of information, clarity in speech, accuracy and comprehensiveness in knowledge demonstrates cognitive presence. Integration of facts and concepts will help to develop knowledge into learning.

Bailey and Card (2009) carried out a research to understand the effective practices for teaching learning. 15 online instructors whom had received South Dakota Board of Regents' ELearning Award was interviewed , and all of them opined that the importance of setting course goals, learning objectives, and expectations were a part of teaching learning process and shared eight pedagogical practices that they considered to be highly effective in practice: (1) fostering relationships; (2) engagement; (3) timeliness; (4) communications; (5) organization; (6) technology; (7) flexibility; and (8) high expectations

Brindley, Blaschke, and Walti (2009) through their research outlined strategies that foster a healthy teaching learning process. In their research they identified that readiness for group work; providing scaffolding for developing skills; establishing a healthy balance between structure (clarity of task) and learner autonomy (flexibility of task); nurturing the establishment of learner relationships and a sense of community development are all that factors that help to concrete a healthy relationship between the tutor and the student. Likewise a tutor must also actively monitor group activities and making indulge in providing group tasks by providing sufficient time for collaborative learning activities to increase student performance and participation.

Bailey & Card (2009). In their view, he identified that to foster good relationships and communication between teachers and the students it is important for the teacher to be empathetic to the students, have a passion for teaching, and willingness to help students succeed. Teachers need to also be attentive, responsive, and prompt in responding to emails and text messages. To do so, their practical strategies included “giving timely feedback on completed assignments, responding to written questions, communicating requirements, and informing students when they will be away”

Keengwe and Kidd (2010) identified cognitive tasks as an important aspect of online learning. He recognized that responding to questions, editing questions, thinking, reasoning, and analyzing information helps students to engage in rehearing and retrieving information in the process of online courses.

Yu Haiqin et al 2021 in their research paper on The COVID-19 pandemic has challenges for online teaching states that crises can facilitate teachers' efforts toward innovation in online teaching under certain conditions. In general, their research brings out the evidence that online education in pandemic fosters innovative teaching through the improvement of personal teaching efficacy and ICT efficacy, without differences of gender and teaching-age effect.

Vijayalakshmi M (2019) through her research states that teachers have to use different teaching methods and approaches for active participation and engagement of students. This would bring in a strong motivation for them to learn and explore. Modern pedagogical paradigms and trends in education reinforced bu use of ICT creates prerequisites of new approaches for active learning Online education is an upcoming platform where more courses would be introduced by educational institutions inducting more tutors. This platform will be witnessing eventually increasing number of student's participants to explore and gain knowledge through online platform. Therefore, future studies should be designed to obtain students' perspectives, especially those who are new to computer based learning. In addition, the study may also focus on this regard by levels of students in online education such as undergraduate and graduate level and by subjects and discipline (Anna Sun and Xiufang Chen)

Significance of the Research: A study on innovative methods of teaching is a prerequisite to understand whether the defined innovative methodology adopted by the teachers is what the student really want in the teaching learning process. Virtual mode of teaching alone would not fit into innovative teaching process. Innovation in education is beyond ICT tools and using virtual model to teach. Innovative strategies are ways to ensure that students outperform in academics and also act independently. It contains the tireless efforts of the teacher to adopt a teaching system that will suit the student and will help to create a positive environment to education and skill development. Hence with this motive a study was undertaken to understand student's perspective on innovative strategies in teaching learning process. The study also moves ahead to comprehend the role of pandemic in bringing innovative teaching learning experience.

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Research Objectives

1. To study the student’s perception on innovative teaching methods.
2. To study the relationship between innovation in teaching and innovative strategies
3. To study the impact of sustainable innovative strategies on the learning outcome.

Methodology of Research Research Hypothesis

Null Hypothesis: There is no association between innovative educations to students learning outcome.

Data Collection, Sample Size, and Limitations of the study:

Data Collection: Primary and secondary data was collected for the study. A structured questionnaire was constructed and survey was conducted to identify the impact of sustainable innovative teaching methods. Primary Data: Structured Questionnaire was prepared and validated through Reliability Analysis. The Cronbach’s Alpha Value is .951 for Items of sustainable teaching methods and learning outcome.

Secondary Data: blogs, websites and journals.

Sample Size: 265, Strata sampling

Limitations: Restricted to women students in institutions of higher education in Chennai city.

Measures

A questionnaire consisting of three scales was used in this study, namely, Strategies in Innovative education, Innovation in teaching and the Outcome of Innovative Teaching. The instructions of the questionnaire asked the women students to fill in based on their perspective and teaching learning experience over the previous two years of the Covid 19 pandemic (2020 to 2022).

