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# EFFECTIVENESS OF AN ADDIE-BASED INSTRUCTIONAL PACKAGE IN ENHANCING E-PORTFOLIO DEVELOPMENT COMPETENCIES AMONG B.ED. STUDENT-TEACHERS

**Dr. Vaishali Patil**

*Assistant Professors*

*Guru Nanak College of Education and Research*

*Bhandup (west), Mumbai, Maharashtra.*

**Abstract:**

*The study aimed at identifying the effectiveness of an ADDIE-Based Instructional Package in enhancing the Competency of e-Portfolio Development among B.Ed. Student-Teachers. Research developed ADDIE Model based Instructional Package. The study sample consisted of 30 of S.Y.B.Ed. Student-teachers who are doing two-year B.Ed. course from the University of Mumbai considers for the study. Treatment was given to the experimental group. Pre-test and Post-test were given to measure the developing E-Portfolio perception based on four sub areas. The appropriate statistical analyses were conducted. The t-test scores post pre-test and post-test in four sub areas indicates that there is a significant effect of e-Portfolio Development Package.*

**Key-Words:** *e-Portfolio, ADDIE-Based Instructional Package, B.Ed. Student-teachers*



## Introduction:

Information and communication technologies (ICTs) are causing major and rapid changes in society. These changes have also got an impact on educational systems. Education must provide effective learning systems to meet the challenges and needs of modern society. Technology-supported learning environments enhance accessibility, collaboration, creativity, and active participation in education.

Blended learning has emerged as one of the most effective approaches in modern education. It combines traditional face-to-face instruction with online and digital learning experiences to provide flexibility and meaningful learning opportunities. Graham (2006) defined blended learning as the combination of face-to-face and computer-mediated instruction. In teacher education programmes, blended learning strategies help student-teachers develop both pedagogical and technological competencies required for \contemporary classrooms.

In recent years, e-Portfolio development has gained significant importance in higher education and teacher education programmes. An e-Portfolio is a digital collection of students' academic work, reflections, achievements, teaching experiences, and evidence of professional growth. Lorenzo and Ittelson (2005) emphasized that e-Portfolios encourage self-assessment, lifelong learning, collaboration, and digital literacy. In teacher education, e-Portfolios provide opportunities for student-teachers to document their learning experiences and showcase professional competencies.

However, many B.Ed. student-teachers face difficulties in developing effective e-Portfolios due to inadequate digital skills, lack of structured guidance, and limited exposure to technology-integrated

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instructional practices. Therefore, there is a need for systematic instructional interventions that can improve competency in e-Portfolio development among student-teachers.

The ADDIE instructional design model is widely recognized for developing effective teaching-learning materials and instructional programmes. The integration of the ADDIE model with blended learning strategies can help create interactive, engaging, and skill-oriented learning environments for B.Ed. student-teachers.

**Need of the Study:**

In the digital era, the integration of technology in teacher education has become essential for preparing competent future teachers. E-Portfolios have emerged as an important tool for documenting learning experiences, professional growth, and digital competencies among student-teachers (Barrett, 2007). Many B.Ed. student-teachers face difficulties in developing e-Portfolios due to inadequate digital skills, lack of proper guidance, and insufficient structured training. In the technology-driven educational environment, there is a growing need for an effective instructional package that can enhance the competency of e-Portfolio development through blended learning strategies. E-Portfolios also play an important role in promoting reflective learning, professional growth, and digital competency among future teachers (Barrett, 2007).

The present study entitled "Effectiveness of an ADDIE-Based Instructional Package in Enhancing e-Portfolio Development Competencies among B.Ed. student-teachers" aims to examine the effectiveness of the developed instructional package in improving student-teachers' competency in e-Portfolio development. A well-developed e-Portfolio helps student-teachers showcase their teaching skills, achievements, projects, and digital competencies during job applications and interviews, thereby supporting their professional identity and career readiness (Lorenzo & Ittelson, 2005).

