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EFFECTIVENESS OF BLENDED LEARNING COURSE FOR SELF-REGULATED LEARNING STRATEGIES AMONG B.ED. STUDENT - TEACHERS

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ABSTRACT:

The study aimed at identifying the effectiveness of Blended Learning Course for developing Self-regulated Learning Strategies 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 self-regulated Learning Strategies is given to the experimental group. It has been found that there is a significant improvement in the Self-regulated Learning Strategies after the treatment. ω^2 (Omega square) estimated value for Self-regulated Learning Strategies is 7.83% which implies that the proportion of variance in gain scores of Self-regulated Learning Strategies is due to Blended Learning Course. The effect size was found Moderate (Magnitude 0.73) after calculating Wolf's formula which implies that the Blended-Learning Course has maximum effect on the development of the Self-regulated Learning Strategies among B.Ed. Student-teachers.



KEYWORDS: Blended learning Course, Self-regulated Learning Strategies.

INTRODUCTION :

Information and Communication Technology has impacted the student approach to learning. Digital Technology has become a part and parcel of students' lives. The use of a Learning Management System for online instruction continues to increase in today's higher education. ICT has advanced with breaking with space and time and adapting the learning characteristics of digital learning. It has created new opportunities for teaching and learning. Students are using digital devices for almost everything such as communication, collaboration, and accessing multiple sources of information. Higher education is typically characterized by a reduction in structured class time per week and more dependency upon self-regulated learning. The rapid development of e-learning systems has headed to many opportunities for self-learning. But Majority of the students still need teachers and traditional classroom teaching along with online learning so more and more colleges are using the Blended Learning approach to manage to teach. Blended Learning is a combination of traditional classroom teaching and online learning methods. It is popular and more practical for both teachers and learners.

SELF-REGULATED LEARNING STRATEGIES

In educational literature self-regulation (SR) first seemed in the 1960s. Self-regulation is the collective actions of individuals to achieve the desired goal. Self-regulation includes controlling one's behaviour, emotions, and thoughts in the achievement of long-term goals. Self-regulation abilities include goal-setting, self-monitoring, self-instruction, and self-reinforcement (Harris & Graham, 1999). Self-regulation is a skill that can be developed and mastered. Self-regulated learning strategies (SRLS) are used by students to observe their progress. They find the strengths of the used learning strategies as well as aware of any weaknesses throughout their learning process. Current literature has clearly stated to learn successfully via digital learning, students need to develop self-regulated learning strategies (SRLS) (Greene et al., 2018). According to existing literature, SRLS is very useful to students learning performance in both online and blended contexts. These strategies help students to find their thought processes. SRLS helps students to actively participate in their learning process in all study contexts.

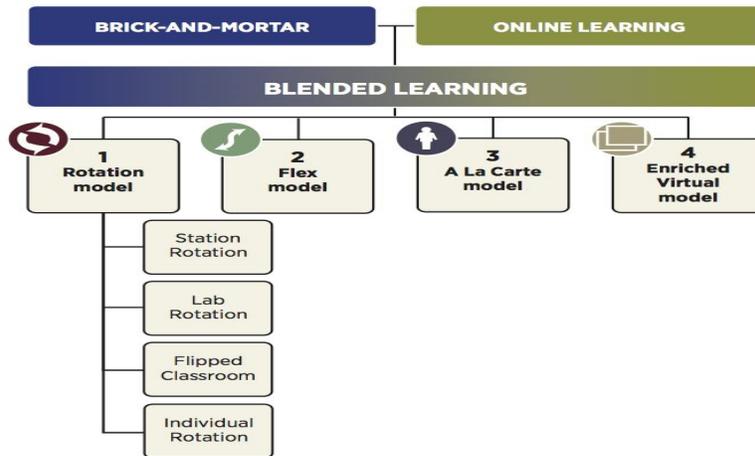
Technology is very useful in all kinds of learning and teaching. Self-regulated learning (SRL) is one of the domains of self-regulation and is associated most closely with educational aims.