Data Analysis Strategy

All data were analyzed using SPSS 21. The descriptive statistics Mean and Standard Deviation , One way ANOVA, Chi-square test , Pearson’s correlations between variables and Regression analysis of two variables were calculated using SPSS. The results were interpreted at 95% level of confidence .

Innovative Teaching Methods

Online Teaching Methods

Teaching learning methods have been providing opportunities for the students and the teachers in exploring new dimensions of teaching methodology. A teacher sets a challenge on her own in taking up new proportions of teaching learning balancing The challenge taken up by the teacher in bringing a new style and methodology in her own teaching methodology is a sustainable methodology to teaching learning practices. Online teaching methods have paved way for a sustainable development of the economy as the students are able to gain knowledge and connect themselves with the present.

Sustainable Strategies in Teaching

Strategies are a new norm in teaching profession. Generally teachers don’t use any strategy in teaching. They follow their own techniques in understanding the pulse of the students and students’ interest towards the subject. The teacher plays an ideal role in creating an interest and like for the subject. Of course there are students who prefer subjects otherwise also but what a teacher does to the student is indispensable. The teacher needs to visualize the impact of her teaching on the students’. This visualisation would give a better understanding and idea on how the students have perceived and observed the concept taught them. Sustainable teaching in itself is a process of fostering self-compassion and renewal in educators who support the growth and development of students. Sustainable teaching facilitates in creating and building an inclusive collaborative student community.

Sustainable strategies to teaching learning.

Technology in teaching

“Learning never stops and never stop learning” this is what education has been all about. Even when the pandemic hit the globe the only thing that never had a pause was the teaching learning process. The entire globe had to slow down and think of various strategies to move on. The only sector that did not pause but was active as before was the education sector. This does not mean that we never slowed down, but we were able to revive quickly and find a way to sustain and survive even in the pandemic. Digitalisation was the major source that supported the teaching learning process. Technology’s support and quick integration of teaching to technology diversified the scope of continued education. Thanks to Internet and supportive technologies that helped in creation of classrooms and online meet to connect with students and continue the teaching learning process. This technology has helped in motivating the students to go in a self-paced manner to understand and learn.

Promotion of self-learning

Learning process starts with identification and understanding of one’s need to gain knowledge. In this process, promoting self learning has been identified as an innovative sustainable teaching. Self learning promotes students to garner information filters and retains them. Search engines lend a helping hand in finding answers to various topics taught in the class. Students can gain more knowledge through browsing and get deep into the concept through self learning process. Assignments and open ended question help them to explore and learn more. Self learning facilitates in critically thinking and analysis.

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Organising self and group learning

Students learn to organise the way the assignments are given to them and they know how to put things in track according to the need. That is how innovative education has helped. Group learning motivates children to work as a team understating the way others work and children are helped to identify their strength and weakness. Leadership quality is developed only when people work as a team and hence this kind of increased participation in learning is done through innovative teaching methodology. The aid to innovative learning is technology. The benefit provided by technology can never be compromised. Technology has been a boon to the current education system. Learning in small groups provides students to explore opportunities and articulate ideas and better understanding on the given topic of study. It helps students to uncover assumptions and misconception of the topic for discussion and gives them a clear idea of what has to be done with the specified topic of discussion.

Group learning enables students to discover deeper meanings in the content and improve on judgemental skills. There is also a motivation to perform better in group learning. This enables children to share ideas and perform better than other groups.

Discussion and case based learning

Discussion based learning is a sustained strategy to increase student participation in the classroom. Only through group learning and case study discussion students get a motivation to participate in the class and express their views about a related case. Case studies are often considered as a tool to student participation and learning. A case is always an example of a concept explained and hence students are given the opportunity to identify the case with its inferences to the given topic. Some case studies are reviewed with a swot analysis expressing the strength and weakness of the case and understanding the opportunities and threats. Case studies are real life examples that the students are able to related and examine in the course of their study.

Project based learning

Project is an instructional methodology that encourages students to learn and apply their knowledge and skills through an engaging experience. Project based learning will provide a deeper insight into the real life situations, help in evaluating the problem and contemplate a solution that is applicable in the most practical way. This method thus instils a confidence in the student to handle real life situations. Every teacher should mould his students to face the challenge in any given situation. This is what Project based education will bring in. It helps to the student to identify a situation and work on projects that can address issues or challenges presented. Project based learning requires skills and additional knowledge to apply in projects. This means that the students need to think and use technology to critically evaluate the projects. Through project based learning there is a shift in the job of teachers from a facilitator to a project manager allowing students to make decisions on their own and fosters independence in their thought process and decision making.

