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EFFECTIVENESS OF BLENDED LEARNING COURSE FOR DEVELOPING TECHNO-PEDAGOGICAL SKILLS AMONG B.ED. STUDENT – TEACHERS

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Abstract:

The study aimed at identifying the effectiveness of Blended Learning Course for developing Techno-pedagogical skills among B.Ed. Student-teachers of the University of Mumbai. Moodle based Blended Learning Course is developed by the researcher and thus the treatment for developing Techno-pedagogical Skills is given to the experimental group. It has been found that there is significant improvement in the Techno-pedagogical Skills after the treatment. ω^2 (Omega square) estimated value for Techno-pedagogical Skills is 22.61%which implies that the proportion of variance in gain scores of Techno-pedagogical Skills is due to Blended Learning Course. The effect size found maximum (Magnitude 1.8) after calculating Wolf's formula which implies that the Blended-Learning Course has maximum effect on the development of the Techno-pedagogical Skills among B.Ed. Student-teachers.

Key-Words: *Blended learning Course, Techno-pedagogical Skills.*

INTRODUCTION:

Information and communication technologies (ICTs) are causing major and rapid changes in society. These changes have also had an impact on educational systems. Education must provide effective learning systems to meet the challenges and needs of modern society. In this digital era, every teacher should know how to use technology while teaching content

effectively in their daily classroom as only technology by itself will not bring changes in education, one must ensure technological integration with education. Teachers who will integrate technology have the potential to bring change in the education process.

ICT has made rapid progress in the past couple of decades. There is an increasing requirement to embrace the usage of technology in the field of education. In this regard, the NEP policy 2020 remarks that one of the central principles steering the education system will be the 'extensive use of technology in teaching and learning, removing language barriers, increasing access as well as education planning and management. (National Policy of Education, 2020)

In the era of digitalization; the incorporation of technology and pedagogy leads to an important skill that is techno-pedagogical skills. Techno-pedagogy is the combination of various digital technologies and pedagogy that provides new opportunities to support learning environments.

Techno-pedagogical Skills

TPACK stands for Technological Pedagogical Content Knowledge. Punya Mishra and Matthew J. Koehler introduced the TPACK framework. This framework was developed to explain the knowledge that teachers need while teaching their students a subject, teaching effectively, and using technology. In this framework, they identified three primary forms of knowledge i.e. technological knowledge (TK), pedagogical knowledge (PK), and content knowledge (CK). According to the TPACK framework, specific technological tools are best used to instruct and guide students for better learning. The three types of knowledge are combined and recombined within the TPACK framework. Technological pedagogical knowledge (TPK) describes relationships and interactions between technological tools and specific pedagogical practices, pedagogical content knowledge (PCK) includes the description between pedagogical practices and specific learning objectives and technological content knowledge (TCK) describes relationships among technologies and learning objectives.

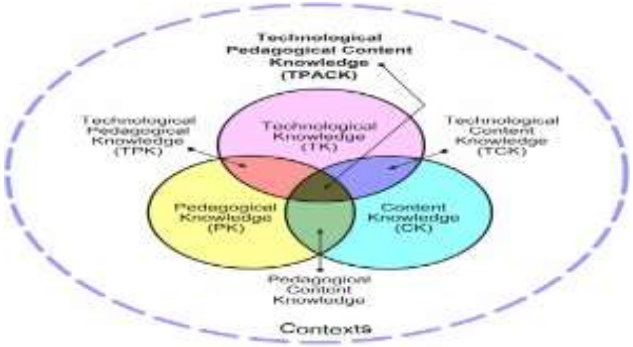


Figure1: Koehler&Mishra(2009)TPaCK Model image ©2012 by tpack.org[3]