The researcher observed that limited studies have been conducted on the development of e-Portfolio competency among B.Ed. student-teachers using ADDIE-based blended learning approaches. Hence, the present study is needed to examine the effectiveness of an ADDIE-Based Instructional Package on the competency of e-Portfolio development among B.Ed. student-teachers. The findings of the study may help teacher educators, curriculum planners, and educational institutions adopt effective blended learning practices and strengthen digital competency development in teacher education programmes.

**Objectives of the Study:**

1. To study the pre-test scores of B.Ed. student-teachers regarding their competencies of e-Portfolio development.
2. To design and develop an instructional package based on the ADDIE Model for the development of e-Portfolio competencies among S.Y. B.Ed. student-teachers.
3. To study the post-test scores of B.Ed. student-teachers regarding their competencies of e-Portfolio development.
4. To compare the pre-test and post-test scores of B.Ed. student-teachers across four dimensions of competencies in e-Portfolio development: Organization and Documentation of Learning, Digital Skills Development, Reflective Learning and Self-Assessment, and Professional Development.

**Hypothesis :**

**$H_{01}$:** There is no significant difference between the pre-test and post-test scores of B.Ed. student-teachers with respect to their competencies in e-Portfolio development in the dimension of **Organization and Documentation of Learning.**

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**$H_{02}$:** There is no significant difference between the pre-test and post-test scores of B.Ed. student-teachers with respect to their competencies in e-Portfolio development in the dimension of **Digital Skills Development.**

**$H_{03}$:** There is no significant difference between the pre-test and post-test scores of B.Ed. student-teachers with respect to their competencies in e-Portfolio development in the dimension of **Reflective Learning and Self-Assessment.**

**$H_{04}$:** There is no significant difference between the pre-test and post-test scores of B.Ed. student-teachers with respect to their competencies in e-Portfolio development in the dimension of **Professional Development.**

**Methodology:** For the present study, the researcher employed a one-group pre-test–post-test experimental design to examine the effectiveness of the developed instructional package. A pre-test was administered to the group of B.Ed. student-teachers to assess their initial perception of e-Portfolio. This was followed by the implementation of the ADDIE-based instructional package as the treatment. After the completion of the treatment, a post-test was conducted on the same group. The difference between the mean pre-test and post-test scores was then analyzed to determine its statistical significance.

**Structure:**

- Pre-test → Treatment (ADDIE-based instructional package) → Post-test
- Same group of B.Ed. student-teachers is tested twice

**Notation:**

- $O_1 \rightarrow X \rightarrow O_2$
  - $O_1$ = Pre-test
  - X = Treatment
  - $O_2$ = Post-test

**The Sample:** The present study employed convenience sampling, a type of non-probability sampling technique. The sample consisted of B.Ed. student-teachers who were readily accessible to the researcher.

**Tool:** The researcher had prepared the tool to analyse the effective of an ADDIE-Based Instructional Package in enhancing the Competencies of E-Portfolio Development among B.Ed. Student-Teachers. Items were consisting of dimensions: Organization and Documentation of Learning, Digital Skills Development, Reflective Learning and Self-Assessment, and Professional Development.

**A Package For E-Portfolio:**

**Stage 1: Analysis phase**

This phase constituted the initial stage of the instructional package development process, involving a systematic analysis of the existing training scenario to identify current practices and knowledge gaps. Based on this analysis, programme objectives were defined, and a detailed learner analysis was conducted. Appropriate training methodologies were selected, and a Moodle-based blended learning approach was adopted. Accordingly, the needs analysis and overall training plan were finalized.

The planning process considered key factors such as learner characteristics, intended behavioural outcomes, learning constraints, delivery methods, online pedagogical strategies, and project timeline. The target group comprised Second Year Bachelor of Education (S.Y.B.Ed.) students, who were required to develop a portfolio for the Audit Course Understanding the Self. An electronic portfolio (e-Portfolio) was implemented as the mode of submission and assessment.

**Stage 2: Design Phase**

The design phase represents the second stage of the ADDIE model and focuses on the systematic planning of the instructional package. During this phase, key elements such as learning objectives, assessment tools, instructional activities, content organization, subject

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matter analysis, lesson planning, and media selection were carefully developed.