Innovative teaching methods

An effective method for a teacher is to propose and discuss questions in the classroom. Innovation in teaching is changing the teaching methods. Teachers often used to follow a similar pattern and methodology in teaching. This will result in boredom to the students and teacher. Hence having a change in the teaching methodology would impact the student in a positive way and also will create an enthusiasm and interest in their mind. Innovative teaching methods are a sustained strategy to engage students and sustain them in the class. The innovative method of teaching would be to blend the learning methods by giving them opportunities to record, recall, and share diverse learning events. Open end questions target the audience to think and respond constructively based on their thought process. Such question helps them to share their intellectual expertise and construct explanations in their own way.

Creative minds

Creation of creative minds is brought in by teachers who identifies that the creativity of a child is important in education. Today most children are lacking creativity in teaching learning process as most schools are following a prototype education system of feeding in what is required and restrict the child to think and respond to what is required. Students should be given the opportunity to think and respond. They need the time to ponder over what has been thought and how each concept is derived. Innovative teaching actually is a means to creative thinking. Here the teachers can bring an blended way of teaching through technology and class room teaching. These teaching methods will allow the child to find options to bring out his own idea into reality. Creativity widely differs from person to person. There is no hard end rule that it should be an excellent description of a given project. What is new according to the child is his creative. Creativity is in whatever job we are doing. It's all about attitude and perspective on the problem solving situation. Teachers are the force to nurture students to bring out the potentiality and creativity in them.

Interactive Learning

This methodology integrates social networking to computing technology into the course design and delivery. Interactive learning has evolved out of the hyper growth in digital technology and virtual communication. The pedagogical techniques in teaching methods in institutes of higher education has opened way for opportunities to explore and adapt to technology in learning new concepts and applying it in the real life context. The digital natives are techno social and they bond themselves into it.

Creation of space for all learners

The modern education system is blended with a purpose of creating a space for all the learners. Technology has helped the student to identify their potential and make the best use of it. Through online teaching the teacher can interact with all the students by giving

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them an opportunity to participate and respond. The teachers understand the key areas that they can focus on the students and help out the students to uncover areas that students are unfamiliar with. Technology has helped students to communicate with peers and teachers without any fear. Virtual classes have helped the students to come out of their shyness and fear they are wilfully participating in the online classes.

Positive environment

Innovation in teaching aids to create a positive learning environment inclusive to all. Students are able to define their capabilities and understand the need to equip themselves when they start using technology. Students understand the importance of management in employment, training and cultural engagement. Students unlearn to learn the need of building a successful career with the use of information technology. Innovative teaching helps in inspiring students to be inquisitive in technology and bring out the efforts of good technology in developing student skills. Technology is increasing the students’ teachers’ participation into it to gain and access information and knowledge. This has been expanding the scope of educational process. Today, there is a transformation in teaching phase. A teacher has become a facilitator to present new challenges and opportunities for students. Teachers have cross the teaching boundaries of the past and have been working to build a stronger shift in education sector. An open minded attitude in the teacher can help in innovating new methods in teaching that helps the teacher and the student to open up to new ideas for self evaluation.

Real time projects to experience risk and failure

Real time projects give the teacher and the student hands on experience of various projects topics that are undertaken as a part of the curriculum. Real time projects assist students to identify intriguing initiatives working as a group or individually to illuminate the emerging trends of the industry. Students can take up projects at their area of interest and involve themselves in the project. This creates a positive action of learning and presenting something that they like. Such real time projects instil confidence and boost student’s motivation to work on the idea that they can work on. Students understand that they are capable of working in such projects and they are well equipped to work for organisation. Real time projects help in relating and demonstrating real- life situations. Real time projects are more lively and interesting. Brainstorming becomes a part of real time projects. Positive brainstorming sessions among the team members will help students to think uniquely and get numerous ideas and involve the group into discussion and participate. Collaborative efforts are the end result of a wonderful team work. They spend some qualitative time with their team; discuss the possibilities of an outcome of the project. This gives a better outlook for the project.

Innovative Learning

Learning is fun and interesting when there are lots of quiz, projects, games, and discussions. Innovative learning makes creative teachers and interactive student. During the pandemic the education sector was widely hit back by the teaching learning process, but unlike other sectors there wasn’t a lost hope. Technology rolled back and supported the teaching learning process because of which the process still continued equipping the students to self learn and explore more in their learning process. Innovative learning creates enthusiasm and the ability to learn. Innovative learning improves on the communication skills. Technology helps the teacher to authenticate the students with evidence of topics taught. Live in sessions, webinars, YouTube videos reflect the information in a novel way. This will lead to good observation amongst the students, aids them to take an initiative to look out to answers that supports the topic for the discussion. When quizzes are conducted online students opts for higher participation when compared to classroom atmosphere. There will also be careful observation of the classmates’ participation that would help them to evaluate their performance.

Teaching process is more practical as it involves a physical and emotional balance to observe the students involvement in innovative teaching methods and read the students mindset towards the teaching learning process.