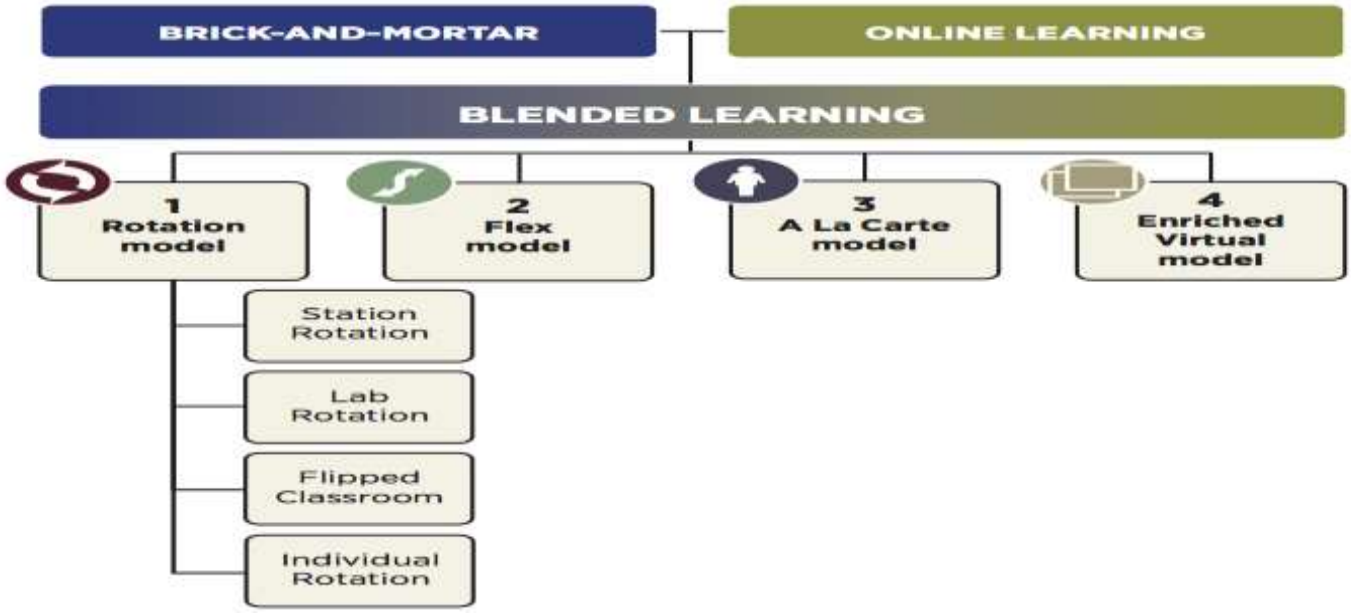
Among the four Intersections of these fields (PCK, TCK, TPK, and TPaCK), one is directly Linked to techno pedagogical skills. Technological Pedagogical Knowledge (TPK) Koehler & Mishra defined TPK as an understanding of how teaching and learning can change when particular technologies are reused in particular ways. This includes knowing the pedagogical affordances and constraints of a range of technological tools as they relate to disciplinarily and developmentally appropriate pedagogical designs and strategies"(Koehler& Mishra,2009).

Blended Learning

The teaching and learning environment is emerging with several innovations based on technology. The blended learning approach is one of these innovations. Many types of research done earlier indicate that Blended learning is increasingly being adopted at all levels of the educational system. It is a way for engaging students in interactive learning experiences.

Blended learning is one of the most modern innovative approaches to learning which is useful in solving the knowledge explosion problem, the growing demand for education, and the problem of overcrowded lectures. Blended learning increases the learning effectiveness to a large degree, saves time, reduces the cost of education and training, allows the learner to study anytime from anywhere, and provides simulations, practical events, and exercises. Blended learning makes learning more fun as there is better involvement of students.

Graham (2013) defined blended learning systems as a combination of face-to-face with computer-mediated instruction. There are different models of blended learning.



Source: https://www.christenseninstitute.org/ [4]

Need of the Study

In a country like India, most students cannot get a quality education due to a few premier colleges that have limited seats. In 2017 MHRD pointed out that some schools have fewer teachers than the required number. With the integration of technology, students can have access to quality education. The Ministry of HRD also has taken initiative in e-learning. As per the 'Digital India' Initiative, MHRD has initiated to develop & make available 'Massive Online Open Courses (MOOCs)' to the learners throughout the country.

The National Education Policy 2020 recommends the use of blended models of learning. The NEP-2020 states the importance of face-to-face in-person learning along with the promotion of digital learning and education, based on it, The University Grants Commission (UGC) prepares draft guidelines for 'blended teaching' in universities and colleges. As per this guideline, higher education institutions might be allowed to teach up to 40 percent of any course through online mode.

So, keeping in mind the government is taking initiative in e-learning future teachers means student-teachers should know how to integrate technology in teaching. So, this study will help to develop these techno-pedagogical skills among them.

The researcher has experience in teaching Critical Understanding of ICT in One year B.Ed. and Two years B.Ed. program Critical Understanding of ICT as 'Ability Course' at Education College of the University of Mumbaifor eight years. She is interested in teachinginnovatively and creatively by using Technology so that the student-teachers find the learning interesting. Both the researchers are using Moodle platform for teaching UG and PG student-teachers in their institutions. In two years B.Ed. Course main aim of teaching Critical Understanding of ICT is developing ICT Competencies among Student-teachers. This 'ability course' is based on assignments. While teaching this course theory and practical both are important. Therefore researchers have planned and prepared a Moodle-based Blended Learning Courseto develop Techno-pedagogical Skills. Due to pandemic face to face teaching was not possible so researchers used synchronous and asynchronous modes of e-learning.