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

The present concept of education gives emphasize more on developing the required skills of learning rather than transforming information mechanically. The UNESCO commission has given four pillars of education as under 1. Learning to do, 2. Learning to be, 3. Learning to learn 4. Learning to live

with others. This being the need of the day, students have to be motivated to learn on their own and required skills that are self-regulated learning should be therefore developed. Self-regulated learning strategy is useful to enhance higher students' achievement. (Nwafor, C. E. O. A. C. O. G. (2015)

In a country like India, with a few best colleges which have limited seats, most students are not able to get a quality education. A report issued by MHRD in 2017 pointed out that some schools have a fewer number of teachers than the required number. Due to this, teachers aren't able to focus on the students in the classrooms nor are the students able to utilize their time spent in the classrooms. Online Learning is one of the best ways to access quality education. Through online learning, students can get quality education, taught by experienced professors and professionals, at their fingertips. It can also provide personalized content to the students. 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 per cent of any course through online mode.

SRL appears to be important for learners in online learning environments that afford high levels of learner autonomy and low levels of teacher presence (Lehmann, Hähnlein, & Ifenthaler, 2014). In online learning environments where the instructor presence is low, learners have to make the decisions regarding when to study or how to approach the study materials. Therefore, learners' ability to self-regulate their own learning becomes a crucial factor in their learning success.

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. When students are completing online courses self-regulated learning strategies are very important as they are completing courses themselves. So, this study will help to develop these techno-pedagogical skills among them.

The researcher has experience in teaching Critical Understanding of ICT and other Subjects in One year B.Ed. and Two years B.Ed. program at Education College of the University of Mumbai for eight years. She is interested in teaching innovatively 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. Self-regulated learning strategies are very important for completing any course with a blended learning approach.

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 self-regulated learning strategies to complete any blended learning course.

RESEARCH QUESTIONS:

1. Does Blended Learning Course help to develop Self -regulated Learning Strategies among B.Ed. Student-teachers?
2. What is the effect of Blended Learning Course on developing Self -regulated Learning Strategies 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 Self-regulated Learning Strategies 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 of F.Y.B.Ed. Student-teachers.

Self-regulated Learning Strategies:

For the present study, the Self-Regulated Learning Strategies are the strategies used by the students to achieve their goal in classroom and academic related activities. Personal, behavioural, and environmental strategies adopted by the students in completing learning tasks are measured using a Scale on Self-Regulated Learning Strategies.

HYPOTHESIS OF THE STUDY

1. There is no significant difference in the pre-test scores of the B.Ed. Student-teachers' Self-regulated Learning Strategies for the experimental and control groups.
2. There is no significant difference in post-test scores of the B.Ed. Student-teachers' Self-regulated Learning Strategies 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' Self-regulated Learning Strategies for the experimental and control groups.
4. There is no significant difference in gain scores of the B.Ed. Student-teachers' Self-regulated Learning Strategies for the Experimental and control groups.

METHOD

The present study, is based on the Quasi-Experimental design with 'Pre-test, Post-Test Parallel Groups Design'. The method is used 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 (Sree Naryana Guru College of Education, Chembur, Mumbai).

TOOL

The researchers have prepared the tool to analyse the effects of Blended Learning Course on B.Ed. Student-teachers' Self-regulated Learning Strategies. Items were selected on the basis of Behavioural, Environmental and Personal Strategies of Self-regulated Learning. The Split-half method was used to establish the reliability of the tool. The reliability index of the tool was found to be 0.92

which was high and hence the tool was found to be internally consistent. Cronbach's Alpha of the tool was found to be 0.92. Apart from this researchers have prepared a Blended Learning Course by Learning Management System-Moodle to develop the Techno-Pedagogical Skills and self-regulated Learning Strategies among B.Ed. students. 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, Self-regulated Learning Strategies includes Behavioural, Environmental and Personal Strategies. All these strategies are very essential for the students and student-teachers.