RESULT ANALYSIS

Descriptive statistics

Table 1. Frequency distribution, Percentage analysis, Mean and Standard Deviation of the data analysis.

Increases level of student engagement	Yes	No	May be	Mean	SD
Frequency	221	5	39	2.82	.435
Percentage (%)	99.6	1.9	14.7		
Same learning experience like classroom teaching.	Yes	No	May be	1.70	.815
Frequency	60	139	66		
Percentage (%)	22.6	52.5	24.9		
Pandemic has introduced new teaching methodology	Yes	No	May be	2.75	.533

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Frequency	213	13	39		
Percentage (%)	80.4	4.9	14.7		
Innovation in Teaching Methods	Yes	No	May be	1.25	.650
Frequency	230	4	31		
Percentage (%)	86.8	1.5	11.7		
Innovation in all subjects of the curriculum	Yes	No	May be	2.83	.417
Frequency	223	38	4		
Percentage (%)	84.2	14.3	1.5		
Sustainable teaching methodology	Blended Mode	Online	Classroom teaching	1.79	.866
Frequency	133	55	77		
Percentage (%)	50	20.8	29.1		

Table 1 represents the descriptive statistics of the data. Based on the Table1 99.6% percentage of the respondents feel that Innovative teaching methods increases the level of student engagement, 52.5% of the respondents strongly feel that online teaching methods does not provide the same experience like in classroom teaching. 80.4% of the respondents say that Pandemic has introduced new teaching methodology in the teaching learning process. Around 85% of the respondents strongly feel that there needs to innovation in teaching and that it is appreciated if innovative teaching is applied in all the subjects. As regards the sustainable teaching method most of the respondents feel that blended mode of teaching would be the sustainable strategy to continue the teaching learning process.

Based on the mean scores from table 1, the most important factor that supports teaching methodology is the innovative teaching learning process that need to be introduced in all the subjects and also there is a strong opinion that the Covid 19 pandemic has introduced innovative teaching –learning methods. This is a scope for development that teachers can welcome for the future.

Hypothesis 1: Student’s perception on innovative teaching methods. According to the above analysis, following hypothesis was analysed:

Hypothesis 1a: Innovative teaching methods after Covid 19 Pandemic have significantly differed from innovative teaching methods before pandemic.

Hypothesis 1b: Innovative teaching methods have created a positive culture in students and aid in skill development.

Table 2. Chi square test for association of Pandemic has introduced new teaching methodology to Innovation in Teaching Methods

Pandemic introduced methodology	has new teaching	Innovation in Teaching Methods			Total	Chisquare value	p value
		Yes	No	maybe			
	No	8	2	3	13	54.925	<.001**
	May be	23	1	15	39		
	Yes	199	1	13	213		
Total		230	4	31	265		

Note ** denotes significant at 1% level

Table 3. Chi square test for association of Pandemic has introduced new teaching methodology to Innovation in Teaching Methods

	Value	Asymp. Std. Error ^a	Approx. T ^b	Approx. Sig.
Ordinal by Ordinal Kendall's tau-b	.162	.073	2.112	.035
N of Valid Cases	265			

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A chi square test of Independence was performed (Table 2) to examine the relation between Innovations in teaching methods to innovative teaching methods after the pandemic. The relation between these variables was significant, $X^2(4, N= 265)= 54.925$, $p <.01$. This signifies that there is an association between innovative methods in teaching to innovative methods introduced after Covid 19.

The analysis is supported by the positive value in Kendall’s tau-b measurement, (Table 3) indicates that there is an association innovative methods in teaching to innovative methods introduced after Covid-19 as in the p value is $<.05$.

Table 4. Chi square test for association between Innovation in Teaching Methods and level of student engagement

Increases level of student engagement	Innovation in Teaching Methods			Total	Chisquare value	P value
	Yes	No	maybe			
No	1	1	3	5	39.680 ^a	<.001**
May be	27	2	10	39		
Yes	202	1	18	221		
Total	230	4	31	265		

Note ** denotes significant at 1% level

A chi square test of Independence (Table 4) was performed to examine the relation between Innovations in teaching methods to increase in student engagement. The relation between these variables was significant, $X^2(4, N= 265) =39.680$, $p <.01$. This signifies that there is an association between innovative teaching methods and student engagement. Thus it indicates that innovative teaching method increases the level of student involvement and participation in teaching learning process.

Table. 5 Annova for significant difference between Innovation in teaching methods to positive learning environment

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	15.178	2	7.589	6.633	.002
Within Groups	299.768	262	1.144		
Total	314.946	264			

Table 6. Test of Homogeneity of Variances

Innovation in Teaching

Levene Statistic	df1	df2	Sig.
1.559	2	262	.212

Table 7. Robust Tests of Equality of Means

Innovation in Teaching

	Statistic ^a	df1	df2	Sig.
Brown-Forsythe	4.454	2	30.937	.020

a. Asymptotically F distributed.