This study is very significant as it investigates the effectiveness of Blended Learning Courses in teacher education which is the pillar of all education. The students- teachers can be trained in all the modern hardware and software as well as their effective use to arouse the interest of the learners.

RESEARCH QUESTIONS:

1. Does Blended Learning Course help to develop Techno-pedagogical Skills among B.Ed. Student-teachers?
2. What is the effect of Blended Learning Course on developing Techno-pedagogical skills among B.Ed. Student-teachers?

AIMS OF THE STUDY:

1. To develop and implement Blended Learning Course based on Ability Course 'Critical Understanding of ICT' for F.Y.B.Ed. Student-teachers.
2. To study the effectiveness of Blended Learning Course for developing Techno- Pedagogical skills (TPS) of B.Ed. student teachers.

OPERATIONAL DEFINITIONS OF THE TERMS:

Effectiveness:

For the present study, effectiveness refers to the difference in pre-test and post-test scores on Blended Learning Course for developing Techno-pedagogical skills.

Blended Learning:

Here in the present study, the term 'Blended Learning' means learning that is facilitated by incorporating online learning (by using LMS platform Moodle) in Synchronous and Asynchronous mode for F.Y. B.Ed. Here researchers have used the Flipped Classroom blended learning model.

Researchers have developed Moodle-based e-learning by following the four-quadrant approach given in the SAWAYM Guideline of developing an e-learning course.

Course:

In the present study, Course means Non-Credit Course which will develop Techno-pedagogical skills and Self-directed learning skills ofF.Y.B.Ed. Student-teachers.

Techno-Pedagogical Skills:

Techno-Pedagogical Skills refer to the skills needed to use technology for pedagogical reasons and competence to integrate technology into teaching. In the present study Techno-pedagogical Skills includes the following sub-skills such as:

a) Technology usages skill for knowledge acquisition
b) technology usages skill for planning and preparing a lesson plan
c) technology usages skill for computer-mediated communication

d) technology usages skill in assessment

HYPOTHESIS OF THE STUDY

1. There is no significant difference in the pre-test scores of the B.Ed. Student-teachers' Techno-pedagogical Skills for the experimental and control groups.
2. There is no significant difference in post-test scores ofthe B.Ed. Student-teachers' Techno-pedagogical Skills for the experimental and control groups.
3. There is no significant difference in pre-test and post-test scores of the B.Ed. Student-teachers' Techno-pedagogical Skills for the experimental and control groups.
4. There is no significant difference in gain scores of the B.Ed. Student-teachers' Techno-pedagogical Skills for the Experimental and control groups.

METHOD

For the present study, the researchers have used the Quasi-Experimental design with 'Pre-test, Post-Test Parallel Groups Design'. The method is employed to check the effectiveness of the developed course. Treatment was given to the experimental group and no treatment to the control group. The difference of the mean of the pre-test, post-test scores were tested for statistical significance for both experimental and control groups.

SAMPLE

A purposive random sampling technique is used for selecting F.Y.B.Ed. Student- teachers pursuing the 2 years B.Ed. program in the University of Mumbai. The sample selected has the same socioeconomic status and same computer ability. The total sample is 87 Student-teachers, 43 in the experimental group (Guru Nanak College of Education and Research, Bhandup, Mumbai) and 44 Student-teachers in the control group (SreeNaryana Guru College of Education,Chembur,Mumbai).

TOOL

The researchers have prepared the tool to analyze the effects of Blended Learning Course on B.Ed. Student-teachers' Techno-pedagogical Skills. Items were consisting of dimensions Technology usages skill for knowledge acquisition, technology usages skill for planning and preparing a lesson plan, technology usages skill for computer-mediated communication, technology usages skill in assessment. The Split-half method was used to establish the reliability of the tool. The reliability index of the tool was found to be 0.91 which was high and hence the tool was found to be internally consistent. Cronbach's Alpha of the tool was

found to be 0.91. Apart from this researchers have prepared a Blended Learning Course by Learning Management System-Moodle to develop the Techno-Pedagogical Skills. Researchers have developed a Moodle-based website named 'Blended Learning India' (https://blendedlearning.co.in/). Content validity was done by experts and due care was taken to ensure the validity and reliability of the tool.

