



A NEW DIMENSION OF KASI BLENDED PEDAGOGICAL MODEL TO ENHANCE MATHEMATICAL SKILLS OF PRE-SERVICE TEACHERS

Mr. D. Kasi

Ph.D Research Scholar, Alagappa University, Karaikudi – 630 003

Dr. N. Johnson*

Assistant Professor, Department of Lifelong Learning, Alagappa University, Karaikudi – 630 003 *Corresponding Author

ABSTRACT

UNESCO recognizes that teacher education is integrally related to quality education and closely linked to curriculum renewal, improved learning outcomes, and a positive school environment. UNESCO's Teacher Training initiative is aimed at redirecting policies, improving institutional capacity, improving teacher quality, and stemming the teacher shortage in order to achieve Education for All by 2015. Blended learning a mix approach of available teaching methodology is a great advancement in pedagogy. An attempt was made to measure Blended pedagogical model in enhancing mathematical skill of D.El.Ed, pre-service teachers. The study is carried out for 65 pre-service teachers of District Institute of Education and Training, Palayampatti, Virudhunagar District, Tamilnadu. The creative blended pedagogical model hosted for 45 days. Skill test, Pre test, Post test1, and Post test 2 conducted. The major findings of the study reveal that the Blended pedagogical model is effective in enhancing mathematical skills of pre-service teachers through Mean, Median, and Mode analysis.

KEYWORDS : KASI Blended Pedagogical Model, Mathematical Skills, Pre-Service Teachers

INTRODUCTION:

As stated by NCTE (1998) in Quality Concerns in Secondary Teacher Education, The teacher is the most important element in any educational program. It is the teacher who is mainly responsible for implementation of the educational process at any stage. This shows that it is very important to invest in the preparation of teachers, so that the future of a nation is secure. The importance of competent teachers to the nation's school system can in no way be over emphasized. Educational systems worldwide insist on using information and communication technologies (ICT) to teach students who gain the knowledge and skills needed for the future knowledge society. Moreover, Blended learning model is the instructional system of processes and activities designed according to the ICT development, characteristics and models of e-learning, principles of formal communication, principles of e-education, principles of competence-based education system, etc.

Need for the study: Teachers prefer to adopt traditional methods of teaching in spite of the advent of advance technologies. Further, it is more disheartening to know that majority of the aspirants choose the career to be a primary school teacher in India, because it is a last resort. The concept of blended learning, which unites multiple teaching models, has recently received much attention. Blended learning represents all teaching models that are integrated with technology, such as e-mails, streaming media, Internet and can be combined with traditional teaching methods. Hence the problem of the present study is stated as "Effect of blended pedagogical model to enhance mathematical skills of Pre-service teachers."

Significance of the study: Pre-service Teachers and students commonly express a fear of or anxiety about mathematics. A sense of fear and failure regarding mathematics among a majority of Pre-service teacher is prevailing because of their shaky foundation. Learning mathematics is a challenge for them. Mathematics education trains Pre-service teachers to make and use measurements and includes the study of algebra, statistics, geometry and calculus. When mathematics content being taught by teacher educator is unconnected to pre-service teachers' ability level and experience, then there is serious achievement gaps result. Without intervention strategies, Pre-service teachers could remain lost for the duration of their education. Hence there is need to analyze various issues and problems relating to Pre-service teachers and learning of mathematics. With the recent advancement in technologies, the teaching of mathematics will be redesigned to bring it in line with modern technological devices. A strategy has to be developed to integrate the effectiveness and socialization opportunities of the class room with the technologically enhanced

active learning possibilities. So the investigator selected this topic entitled "Effect of Blended Pedagogical Model to enhance Mathematical skills of Pre-Service Teachers".

Review of Related Literature:

1. Vinh-Thang Ho et al. (2016) reported that the experimental, blended learning group showed a significantly higher level of knowledge of hands-on approach & overall satisfaction with the course.
2. Inderbir Kaur, (2016) revealed that an interactive combination of video teaching and an energetic peer facilitator beyond the traditional boundaries of classroom instruction with new advances in learning and collaboration technologies to maximize results.
3. Johnson N and Kasi D (2014) investigated on Design Approaches of Blended Learning in Higher Education.
4. Johnson N and Kasi D (2015) explored on Octagonal framework for implementing Blended Learning Pedagogical Model.
5. Johnson N and Kasi D (2016) investigated on "Involvement of Peer Group in Reflective Pedagogy".