A one way analysis of variance was used to evaluate the null hypothesis that there is no significance difference between innovation in teaching to creation of positive learning environment (N=265), The independent variable being innovation Yes(M=5.744 SD=1.02 , N =213), No (M=4.648 SD=1.455 N=13), MAYBE (M = 5.564 SD= 1.180 N =39)

The alpha level of .05 was used for the analysis. The test for homogeneity of variance (Table 6) was tested and found no significance {Levene’s Test , $F(2, 262) = 1.55$, $p >.05$ } indicating that this assumption underlying the application of ANOVA was met. The one way ANOVA of standardised test score (Table 5) revealed a statistically significant main effect (F (2, 262) 6.633, $p < 0.01$ indicating that the groups resulted in the same standardised test score. Thus there is significant evidence to reject the null hypotheses

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and conclude that there is a significant difference between the innovation and creation of positive environment through innovative teaching methods. The Robust test (Table 7) strengthens the significance of the test.

Post hoc comparisons to evaluate difference among group means were conducted with the use of Tukey hsd test since equal variance were tenable. Tests revealed significant pair wise difference between the mean score of the innovation in teaching methods to creation of positive environment in teaching learning process, $p < .05$ significantly differ from the others.

Table 8. One way Anova for significant difference between innovative teaching methods after pandemic to skill development of students

Skill Development	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	10.024	2	5.012	4.159	.017
Within Groups	315.758	262	1.205		
Total	325.782	264			

Table 9. Test of Homogeneity of Variances

Skill Development

Levene Statistic	df1	df2	Sig.
1.199	2	262	.303

Table 10. Robust Tests of Equality of Means

Skill Development

	Statistic ^a	df1	df2	Sig.
Brown-Forsythe	3.135	2	35.000	.05

a. Asymptotically F distributed.

A one way analysis of variance was used to evaluate the null hypothesis that there is no significance difference between innovative teaching methods after pandemic to skill development in students through innovative teaching (N=265), The independent variable being innovative teaching methods after pandemic Yes(M=5.852 SD=1.06, N =213), No (M=5.089 SD=1.351 N=13), MAYBE (M = 5.512 SD= 1.205 N =39)

The alpha level of .05 was used for the analysis. The test for homogeneity of variance (Table 9) was tested and found no significance {Levene’s Test, $F(2, 262) = 1.19, p > .05$ } indicating that this assumption underlying the application of ANOVA was met. The one way ANOVA of standardised test score (Table 8) revealed a statistically significant main effect ($F(2, 262) 4.159, p < 0.01$) indicating that the groups resulted in the same standardised test score. Thus there is significant evidence to reject the null hypothesis and conclude that there is a significant difference between innovative teaching methods after pandemic to skill development in students through innovative teaching.

Post hoc comparisons to evaluate difference among group means were conducted with the use of Tukey HSD test since equal variance were tenable. Tests revealed significant pair wise difference between the mean score of the innovative teaching methods after pandemic to skill development of students, $p < .05$ significantly differ from the other groups.

Hypothesis 2: Innovative teaching methods have introduced innovative strategies in teaching learning.

According to the above statement following hypothesis were framed:

Hypothesis 2a: Innovation has a significant difference to innovative strategies

Hypothesis 2b: Innovation in teaching has significant difference when used in all subjects.

Table 11. One way Anova for significant difference between Innovative teaching methods to Innovative Strategies

Innovative Strategies	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	16.532	2	8.266	9.470	<.001**
Within Groups	228.684	262	.873		
Total	245.216	264			

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Table 12. Test of Homogeneity of Variances

Innovative Strategies

Levene Statistic	df1	df2	Sig.
.278	2	262	.758

Table 13. Robust Tests of Equality of Means

Innovative Strategies

	Statistic ^a	df1	df2	Sig.
Brown-Forsythe	8.910	2	48.442	.001

a. Asymptotically F distributed.

A one way analysis of variance was used to evaluate the null hypothesis that there is no significance difference between innovative teaching methods to innovative strategies (N=265), The independent variable being innovation Yes (M= 5.541 SD=.915 , N =213), No (M= 4.410 SD= .893 N=13), MAYBE (M = 5.316 SD =1.04 N 39)

The alpha level of .05 was used for the analysis. The test for homogeneity of variance (table 12) was tested and found no significance {Levene’s Test , F(2, 262) = .278 , p >.05} indicating that this assumption underlying the application of ANOVA was met. The one way ANOVA of standardised test score (Table 11) revealed a statistically significant main effect (F (2, 262) 9.47 , p < 0.01 indicating that the groups resulted in the same standardised test score. Thus there is significant evidence to reject the null hypothesis and conclude that there is a significant difference between innovative teaching methods to innovative strategies.