For the present study researchers compared the pre and post-test scores of Self-regulated Learning Strategies 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' Self-regulated Learning Strategies for the experimental and control groups.

Table 1 indicates the difference in the pre-test Scores of the B.Ed. Student-teachers' Self-regulated Learning Strategies of Experimental and Control Group.

Table 1
The difference in the pre-test Scores of the B.Ed. Student-teachers' Self-regulated Learning Strategies of Experimental and Control Group.

Variables	Group	N	Mean	SD	t-ratio	p-value	Level of Significance
Self-Regulated Learning Strategies	Experimental	43	138.86	10.4	0.56	0.57	NS
	Control	44	140	8.63			

Table 1. Indicates that in pre-test scores of self-regulated Learning Strategies 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. Thus it can be stated that there is no significant difference in the pre-test scores of the student-teachers' Self-regulated Learning Strategies. It means both the groups possess more or less the same level of Self-regulated Learning Strategies. This implies that the initial conditions of both groups are similar in terms of prior knowledge.

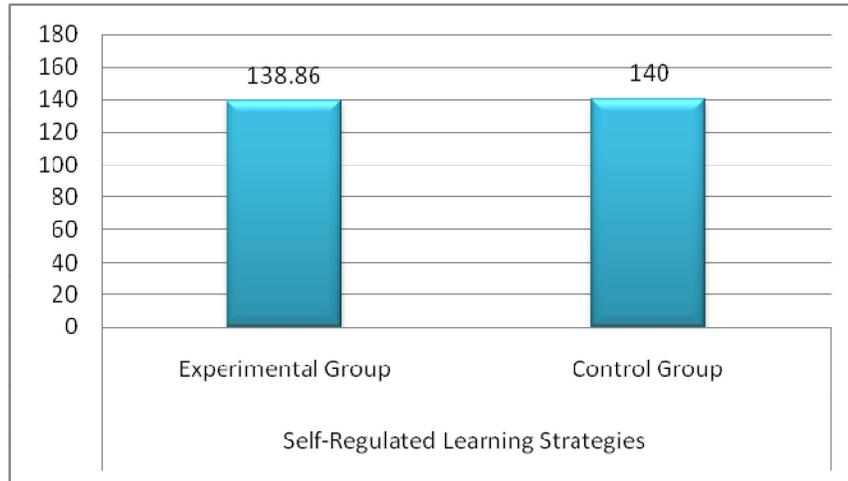


Figure 1. Bar Graph of Mean Scores pre-test Scores of the B.Ed. Student-teachers' Self-regulated Learning Strategies of Experimental and Control Group.

Hypothesis 2 There is no significant difference in post-test scores of the B.Ed. Student-teachers' Self-regulated Learning Strategies for the experimental and control groups.

The table 2 indicates the difference in the post-test Scores of the B.Ed. Student-teachers' Self-regulated Learning Strategies of Experimental and Control Group

**Table 2
Differences in the post-test Scores of the B.Ed. student- Self-regulated Learning Strategies for experimental and control groups.**

Variables	Group	N	Mean	SD	t-ratio	p value	Level of Significance
Self-Regulated Learning Strategies	Experimental	43	149.25	10.58	3.56	0.0006	S
	Control	44	140.75	11.64			

Table 2 indicates that post-test scores of B.Ed. Student-teachers' Self-regulated Learning Strategies 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' Self-regulated Learning Strategies in the experimental and Control group. Mean scores of Self-regulated Learning Strategies indicate that the experimental group has obtained higher scores in Self-regulated Learning Strategies as compared to the control group. From these outcomes, it can be seen that the experimental and control group differ in their Self-regulated Learning Strategies.