RESULTS AND INTERPRETATION

In this Study Techno-pedagogical Skill includes Technology usages skill for knowledge acquisition technology usages skill for planning and preparing a lesson plan, technology usages skill for computer-mediated communication, technology usages skill in assessment. All these skills are very essential for the teacher and student-teachers.

For the present study researchers compared the pre and post-test scores of Techno-pedagogical Skills of the B.Ed.Student-teachers of experimental and control groups. For these comparisons statistical techniques t-test, Paired t-test, Wolf's Formula were used.

Hypothesis 1: There is no significant difference in the pre-test scores of the B.Ed. Student-teachers' Techno-pedagogical Skills for the experimental and control groups.

Table 1 indicates the difference in the pre-test Scores of the B.Ed. Student-teachers' Techno-pedagogical Skills of Experimental and Control Group

Table 1

The difference in the pre-test Scores of the B.Ed. Student-teachers' Techno-pedagogical Skills of Experimental and Control Group.

Variables	Group	N	Mean	SD	t-ratio	p-value	Level of Significance
Techno-Pedagogical Skill	Experimental	43	141.04	15.32	0.69	0.498	Not Significant
	Control	44	138.9	13.81			

Table 1., indicates that in pre-test scores of Techno-pedagogical for experimental and control groups the obtained p-value is greater than 0.01 therefore it is not significant. Therefore the null hypothesis is accepted. The mean scores of both groups are nearly equal. Thus it can be stated that there is no significant difference in the pre-test scores of the student-teachers' Techno-pedagogical Skills. It means both the groups possess more or less the same level of Techno-pedagogical Skills.

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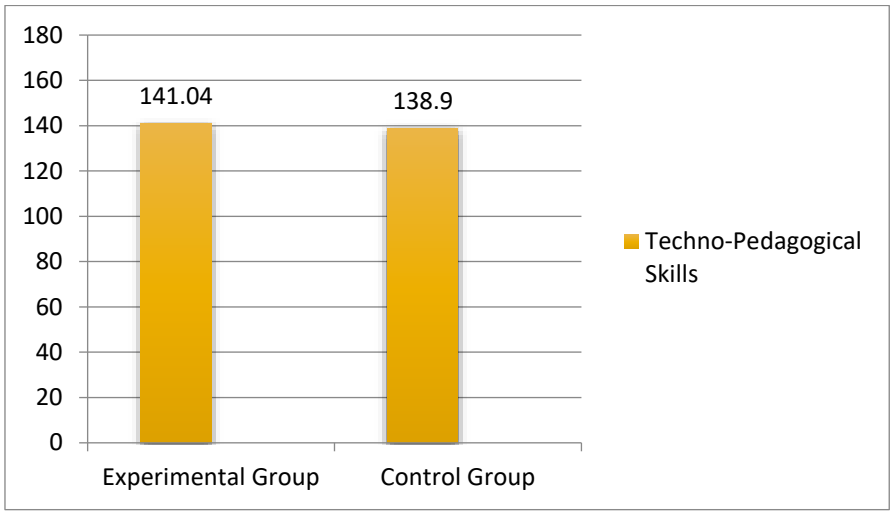

Figure 1. Bar Graph of Mean Scores pre-test Scores of the B.Ed. Student-teachers' Techno-pedagogical Skills of Experimental and Control Group.

Hypothesis 2 There is no significant difference in post-test scores ofthe B.Ed. Student-teachers' Techno-pedagogical Skills for the experimental and control groups.

The table 2 indicates the difference in the post-test Scores of the B.Ed. Student-teachers' Techno-pedagogical Skills of Experimental and Control Group

Table 2

Differences in the post-test Scores of the B.Ed. student- teachers' Techno-pedagogical Skills for experimental and control groups.

Variable	Group	N	Mean	SD	t-ratio	p-value	Level of Significance
Techno-Pedagogical Skill	Experimental	43	176.46	15.39	7.71	0.000*	Significant
	Control	44	151.45	13.81			

Table 2 indicates that post-test scores of B.Ed.Student-teachers' Techno-pedagogical Skills and obtained p-value less than 0.01 is significant. Hence the null hypothesis is rejected. Therefore, it can be concluded that there is a significant difference in the post-test scores of student teachers' Techno-pedagogical Skills in the experimental and Control group. Mean scores of Techno-pedagogical Skills indicate that the experimental group has obtained higher scores in Techno-pedagogical Skills as compared to the control group. From these outcomes, it can be seen that the experimental and control group differ in their Techno-pedagogical Skills.