Table 14. Chi square test for association between Innovations in Teaching Methods to Innovation in all subjects

Innovation in Teaching Methods	Part of subjects in the curriculum			Total	Chi square value	P Value
	No	May be	Yes			
No	1	0	2	3	39.167 ^a	<.001**
May be	1	12	18	31		
Yes	2	26	203	231		
Total	4	38	223	265		

Table 15. Kendall’s tau Chi square test for association between Innovations in Teaching Methods to Innovation in all subjects

	Value	Asymp. Std. Error ^a	Approx. T ^b	Approx. Sig.
Ordinal by Ordinal Kendall's tau-b	.266	.078	3.027	.002
N of Valid Cases	265			

a. Not assuming the null hypothesis.

b. Using the asymptotic standard error assuming the null hypothesis.

A chi square test of Independence (Table 14) was performed to examine the relation between Innovations in teaching methods to innovation in all subjects. The relation between these variables was significant, $X^2(4, N= 265)= 39.167, p <.01$. This signifies that there is an association between innovative teaching methods to innovation in all subjects.

The analysis of support the analysis the positive value in Kendall’s tau-b (Table 15) measurement indicates that there is an association between innovation and innovation in all subjects as the p value is <.01

Hypothesis 3: Innovative strategies in teaching methods have a positive learning outcome on the students.

According to the above analysis, we offer the following hypothesis:

Hypothesis 3a: Innovative strategies has an association to innovative methods and skills

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Hypothesis 3b: Strategies has an impact on outcome and improved the skills of students.

Table 16. Kendall's tau_b Correlation for association between Innovative strategies, Innovation in teaching methods creating a positive environment and skill development

		Innovative Strategies	Creation a Positive learning environment	Skill Development
Kendall's tau_b	Correlation	1.000	.546**	.530**
	Coefficient			
	Innovative Strategies			
	Sig. (2-tailed)	.	.000	.000
	N	265	265	265
Creation a Positive learning environment	Correlation	.546**	1.000	.689**
	Coefficient			
	Sig. (2-tailed)	.000	.	.000
	N	265	265	265
Skill Development	Correlation	.530**	.689**	1.000
	Coefficient			
	Sig. (2-tailed)	.000	.000	.
	N	265	265	265

** . Correlation is significant at the 0.01 level (2-tailed).

Table 17. Pearson Correlation for association between Innovative strategies, Innovation in teaching methods creating a positive environment and skill development

		Innovative Strategies	Creation a Positive learning environment	Skill Development
Innovative Strategies	Pearson Correlation	1	.729**	.687**
	Sig. (2-tailed)		.000	.000
	N	265	265	265
Creation a Positive learning environment	Pearson Correlation Sig. (2-tailed)	.729**	1	.881**
		.000		.000
	N	265	265	265
Skill Development	Pearson Correlation	.687**	.881**	1
	Sig. (2-tailed)	.000	.000	
	N	265	265	265

** . Correlation is significant at the 0.01 level (2-tailed).

A Pearson correlation (Table 17) examined the relationship between the consistency of association between Innovative strategies, Creation of positive culture and Skill development through innovative teaching methods. Scale scores were computed adding up responses to the 6 questions in each scale. The mean for Innovative strategies 5.452 (SD .963), the mean for Positive culture 5.664 (SD 1.09) and mean of Skill development 5.764 (SD 1.11). The relationship amongst all the three variables was positive, high in strength and statistically significant ($r(263) = .729$ strategies to Positive culture , $r(263) = .687$ strategies to skill development, $r(263) = .881$ positive culture to skill development). There is a significant positive association between Strategies, Creation of positive culture and skill development.

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A Kendall’s tau-b correlation (Table 16) was run to determine the relationship between Innovative strategies , creation of positive environment and skill development through innovative teaching methods amongst 265 participants, There is a strong, positive correlation between all three variables which was ststistically significant ($T_h = .546, .540$ and $.689$; $p < .001$)

Regression Analysis of Innovative Strategies on Creating Positive Environment.

The Regression Analysis tests the effect of Innovative Strategies on Creating Positive Environment.

Dependent Variable	: Positive Environment (Y)
Independent Variable	: Innovative Strategies (X)
Multiple R Value	: 0.687
R Square Value	: 0.472
F Value	: 235.565
P Value	: <0.001

Table 18. Regression Analysis of Innovative Strategies on Creation of Positive Culture.