Based on the outcomes of the analysis phase, appropriate strategies were formulated to design the module on e-Portfolio development. The primary approach adopted was a Moodle-based blended learning strategy. This included the integration of diverse instructional components such as learning materials, video resources, quizzes, assignments, sample e-Portfolios, and a comprehensive manual for e-Portfolio preparation.

In addition to the online components, face-to-face sessions were conducted to explain the concept of e-Portfolios in detail. Demonstrations were also provided to guide students in developing their own e-Portfolios using Google Sites.

All necessary instructional materials required for the module were identified and developed, and a final draft of the module design was prepared during this phase.

**Stage 3: Development Phase**

The development phase involves creating and organizing instructional materials based on the design phase. For this Blended Learning Course, the researcher adopted the Flipped Classroom Model, where students accessed content online before attending classroom sessions. The e-content was developed using the Moodle platform (https://elearn.gncer.org/ ).

The materials included video lectures, PowerPoint presentations, PDFs, Word documents, quizzes, tasks, and assignments, all aligned with learning objectives and arranged systematically. Classroom sessions were used for discussion, Demonstration, clarification, and activities. The researcher also ensured content quality, usability, and proper functioning of the materials during this phase.

**Stage 4: Implementation Phase**

During the implementation phase, a structured plan was developed to train both facilitators and learners, and the program was conducted over a period of 10 days. The researcher introduced the concept of e-Portfolios in education, explained their types, and emphasized their importance. She demonstrated how to create an e-Portfolio using Google Sites. In subsequent sessions, she presented sample e-Portfolios and provided students with hands-on practice opportunities to help them design and develop their own e-Portfolios.

In addition, the researcher developed a course on Moodle, where she uploaded videos explaining the concept of e-Portfolios and provided step-by-step guidelines for their creation. The course also included quizzes and assignments, requiring students to submit the link to their e-Portfolio.

**Stage 5: Evaluation Phase**

This phase focuses on assessing the effectiveness and efficiency of the instructional package. The evaluation phase is divided into two components: formative and summative evaluation. Formative evaluation was conducted at each stage of the ADDIE process to ensure continuous improvement. Summative evaluation was carried out after the complete implementation of the module through post-tests to measure overall learning outcomes.

**Results and Interpretion:** In this Study four dimensions of competencies in e-Portfolio development: Organization and Documentation of Learning, Digital Skills Development, Reflective Learning and Self-Assessment, and Professional Development All these competencies are very essential for student-teachers in e-Portfolio-development.

**Hypothesis 1:** There is no significant difference between the pre-test and post-test scores of B.Ed. student-teachers with respect to their competencies in e-Portfolio development in the dimension of Organization and Documentation of Learning.

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**Table 1 Difference in the Pre-test and Post-test scores of B.Ed. student-teachers with respect to their competencies in e-Portfolio development in the dimension of Organization and Documentation of Learning.**

| Area | Mean | SD | p-value | Level of Significant |
|---|---|---|---|---|
| Pre-test | 17.57 | 3.37 | 0.00001 | Significant |
| Post-test | 22.2 | 3.79 | | |