Figure 2. Bar Graph of Mean Scores Post-test Scores of the B.Ed. Student-teachers' Self-regulated Learning Strategies 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' Self-regulated Learning Strategies 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' Self-regulated Learning Strategies of Experimental and Control Group

**Table 3
The difference in the pre-test and post-test scores of the B.Ed. Student-teachers' Self-regulated Learning Strategies of Experimental and Control Group.**

Groups	Test	N	df	Mean	SD	t-ratio	p-value	Level of Significance
Experimental Group	Pre	43	42	138.86	10.4	4.28	0.000*	S
	Post			149.25	10.58			
Control Group	Pre	44	43	140	8.63	0.31	0.75	NS
	Post			140.75	11.64			

Table-3 shows the significant difference in the pre-test and post-test scores of student teachers' Self-regulated Learning Strategies of Experimental 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 Self-regulated Learning Strategies of the Experimental Group. Mean scores of the student-teachers Self-regulated Learning Strategies indicate that post-test scores of the experimental group have obtained higher scores in skills as compared to pre-test scores Whereas for pre-test and post-test scores of control group the obtained p value is more than 0.01 therefore it is not significant. Hence the null hypothesis is accepted. Therefore, it can be concluded that there is no significant difference in the pre-test and post-test scores of student teachers' Self-regulated Learning Strategies in the control group who has completed the course with the traditional method. The pre-test mean scores of student teachers' Self-regulated Learning Strategies of the control group have nearly equal scores compared to the post-test scores.

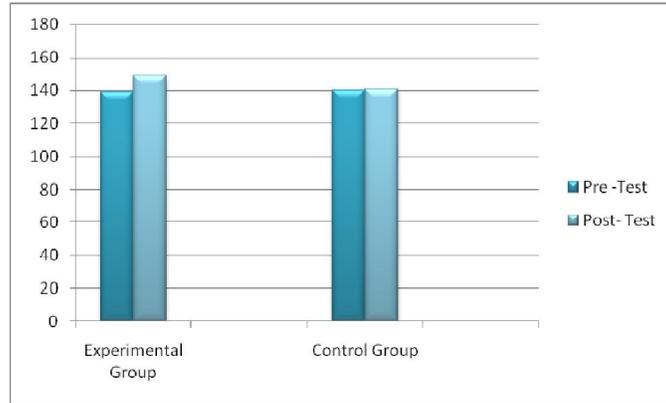


Figure 3. Bar Graph of Mean Scores Pre-test and Post-test Scores of the B.Ed. Student-teachers' Self-regulated Learning Strategies of Experimental and Control Group.

Hypothesis 4: There is no significant difference in gain scores of the B.Ed. Student-teachers' Self-regulated Learning Strategies for the experimental and control group.

Table 4 indicates the difference in the gain scores of the B.Ed. Student-teachers' Self-regulated Learning Strategies of Experimental and Control Group

**Table 4
The difference Table in the Gain Scores of the B.Ed. Student-teachers' Self-regulated Learning Strategies for Experimental and Control Groups**

Variables	Group	N	Pre Test Scores	Post Test Scores	Gain Scores	Gain Scores SD	t-ratio	p value	Level of Significance
Self-regulated Learning Strategies	Experimental	43	138.86	149.25	10.39	15.9	2.898	0.004	S
	Control	44	140	140.75	0.75	15.22			

Table-4 indicates the significant difference in the gain scores of Self-regulated Learning Strategies for experimental and control groups in an obtained p-value 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 Self-regulated Learning Strategies. Gain scores of Self-regulated Learning Strategies indicate that the experimental group has obtained higher scores in the Self-regulated Learning Strategies as compared to the control group.