Variables	Un standardized Coefficient	SE of B	Standardized coefficient	t value	P value.
(Constant)	1.445	.286	-	5.054	0.001**
Innovative Strategies	.792	0.052	0.687	15.348	<0.001**

Note: ** denotes significant at 1 % level.

The value 0.687 is the correlation coefficient that measures the degree of relationship between the actual values and the predicted values of the Creation of Positive environment; as the predicted value is obtained as a linear combination of Innovative Strategies and factors (X) the coefficient value of 0.687 indicates that the relationship between Creation of Positive environment and the independent variable Innovative strategies is sturdy and constructive.

The coefficient of determination R-square measures the goodness of fit of the estimated sample regression plane (SRP) in terms of the proposition of the variation in the dependent variables explained by the fitted sample regression equation. Thus, 0.472 the calculated value of R square indicates that about 47.2% difference in Creation of Positive environment is explained by the estimated SRP that uses innovative strategies, as an independent variables and R square value is significant at 1% level.

The regression equation is $Y = 1.445 + 0.792X$

The coefficient of X is 0.792 represents the partial effect of Innovative strategies on Creation of Positive environment holding another variable constant. The estimated positive sign implies that such an effect is positive that Creation of Positive environment would increase by 0.792 for every unit increase in Innovative strategies and the coefficient value is significant at 1 % level.

Regression Analysis of Innovative strategies on skill development.

The Regression Analysis tests the effect of Innovative strategies on skill development

Dependent Variable	: Skill Development (Y)
Independent Variable	: Innovative Strategies(X)
Multiple R Value	: 0.729
R Square Value	: 0.532
F Value	: 299.024
P Value	: <0.001

Table 19. Regression Analysis of Skill Development on Innovative Strategies.

Variables	Un standardized Coefficient	SE of B	Standardized coefficient	t value	P value.
(Constant)	1.157	.265	-	4.370	0.001**
Innovative Strategies	.827	0.048	0.729	17.292	<0.001**

Note: ** denotes significant at 1 % level.

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The value 0.729 is the correlation coefficient that measures the degree of relationship between the actual values and the predicted values of the skill development; as the predicted value is obtained as a linear combination of Innovative Strategies (X) the coefficient value of 0.729 indicates that the relationship between Skill Development and the independent variable Innovative strategies is sturdy and constructive.

The coefficient of determination R-square measures the goodness of fit of the estimated sample regression plane (SRP) in terms of the proportion of the variation in the dependent variables explained by the fitted sample regression equation. Thus, 0.729 the calculated value of R square indicates that about 72.9% difference in skill development is explained by the estimated SRP that uses Innovative strategies, as an independent variables and R square value is significant at 1% level.

The regression equation is $Y=1.157 +0.827X$

The coefficient of X is 0.827 represents the partial effect of Innovative strategies on skill development holding another variable constant. The estimated positive sign implies that such an effect is positive that skill development would increase by 0.827 for every unit increase in Innovative strategies and the coefficient value is significant at 1 % level.

DISCUSSION AND FINDINGS

The Covid-19 Pandemic has created a lot of opportunities and challenges for online teaching and learning. The students across the globe had to accept the changes that the pandemic had created. The real challenge in the situation was more for the students, rather than the teachers. Students had to accept to the new ways by which teaching could be continued as a new norm to virtual mode. Teachers had the option to understand that new pedagogy could be a new part of exploration and exposure. This research was conducted to understand role of pandemic in introducing innovative teaching methods and students' perspective on innovative teaching methods in the teaching learning process.

Based on the research conducted among the 265 women college students between the age group of 18 to 23 in the Chennai city the result analysis are discussed as follows.

Most of respondents strongly feel that pandemic has introduced more innovative methods of teaching and learning and in the process innovative methods has created a different learning experience. Innovative teaching methods have increased the student engagement in learning process. Students feel that in the future blended mode of education will be the unique strategy that would suit for teaching learning process as it gives more scope and opportunity to learning and teaching. But the fact to appreciate is that students strongly feel that virtual mode can hardly substitute classroom learning experience.

The hypothesis to identify the student's perception on innovative teaching methods indicates that there is a strong association between the innovative teaching methods introduced after the pandemic when compared to innovative methods in teaching before the pandemic. The one way Anova test for significant difference between innovations in teaching to creation of positive learning environment signifies that innovative teaching methods create a positive environment for students to participate and entail. Significance of innovative teaching methods after pandemic to skill development in students through innovative teaching signify that there is an association between Innovation in Teaching Methods and increase in students skill development.

The hypotheses on understanding the relationship between Innovative teaching methods on innovative strategies in teaching learning proves that there is significant evidence to reject the null hypothesis and conclude that there is a significant difference between innovative teaching methods to innovative strategies. A chi square test of Independence was performed to examine the relation between Innovations in teaching methods to innovation in all subjects. The relation between these variables was significant; to prove that there is an association between innovative teaching methods to innovation in all subjects.