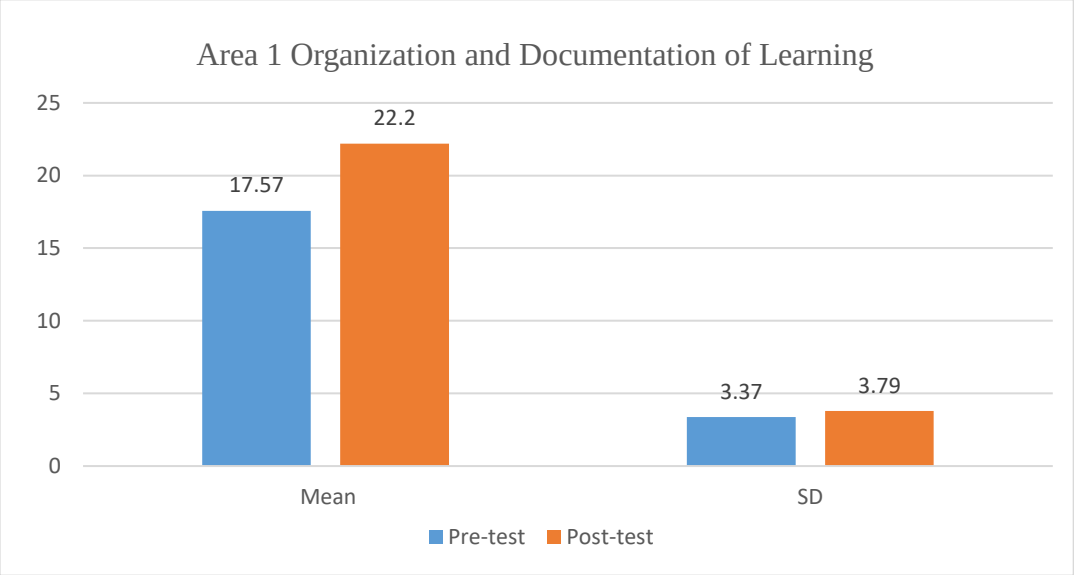


Figure 1. Bar Graph of Mean Scores Pre-test Post-test Scores of the B.Ed. student-teachers with respect to their competencies in e-Portfolio development in the dimension of Organization and Documentation of Learning.

Table 1, indicates that the p-value obtained for the pre-test and post-test scores of B.Ed. student-teachers in the dimension of Organization and Documentation of Learning is less than 0.01, indicating a statistically significant difference. Hence, the null hypothesis is rejected. The mean score of the post-test is higher than that of the pre-test, which shows an improvement in students' competency. Therefore, it can be concluded that the ADDIE-based instructional package was effective in enhancing the competency of e-Portfolio development in the dimension of organization and documentation learning among B.Ed. student-teachers.

**Hypothesis 2: There is no significant difference between the pre-test and post-test scores of B.Ed. student-teachers with respect to their competencies in e-Portfolio development in the dimension of Digital Skills Development.**

**Table 2 Differences in the pre-test and post-test scores of B.Ed. student-teachers with respect to their competencies in e-Portfolio development in the dimension of Digital Skills Development.**

| Area | Mean | SD | p-value | Level of Significant |
|---|---|---|---|---|
| Pre-test | 18.53 | 4.64 | 0.00003 | Significant |
| Post-test | 22.33 | 4.59 | | |

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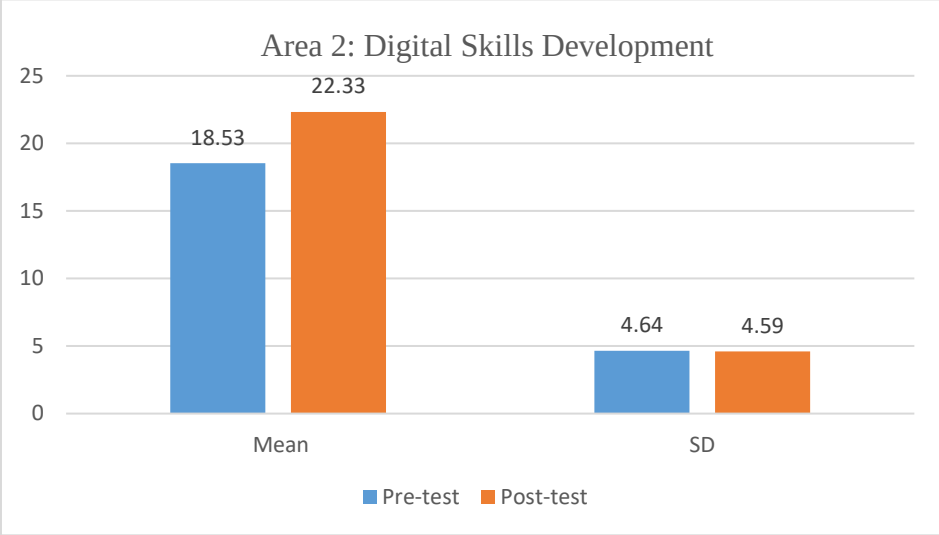


Figure 2. Bar Graph of Mean Scores in the pre-test and post-test scores of B.Ed. student-teachers with respect to their competencies in e-Portfolio development in the dimension of Digital Skills Development.