Definition of the Key Terms

Blended: The terms "blended," "hybrid," "technology-mediated instruction," "web-enhanced instruction," and "mixed-mode instruction" are often used interchangeably in current research literature. Here traditional face to face learning mixed with technology-mediated instruction. Blended Pedagogical model: Blended pedagogy model consist of complexity instructional strategies, instructional objectives, content rapidity of change instructional component multimedia (aural/visual), and interactivity didactic collaboration.

Mathematical skills: Mathematics skills refers to mastery in arithmetic, solving day to day life problems, algebra, practical geometry, statistics, graphs etc.

Pre-service teachers: The term "Pre-service teachers" refers to the student teachers who are studying in the Diploma in Elementary Education course.

OBJECTIVES OF THE STUDY:

The following are the objectives of the study:

1. To assess the mathematical skills of the Pre-Service teachers.
2. To find out significant difference if any on mathematical skills of Pre-service teachers in respect to certain demographic variables.
3. To develop and validate module for Pre-service teachers to

enhance the mathematical skills.

- To find out the effect of developed module towards mathematical skills among Pre-Service teachers before and after experimentation.

Hypothesis: The following hypotheses were formulated based on the objectives of the study

- There is no significance difference between the means of control and experimental group pre-service teachers in their skill test achievement in mathematics.
- There is no significance difference between the means of control and experimental group pre-service teachers in their pre-test achievement in mathematics.
- There is no significance difference between the means of control and experimental group pre-service teachers in their post-test 1 achievement in mathematics.
- There is no significance difference between the means of control and experimental group pre-service teachers in their post-test 2 achievement in mathematics.

Sample: 65 Pre-Service Teachers of District Institute of Education and Training, Palayampatti, Virudhunagar District, Tamil Nadu were taken as sample for the study. Experimental method was adopted. For data analysis, descriptive and differential analysis was used.

Tool: The following tools was developed and standardized by the Investigator

- Specially designed High Impact Blend Learning Pedagogical Model for improving mathematical skills among Pre-Service Teachers of Elementary Education
- Tool developed by the researcher to assess the mathematical skills among Pre-Service Teachers of Elementary Education.

Mean, Median, and Mode analysis for Skill Test, Pre-test, Post test 1 and Post test 2:

| Test | Skill Test | | | Pre-test | | | Post-test 1 | | | Post-test 2 | | |
|-----------|------------|--------------|-------------|----------|--------------|--------------|-------------|--------------|--------------|-------------|--------------|--------------|
| | Control | Experimental | Difference | Control | Experimental | Difference | Control | Experimental | Difference | Control | Experimental | Difference |
| Mean: | 50.88 | 51.39 | 0.51 | 46.88 | 36 | 10.88 | 56.93 | 69.21 | 12.27 | 76.38 | 91.15 | 14.77 |
| Median: | 50 | 52 | 2 | 44 | 36 | 8 | 56 | 72 | 16 | 84 | 92 | 08 |
| Range: | 64 | 48 | 16 | 52 | 36 | 16 | 72 | 60 | 12 | 60 | 28 | 32 |
| Mode: | 40 | 48, 40 | 7 | 36 | 40 | 4 | 48, 40 | 72 | 24 | 96 | 96 | 0 |
| Largest: | 92 | 76 | 16 | 76 | 52 | 24 | 92 | 92 | 0 | 100 | 100 | 0 |
| Smallest: | 28 | 28 | 0 | 24 | 16 | 8 | 20 | 32 | 12 | 40 | 72 | 32 |
| Sum: | 1628 | 1696 | 68 | 1500 | 1188 | 312 | 1822 | 2284 | 462 | 2444 | 3008 | 564 |
| Count: | 32 | 33 | 01 | 32 | 33 | 01 | 32 | 33 | 01 | 32 | 33 | 01 |

Interpretation:

- From the table, it shows that mean scores of control groups Skill Test, Pre-test, Post-test 1 and Post-test 2 are 50.88, 46.88, 56.93, and 76.38. Therefore there is improvement in achievement could be seen between Pre-test, Post-test 1 and Post-test 2 of control. Hence the conventional method (traditional method) is effective in enhancing mathematical skills of pre-service teachers. Since the control group got treatment through traditional face to face learning method.
- From the table, it shows that mean scores of experimental groups Skill Test, Pre-test, Post-test 1 and Post-test 2 are 51.39, 36, 69.21, and 91.15. Therefore there is improvement in achievement could be seen between Pre-test, Post-test 1 and Post-test 2 of experimental. Hence the Blended pedagogical model is effective in enhancing mathematical skills of pre-service teachers. Since the experimental group got treatment both traditional face to face learning and technology mediated instruction.
- From the table, it shows that Median values of control groups Skill Test, Pre-test, Post-test 1 and Post-test 2 are 50, 44, 56, and 84. Therefore there is improvement in achievement could be seen between Pre-test, Post-test 1 and Post-test 2 of control. Hence the conventional method (traditional method) is

RESULTS:

Sorted Data Set for Control group Skill Test: 92, 76, 72, 68, 68, 68, 64, 64, 60, 60, 56, 56, 52, 52, 52, 52, 48, 48, 44, 40, 40, 40, 40, 40, 40, 36, 36, 36, 32, 28, 28

Sorted Data Set for Experimental group Skill Test: 76, 72, 72, 68, 64, 64, 64, 64, 60, 60, 56, 56, 52, 52, 52, 52, 48, 48, 48, 48, 44, 44, 40, 40, 40, 40, 40, 36, 32, 32, 28

Sorted Data Set for Control group Pre Test: 76, 64, 64, 64, 64, 60, 60, 60, 56, 56, 52, 48, 48, 44, 44, 44, 44, 40, 40, 40, 40, 36, 36, 36, 36, 32, 32, 24, 24

Sorted Data Set for Experimental group Pre Test: 52, 52, 52, 52, 48, 48, 48, 44, 40, 40, 40, 40, 40, 40, 36, 36, 36, 36, 32, 32, 32, 32, 28, 28, 28, 24, 20, 20, 16

Sorted Data Set for Control group Post Test 1: 92, 84, 84, 84, 80, 76, 76, 68, 68, 68, 64, 64, 64, 60, 56, 56, 56, 52, 48, 48, 48, 48, 44, 44, 42, 40, 40, 40, 40, 36, 32, 20

Sorted Data Set for Experimental group Post Test 1: 92, 92, 88, 88, 88, 84, 84, 80, 76, 76, 76, 76, 72, 72, 72, 72, 72, 68, 68, 64, 64, 60, 60, 56, 56, 56, 52, 52, 44, 44, 32

Sorted Data Set for Control group Post Test 2: 100, 100, 96, 96, 96, 96, 96, 92, 92, 92, 88, 88, 88, 84, 84, 84, 80, 80, 76, 76, 72, 72, 64, 64, 48, 44, 42, 42, 40, 40, 40

Sorted Data Set for Experimental group Post Test 2: 100, 100, 100, 100, 96, 96, 96, 96, 96, 96, 96, 96, 92, 92, 92, 92, 92, 92, 92, 88, 88, 88, 88, 84, 84, 80, 80, 80, 72

effective in enhancing mathematical skills of pre-service teachers. Since the control group got treatment through traditional face to face learning method.

- From the table, it shows that Median values of experimental groups Skill Test, Pre-test, Post-test 1 and Post-test 2 are 52, 36, 72, and 92. Therefore there is improvement in achievement could be seen between Pre-test, Post-test 1 and Post-test 2 of experimental. Hence the Blended pedagogical model is effective in enhancing mathematical skills of pre-service teachers. Since the experimental group got treatment both traditional face to face learning and technology mediated instruction.
- From the table, it shows that Mode values of control groups Skill Test, Pre-test, Post-test 1 and Post-test 2 are 40, 36, 40 & 48, and 96. Therefore there is improvement in achievement could be seen between Pre-test, Post-test 1 and Post-test 2 of control. Hence the conventional method (traditional method) is effective in enhancing mathematical skills of pre-service teachers. Since the control group got treatment through traditional face to face learning method.
- From the table, it shows that Mode values of experimental groups Skill Test, Pre-test, Post-test 1 and Post-test 2 are 48 & 40, 40, 72, and 96. Therefore there is improvement in achievement

could be seen between Pre-test, Post-test 1 and Post-test 2 of experimental. Hence the Blended pedagogical model is effective in enhancing mathematical skills of pre-service teachers. Since the experimental group got treatment both traditional face to face learning and technology mediated instruction.