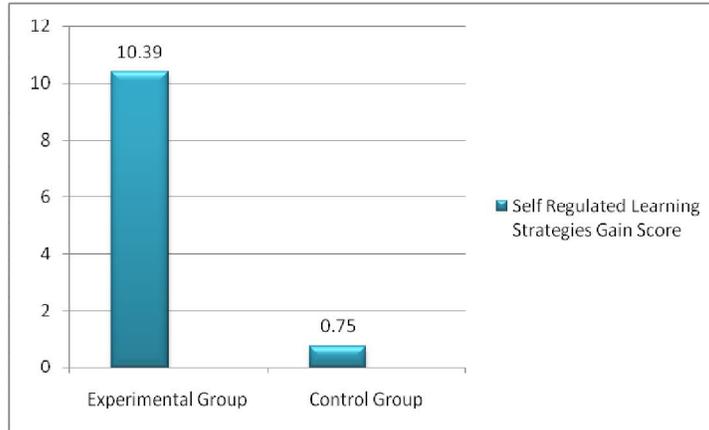


Figure 4: Gain Scores of Self-regulated Learning Strategies for Experimental and Control Groups

The table 5 indicates the Estimated Value for Self-regulated Learning Strategies

Table 5
 ω^2 Estimated Value for Self-regulated Learning Strategies

Variable	t-ratio of Gain Scores	ω^2	100 ω^2
Self-regulated Learning Strategies	2.898	0.07837	7.83%

From table 5 it can be said that ω^2 estimated value for variable Self-regulated Learning Strategies is 7.83%

Figure 5 shows the pie chart of the proportion of variance in a gain score of Self-regulated Learning Strategies due to Blended Learning Course.

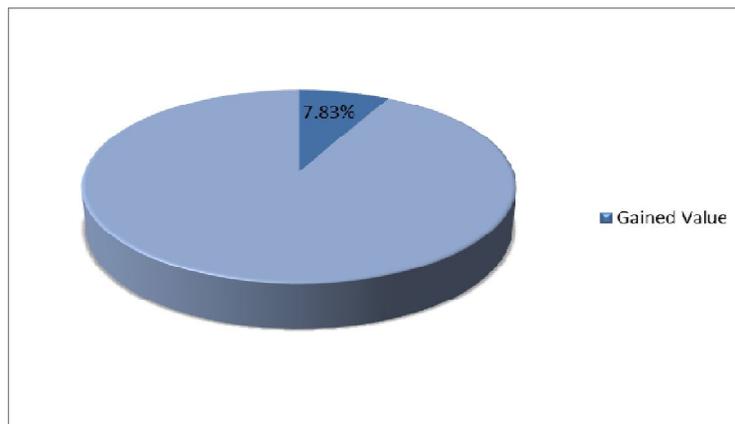


Figure 5
Pie Chart of Proportion of Variance in Gain Score of Self-regulated Learning Strategies due to Blended Learning Course.

From figure 5 it can be inferred that the contribution of Blended Learning Course in the development of Self-regulated Learning Strategies is 7.83% 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 variables for Self-regulated Learning Strategies, Wolf's formula is applied. The following table 6 gives the effect size of treatment on the dependent variable.

Table 6
Effect Size of the Treatment on the Experimental Group for Self-regulated Learning Strategies

Mean of Post-test Experimental Group	Mean of Post-test Control Group	SD of Control Group	Magnitude	Variable	Effect size
149.25	140.75	11.64	0.73	Self-Regulated Learning Strategies	Moderate Effect

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

DISCUSSION:

1. It can be seen from this study that the Self-regulated Learning Strategies for the experimental and control groups do not differ before the treatment. Hence it is confirmed that both the groups are similar in Self-regulated Learning Strategies before implementation of the treatment. (Blended-Learning Course)
2. There is a difference between both groups' post test scores. From these outcomes, it can be seen that the experimental and control group differ in their Self-regulated Learning Strategies. The mean scores of the experimental group are higher for Self-regulated Learning Strategies as compared to the control group which suggests that the level of Self-regulated Learning Strategies is higher for the students of the experimental group after the treatment. (Blended Learning Course). This indicates that the Student-teachers' Self-regulated Learning Strategies are developed due to treatment. Blended Learning Course has provided them with an opportunity to develop their Self-regulated Learning Strategies. Blended learning is one of the environments that allow students to manage and control their learning activities (Dettori G and Persico D 2007). Four modules were developed in Moodle platform to develop Techno-pedagogical Skills along with that different self-regulated learning strategies were introduced to students. In four modules in the blended learning course different self-regulated learning strategies like setting goals, time management, studying and learning strategies like note-making, concept mapping, and Self-Consequating were introduced. Based on these strategies different tasks and assignments were given, which helped Student-teachers to develop their self-regulated learning strategies. Along with that Moodle-based Blended learning, the course provided progress reports, rewards, and badges to students which were motivating students to learn. At the beginning of every module, objectives were given which were helping students to plan their learning. Course completion, assignments, tasks were based on a time limit which was helping students to manage time. Another aspect that increases significantly is an organization in resource management. This can possibly be explained by understanding the nature of learning processes in blended learning, which provides students with more resources and encourage them to refer to extra learning resources such as the internet, videos. This helps them to find relevant material to support their studies in any topic as well as explore the topics more deeply.
3. There is a significant difference in the pre-test and post-test scores of student Teachers Self-regulated Learning Strategies of the Experimental group. The p-value of the experimental group score is highly significant. This could be because Blended Learning Course has helped the students to develop their self-regulated learning strategies. This course help students to develop Personal,

Environmental, and behavioural learning strategies. Students learned to set their goals, complete tasks within the time limits. Discussion forums, live chats helped them to communicate with peers and teachers. Moodle-based Blended learning Course allowed for communication between students to teachers or students to students through forums, blogs, chats, and messages. These features allow students to post or discuss learning material anytime and anywhere. The online version also gives the opportunity for students to revise learning materials that are difficult for them. This flexibility might affect students' SRL as it provides students a room to control their learning processes and strategies. They could see their progress and according that they could manage their learning. Learning and study strategies like mind mapping, note-taking helped them to improve their self-regulated learning strategies.

4. ω^2 estimated value for Techno-pedagogical Skills 7.83% which implies that the proportion of variance in the gain score of Self-regulated Learning strategies is due to Blended Learning Course. Both the groups have significant differences in gain score in Self-regulated Learning strategies. This is the great contribution of the Blended Learning Course for developing Self-regulated Learning strategies among B.Ed. Student-teachers.
5. Results of this study indicated that the Blended Learning Course helped to develop Self-regulated Learning strategies effectively. Study (Setyaningrum, W. (2019) reveals that students in blended learning have higher self-regulated learning scores than their counterparts. The treatment has a moderate effect on the experimental group in the development of Self-regulated Learning strategies as per Wolf's criterion. This shows that the Blended-Learning Course has a moderate effect on the development of the Self-regulated Learning strategies 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. 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 the proper training to use the Blended Learning Approach effectively. For it teacher-educators, teachers, and student-teachers should know Self-regulated Learning Strategies. Universities and other educational institutions should emphasise on development of self-regulated learning strategies of students.

CONCLUSION:

Blended learning allowed students to manage their own pace of learning especially in the online session (Setyaningrum, W. (2019). This might foster students' self-regulated learning. The NEP, 2020 gives 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. For effective use of blended learning approach, the student teacher should get proper training of self-regulated learning strategies. Blended learning could improve students' self-regulated learning in mathematics class. Nevertheless, there is a need to explore more deeply on the design of blended learning that would affect self-regulated learning more effective. (Setyaningrum, W. (2019)

It means the Blended learning approach will be a part and parcel of the day- today's teaching-learning process. And for this future teachers and students should be more competent in using Self-regulated learning strategies. To conclude, the Blended learning Course was found to be effective for developing self-regulated learning strategies. Therefore, it can be stated here that the use of the Blended Learning course helps student-teachers to develop self-regulated learning strategies effectively.

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