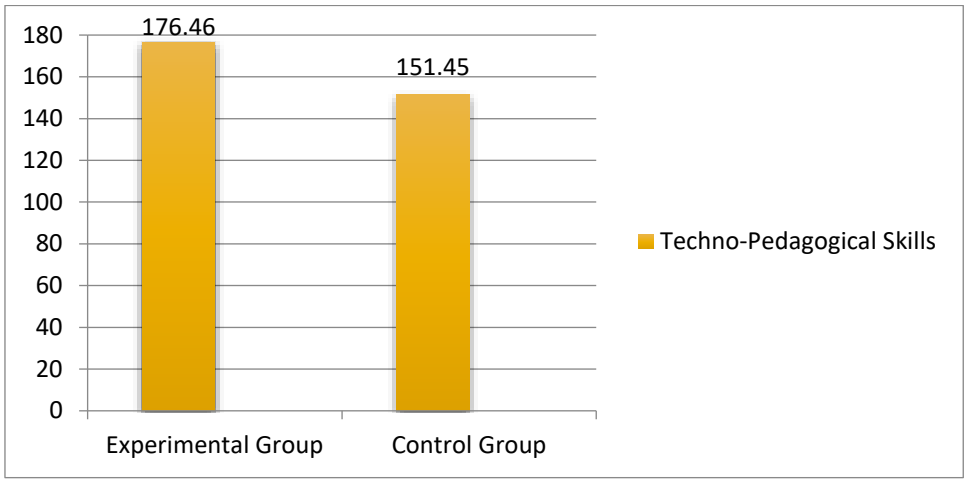

Figure 2. Bar Graph of Mean Scores Post-test Scores of the B.Ed. Student-teachers' Techno-pedagogical Skills of Experimental and Control Group.

Hypothesis 3: There is no significant difference in pre-test and post-test scores of the B.Ed. Student-teachers' Techno-pedagogical Skills for the experimental and control groups.

Table 3 indicates the difference in the pre-test and post-test scores of the B.Ed. Student-teachers' Techno-pedagogical Skills of Experimental and Control Group

Table 3

The difference in the pre-test and post-test scores of the B.Ed. Student-teachers' Techno-pedagogical skills of Experimental and Control Group.

Groups	Test	N	df	Mean	SD	t-ratio	p-value	Level of Significance
Experimental Group	Pre	43	42	141.04	15.32	11.99	0.000*	S
	Post			176.46	15.39			
Control Group	Pre	44	43	138.9	13.81	3.78	0.0004	S
	Post			151.45	13.81			

Table-3 shows the significant difference in the pre-test and post-test scores of student teachers' Techno-pedagogical skills of Experimental Group and Control Group obtained p-value is

lesser than 0.01 therefore it is significant. Hence the null hypothesis is rejected. Therefore, it can be concluded that there is a significant difference in the pre-test and post-test scores of student Teachers Techno-pedagogical skills of the Experimental Group and Control Group. From the t ratio, it is evident p-value is highly significant as compared to the Control group. Mean scores of the student-teachers Techno-pedagogical skills indicate that post-test scores of the experimental group have obtained higher scores in skills as compared to pre-test scores.

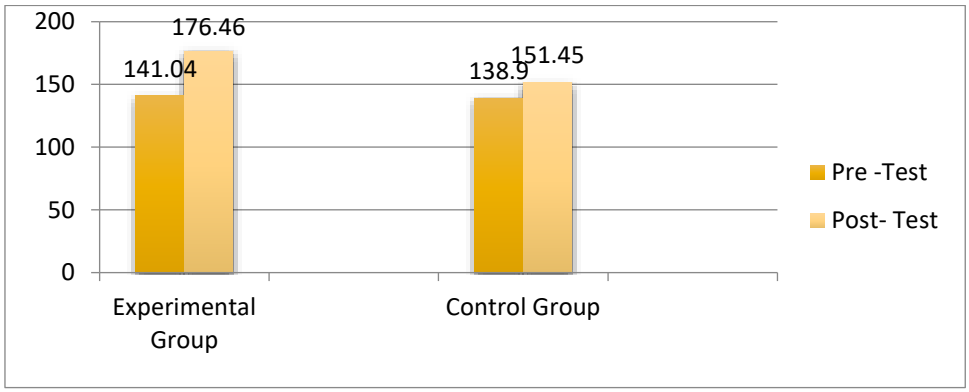

Figure 3. Bar Graph of Mean Scores Pre-test and Post-test Scores of the B.Ed. Student-teachers' Techno-pedagogical Skills of Experimental and Control Group.