- The above table shows that mean difference is 0.51, median difference is 2, range difference is 16, mode difference is 7, sum difference is 68, and standard deviation difference is 2 are found between control and experimental group achievement in **Skill test**. The above table shows that mean difference is 10.88, median difference is 8, range difference is 16, mode difference is 4, sum difference is 312, and standard deviation difference is 2.68 are found between control and experimental group achievement in **Pre- test**. The above table shows that mean difference is 12.27, median difference is 16, range difference is 12, mode difference is 24, sum difference is 462, and standard deviation difference is 2.97 are found between control and experimental group achievement in **Post- test 1**. The above table shows that mean difference is 14.77, median difference is 08, range difference is 32, mode difference is 0, sum difference is 564, and standard deviation difference is 13.91 are found between control and experimental group achievement in **Post-test 2**. It clearly indicates that experimental group got better achievement than the control group. That means Blended pedagogical model gives better achievement than traditional method. Hence the Blended pedagogical model is effective in enhancing mathematical skills of pre-service teachers.

Major Findings of the Study:

The following are the major findings of the study

- 1) There is no significance difference between the means of control and experimental group pre-service teachers in their skill test achievement in mathematics.
- 2) There is significance difference between the means of control and experimental group pre-service teachers in their pre-test achievement in mathematics.
- 3) There is significance difference between the means of control and experimental group pre-service teachers in their post- test 1 achievement in mathematics.
- 4) There is significance difference between the means of control and experimental group pre-service teachers in their post- test 2 achievement in mathematics.

CONCLUSION:

Tamil Nadu Government had given free laptops to students those who have completed their higher secondary education through Government and Government aided schools. It is recommended to the students owning laptops to have a regular practice of using laptop for their study related to academic activities either through online or offline. It will put forward a new approach about different walks of life and give a platform for development. Blended learning is giving the student greater autonomy over his/her education growth path, using technology only as an enabler. The Pre and in-service teachers can make use of the technology available in the digital era to equip themselves through education related websites, Apps, software, videos, audios and make use of them for providing better teaching learning environment to students. It is more Preferential for the next generation teachers too.

REFERENCES:

1. Ho V.-T, Nakamori Y, Ho T.-B, Lim C. P. (2016). Blended learning model on hands-on approach for in-service secondary school teachers: Combination of e-learning and face-to-face discussion. *Education and Information Technologies*, 21(1), 185–208.
2. Inderbir Kaur (2016). Blended learning a convergence of online learning and face-to-face education for imparting better education in India: *International journal of social sciences*, 2(1), 226-235.
3. Johnson N & Kasi D (2014) Design Approaches of Blended Learning in Higher Education. In Proceedings of the International seminar on Blended learning: Opportunities and challenges in higher education (BLOCHE 2014) (Vol. 1, pp. 183-185) (A. M., Ed.). Salem, Tamilnadu
4. Johnson N et.al (2015) Octagonal framework for implementing Blended Learning Pedagogical Model. *Trends in Teacher Education*, 2015. Kattukuppam, Puducherry: St. Anne's College of Education & Research center.
5. Johnson N & Kasi D (2016) Involvement of Peer Group in Reflective Pedagogy. In

National conference on Perspectives and Prospects of Technology Enabled learning (COPPEL-2016) (Vol. I, pp. 234-235). Karaikudi, TamilNadu: Department of Education Alagappa University.

6. Johnson N & Kasi D (2016). Effectiveness of Low impact Blend in teaching arithmetic operation on Integer for class VIII students. In National conference on Perspectives and Prospects of Technology Enabled learning (COPPEL-2016) (Vol. II, pp. 470-471). Karaikudi, Tamilnadu: Department of Education Alagappa University.