The hypotheses to identify Innovative strategies in teaching methods have a positive learning outcome on the students. The relationship amongst all the three variables was positive, high in strength, and statistically significant. Thus the three variables Innovative strategies, Positive environment, and skill development all three variables are positively correlated to strengthen innovative methods in teaching learning process.

CONCLUSION

The innovation in teaching is a new concept in itself but the pandemic has introduced many concepts to the teaching learning process. It has become a means of education during the pandemic. India has witnessed a wide range of teaching learning opportunities and challenges in the pandemic. Though we cannot outline the fact that online education cannot substitute classroom teaching, we need to under that without innovative pedagogy in teaching there could not be scope for further development and growth. We need to be happy that the pandemic has open up platforms for the students and teachers to explore the gateway of innovative education. Use of ICT tool alone does not mean innovation in education. Innovative education define strategies where students explore their talent, take part in case based learning , project based learning, group based learning experience that help them identify their potentials and motive them to think independently and work towards his goal. Virtual teaching is a mode to help the students define them for a better tomorrow. Innovative teaching methods help the students to master skills, boost self-confidence and create independent personality. Through innovative teaching strategies the teacher can acknowledge the student and help him understand the new arenas in education. Students feel that through innovative teaching they can easily communicate with the teacher

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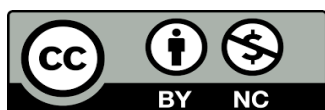
and less refer books Innovation in teaching and learning creates space for the learners to improve their skills and knowledge. The future of nation is built by the teachers of today. Innovation in education is never a challenge for creating strong generation but by itself a way to open up the doors of education for a better future.

Limitations, Future Research and Implications

This study has some weaknesses. First, the study was based only on the women students in the Chennai city In addition, the process for the study was dealt only with innovative teaching strategies, innovation in creation of positive environment, and innovation in skill development Therefore, and further studies are recommended to employ varied demographic profile and other arenas in education.

REFERENCES

- 1) Anna Sun and Xiufang Chen Rowan University, Glassboro, NJ, USA , Online Education and Its Effective Practice: A Research Review , Journal of Information Technology Education:Research · January 2016 DOI: 10.28945/3502
- 2) Bailey, C. J., & Card, K. A. (2009). Effective pedagogical practices for online teaching: Perception of experienced instructors. *Internet and Higher Education*, 12, 152-155.
- 3) Beatrice tucker, sue jones, leon straker, joan cole ,Course evaluation on the web: Facilitating student and the teacher reflection to improve learning,
- 4) Brindley, J., Blaschke, L. M., & Walti, C. (2009). Creating effective collaborative learning groups in an online environment. *The International Review of Research in Open and Distributed Learning*, 10 (3). Retrieved from <http://www.irrodl.org/index.php/irrodl/article/view/675/1313>
- 5) Brockbank and McGill, Facilitating Reflective Learning in Higher education, Bristol England, Open University press, 1998. New directions for teaching and learning, e-issn 15360768, 2003, wiley publications.
- 6) Jorge Larreamendy-Joerns, Gaea Leinhardt, Going the Distance With Online Education, 2006 doi.org/10.3102/00346543076004567
- 7) Keengwe, J., & Kidd, T. T. (2010). Towards best practices in online learning and teaching in higher education. *MERLOT Journal of Online Learning and Teaching*, 6(2), 533-541.
- 8) Lee harvey,bjørn stensaker, Quality Culture: understandings, boundaries and linkages, *European Journal of education*, Vol 43, Issue 4, 2008 doi.org/10.1111/j.1465-3435.2008.00367.x
- 9) Thierry Volery, **Critical success factors in online education**, Deborah Lord, International Journal of Educational Management, Emerald Publishing Limited,2000
- 10) Vijayalakshmi M, innovations in teaching methods, *JASC: Journal of Applied Science and Computations*, ISSN No 1076-5131
- 11) Yu Haiqin, Liu Ping, Huang Xiaoqing, Cao Yuxi, Teacher Online Informal Learning as a Means to Innovative Teaching During Home Quarantine in the COVID-19 Pandemic, *Frontiers in Psychology*, VOL12, 2021,DOI=10.3389/fpsyg.2021.596582, ISSN=1664-1078
- 12) https://bold.expert/we-need-to-completely-reimagine-education/?gclid=Cj0KCQjwyN-DBhCDARIsAFOELTmK-W0G0zaFPAAYc81A6vPt-XQvDSNBXKeBNqtm1dTnr1Km9cTZ47caAq_4EALw_wcB. accessed on 1/2/22
- 13) <https://www.csuwritingproject.net/what-is-sustainable-teaching.html> accessed on 1/2/22



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