Hypothesis 4: There is no significant difference in gain scores of the B.Ed. Student-teachers' Techno-pedagogical Skills for the experimental and control group.

Table 4 indicates the difference in the gain scores of the B.Ed. Student-teachers'Techno-pedagogical Skills of Experimental and Control Group

Table 4

The differenceTable in the Gain Scores ofthe B.Ed. Student-teachers' Techno-pedagogical Skills for Experimental and Control Groups

Variable	Group	N	Pre Test Scores	Post Test Scores	Gain Scores	Gain Scores SD	t-ratio	p-value	Level of Significance
Techno-pedagogical Skills	Experimental	43	141.04	176.46	35.39	19.34	5.14	0.000**	S
	Control	44	138.9	151.45	12.55	21.99			

Table-4indicates the significant difference in the gain scores of Techno-pedagogical Skills for experimental and control groups in an obtained p-value for Techno-pedagogical is less than 0.01 is significant. Hence the null hypothesis is rejected. Therefore, it can be concluded that there is a significant difference in gain scores of Techno-pedagogical Skills. Gain scores of Techno-pedagogical Skills indicate that the experimental group has obtained higher scores in the Techno-pedagogical Skills as compared to the control group.

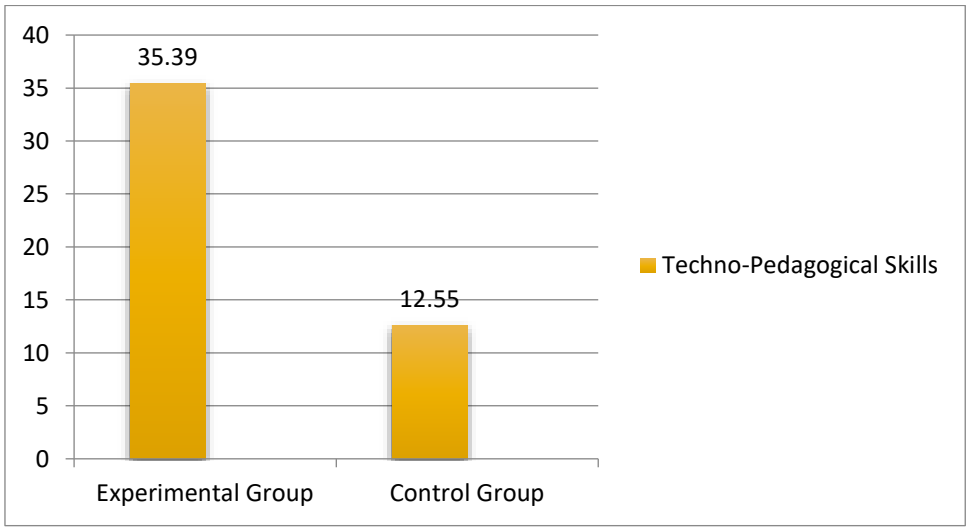

Figure 4:Gain Scores of Techno-pedagogical Skills for Experimental and Control Groups

The table 5 indicates the Estimated Value for Techno-pedagogical Skills Techno-pedagogical Skills

Table 5

ω^2Estimated Value for Techno-pedagogical Skills

Variable	**t-ratio of Gain Scores**	**ω^2**	**100 ω^2**
Techno-pedagogical Skills	5.14	0.2261	22.61%

From table 5 it can be said that ω^2 estimated value for variable Techno-pedagogical Skills is 22.61%

Figure 5 shows the pie chart of the proportion of variance in a gain score of Techno-pedagogical Skills due to Blended Learning Course.

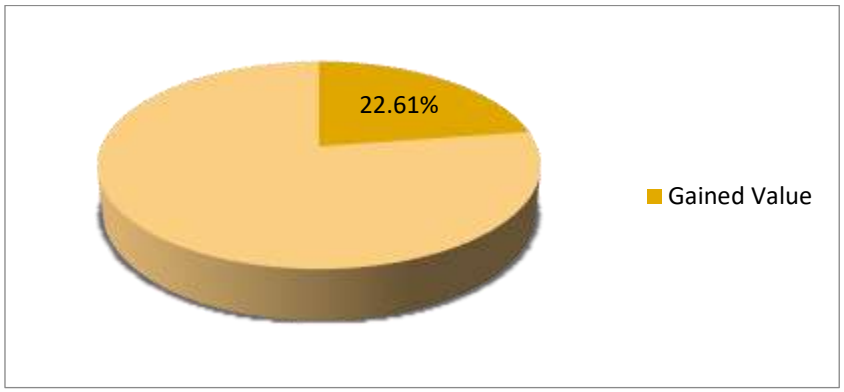

Figure 5

Pie Chart of Proportion of Variance in Gain Score of Techno-pedagogical Skills due to Blended Learning Course.

From figure 5 it can be inferred that the contribution of Blended Learning Course in the development of Techno-pedagogical Skills is 22.61% and this variance is due to the treatment given by the researchers to the experimental group.

EFFECT SIZE

In order to estimate the effect size of treatment on the dependent variablesfor Techno-pedagogical Skills,Wolf's formula is applied. The following table 6gives the effect size of treatment on dependent variable.

Table 6

Effect Size of the Treatment on the Experimental Group for Techno-pedagogical Skills

Variable	Mean of Post-test Experimental Group	Mean of Post test Control Group	SD of Control Group	Magnitude	Effect size
Techno-pedagogical Skills	176.46	151.45	13.81	1.8	Maximum Effect

Table-6 indicates that the treatment has maximum effect on the experimental group in the development of Techno-pedagogical Skills as per Wolf's criterion. This shows that the Blended-Learning Course has maximum effect on the development of the Techno-pedagogical Skills among B.Ed. Student-teachers.

DISCUSSION:

1. It can be seen from this study that the Techno-pedagogical Skills for the experimental and control groups do not differ before the treatment. Hence it is confirmed that both the groups are similar in Techno-pedagogical Skills before implementation of the treatment. (Blended-Learning Course)
2. There is a difference between both groups' scores. From these outcomes, it can be seen that the experimental and control group differ in their Techno-pedagogical Skills after the treatment. The mean scores of the experimental group are higher for Techno-pedagogical Skills as compared to the control group which suggests that the level of Techno-pedagogical Skills is higher for the students of the experimental group after the treatment. (Blended Learning Course). This indicates that the Student-teachers' Techno-pedagogical Skills are developed due to treatment. (Scaria, Sumy M.,2016).

Blended Learning Course has provided them with an opportunity to develop their Techno-Pedagogical Skills. Four modules were developed in Moodle platform to develop technology usages skill for knowledge acquisition, technology usages skill for planning and preparing a lesson plan, technology usages skill for computer-mediated communication, technology usages skill in assessment. The reason for the difference in the scores of the experimental and control group would be that the Moodle-based Blended Learning Course had included many activities such as Synchronous e-learning such as online lectures, Demonstrations and Asynchronous e-learning such as Learning Material, interactive videos, quizzes, discussion forum, mind maps, group and individual assignments badges, progress, etc. which helped the B.Ed. student-teachers to enhance their Techno-pedagogical Skills in comparison to the control group. (Garrison, D. R., & Vaughan, N. D. (2012) also stated that the Blended Learning approach has proven to both enhance and expand the effectiveness and efficiency of teaching and learning in higher education across disciplines.

3. There is a significant difference in the pre-test and post-test scores of student Teachers Techno-pedagogical skills of both the Experimental Group and Control Group. But the p-value of the experimental group score's is highly significant than the control group which means that the control group has also shown improvement in the scores but not as significant as experimental group. This could have happened because the subject teacher taught the same content for developing Techno-pedagogical Skills. Whereas the

experimental group's score is much higher this could be because Blended Learning Course has helped the students to develop their Techno-pedagogical Skills. The Moodle-based course provided learning resources, discussion forum, quizzes, mind map, demonstration, face-to-face lectures, and assignments to the student-teachers which helped them to develop their Techno-pedagogical skills effectively. (Khan, A. I., Qayyum, N., Shaik, M. S., Ali, A. M., &Bebi, C. V.,2012)

4. ω^2estimated value for Techno-pedagogical Skills is 22.61% which implies that the proportion of variance in gain score of Techno-pedagogical Skills is due to Blended Learning Course.Both the groups have significant difference in gain score in techno-pedagogical skills. This is the great contribution of Blended Learning Course for developing Techno-pedagogical skill among B.Ed. Student-teachers.
5. Results of this study indicated that the Blended Learning Course helped to develop Techno-pedagogical Skills effectively. The treatment has maximum effect on the experimental group in the development of Techno-pedagogical Skills as per Wolf's criterion. This shows that the Blended-Learning Course has maximum effect on the development of the Techno-pedagogical Skills among B.Ed. Student-teachers.

From the study it can be suggested that an effective blended learning environment is necessary for undertaking innovative pedagogical practices (Leema and Mohamed Saleem, 2017). Teacher education curriculum with technology integration plays a vital role to inculcate such abilities and skills to modern teachers. Adequate technology-supported classroom, quality resource materials, skilled teacher educators, sufficient time and motivation are required for effective implementation. For this Universities and other educational institutions need to install learning management systems (LMS) with powerful internet facilities.

Blended learning is bringing considerable change in higher education and will become equally impactful in school education and industrial training. So Teachers should get proper training in Blended learning to use blended learning strategies effectively teacher-educators, teachers, and student-teachers should know Techno-pedagogical Skills. The findings of a study conducted by Lyonga, N. A. N., Moluayonge, G. E., &Nkeng, A. J. (2021) also found a significant positive relationship between techno-pedagogical skills and teachers' performance. For this proper training should be given. The Teacher educators are shaping the student-teachers so that they can insist their student-teachers use the technologies in the teaching-

learning process. Universities and other educational institutions should improve coordination among other departments which helps the teacher- educators, teachers to share their views, ideas, expertise, and vice-versa.

Conclusion: The NEP, 2020 give emphasis to the usage of technology in education. The NEP-2020 states the importance of face-to-face in-person learning along with the promotion of digital learning and education, based on it. The University Grants Commission (UGC) has prepared draft guidelines for 'blended teaching' in universities and colleges. Education 4.0 also lays emphasis on Technology based Education to prepare students for 4th industrial revolution. It means Blended learning approach will be a part and parcel of the day- today teaching-learning process. And for this future teachers should be more competent in using techno-pedagogy effectively. To conclude, the Blended learning Course was found to be effective for Techno-pedagogical Skills. Therefore, it can be stated here that use of BlendedLearning coursehelps student-teachers to develop Techno-pedagogical Skills effectively.

References

Garrett, H. E. (1937). Statistics in psychology and education

Garrison, D. R., & Vaughan, N. D. (2012). Blended Learning in Higher Education: Framework, Principles, and Guidelines. In *Blended Learning in Higher Education: Framework, Principles, and Guidelines*. https://doi.org/10.1002/9781118269558 retrieved on 25/01/2021

Graham, C. R. (2013). *Emerging practice and research in blended learning* (3rd ed.). New York, Routledge: n M. G. Moore (Ed.), Handbook of distance education, .

Devyani Singh & CAM Corporate Team. (2020, August 21). NEP 2020: An Interplay of Education and Technology. Retrieved August 12, 2021, from Indian corporate and law: https://corporate.cyrilamarchandblogs.com/2020/08/nep-2020-an-interplay-of-education-and-technology/

Khan, A. I., Qayyum, N., Shaik, M. S., Ali, A. M., & Bebi, C. V. (2012). Study of Blended Learning Process in Education Context. International Journal of Modern Education and Computer Science, 4(9), 23–29. https://doi.org/10.5815/ijmecs.2012.09.03 retrieved on27-01-2021

Koehler, M.J., & Mishra, P. (2009). What Is technological pedagogical content knowledge? Contemporary Issues in Technology and Teacher Education (CITE)

Leema K M and T. Mohamed Saleem (2017). Infusion of Techno Pedagogy In Elementary Teacher Education Curriculum: Perspectives And Challenges, IOSR Journal Of Humanities And Social Science (IOSR-JHSS) Volume 22, Issue 1,Version 1, (January 2017) PP 06-10

Lyonga, N. A. N., Moluayonge, G. E., & Nkeng, A. J. (2021A Study of Techno-Pedagogical Skills and Teachers' Performance in HTTTC Kumba, Cameroon. (2021). Retrieved from https://www.ej-edu.org/: https://www.ej-edu.org/index.php/ejedu/article/view/31 on 25th May2021.

Pandya, S.R. (2011). Educational Research .New Delhi: A P H Publishing Corporation.

Scaria, Sumy M (2016) Developing a blended learning package for enhancing Techno Pedagogical skills and achievement among Student Teachers at the secondary level, Thesis, Mahatma Gandhi University, Retrieved http://hdl.handle.net/10603/194467

Thakur, N., & Research Scholar, P. D. (2015). a Study on Implementation of Techno-Pedagogical Skills, Its Challenges and Role To Release At Higher Level of Education. *American International Journal of Research in Humanities, Arts and Social Sciences AIJRHASS*, *February*, 15–154. http://www.iasir.net

UGC. (2021). *Blended Mode of Teaching and Learning : Concept Note*. 1–46. Retrieved August 12, 2021,From https://www.ugc.ac.in/pdfnews/6100340_Concept-Note-Blended-Mode-of-Teaching-and-Learning.pdf