Table 2, indicates that the p-value obtained for the pre-test and post-test scores of B.Ed. student-teachers in the dimension of Digital Skills Development of Learning is less than 0.01, indicating a statistically significant difference. Hence, the null hypothesis is rejected. The mean score of the post-test is higher than that of the pre-test, which shows an improvement in students' competency. Therefore, it can be concluded that the ADDIE-based instructional package was effective in enhancing the competency of e-Portfolio development among B.Ed. student-teachers in this dimension.

**$H_{03}$:** There is no significant difference between the pre-test and post-test scores of B.Ed. student-teachers with respect to their competencies in e-Portfolio development in the dimension of Reflective Learning and Self-Assessment.

**Table 3 Difference the pre-test and post-test scores of B.Ed. student-teachers with respect to their competencies in e-Portfolio development in the dimension of Reflective Learning and Self-Assessment.**

| Area | Mean | SD | p-value | Level of Significant |
|---|---|---|---|---|
| Pre-test | 18.43 | 4.15 | 0.00002 | Significant |
| Post-test | 22.27 | 3.67 | | |

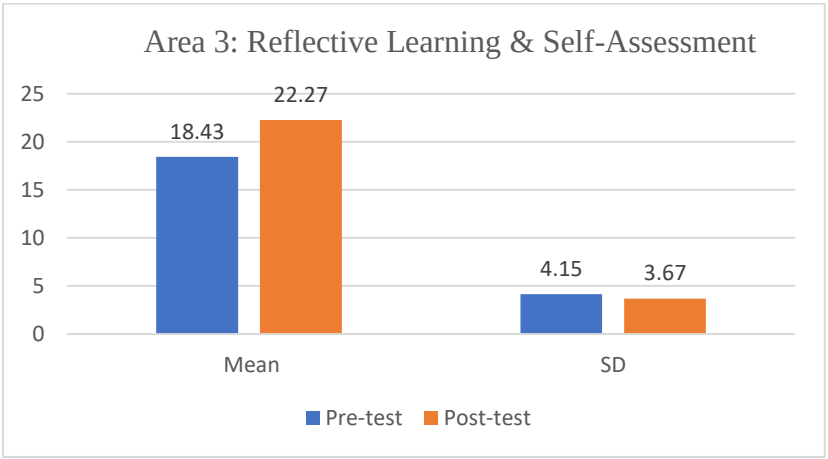

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Figure 3. Bar Graph of Mean Scores in the pre-test and post-test scores of B.Ed. student-teachers with respect to their competencies in e-Portfolio development in the dimension of Reflective Learning and Self-Assessment.

Table 3, shows that the p-value obtained for the pre-test and post-test scores of B.Ed. student-teachers in the dimension of Reflective Learning and Self-Assessment is less than 0.01, indicating a statistically significant difference. Hence, the null hypothesis is rejected. The mean score of the post-test is higher than that of the pre-test, which shows an improvement in students' competencies in the dimension of Reflective Learning and Self-Assessment. Therefore, it can be concluded that the ADDIE-based instructional package was effective in enhancing the competencies of e-Portfolio development among B.Ed. student-teachers in this dimension.

**$H_{04}$: There is no significant difference between the pre-test and post-test scores of B.Ed. student-teachers with respect to their competencies in e-Portfolio development in the dimension of Professional Development.**

**Table 4: Difference in the pre-test and post-test scores of B.Ed. student-teachers with respect to their competency in e-Portfolio development in the dimension of Professional Development.**

| Area | Mean | SD | p-value | Level of Significant |
|---|---|---|---|---|
| Pre-test | 18.23 | 3.98 | 0.00004 | Significant |
| Post-test | 21.57 | 4.43 | | |

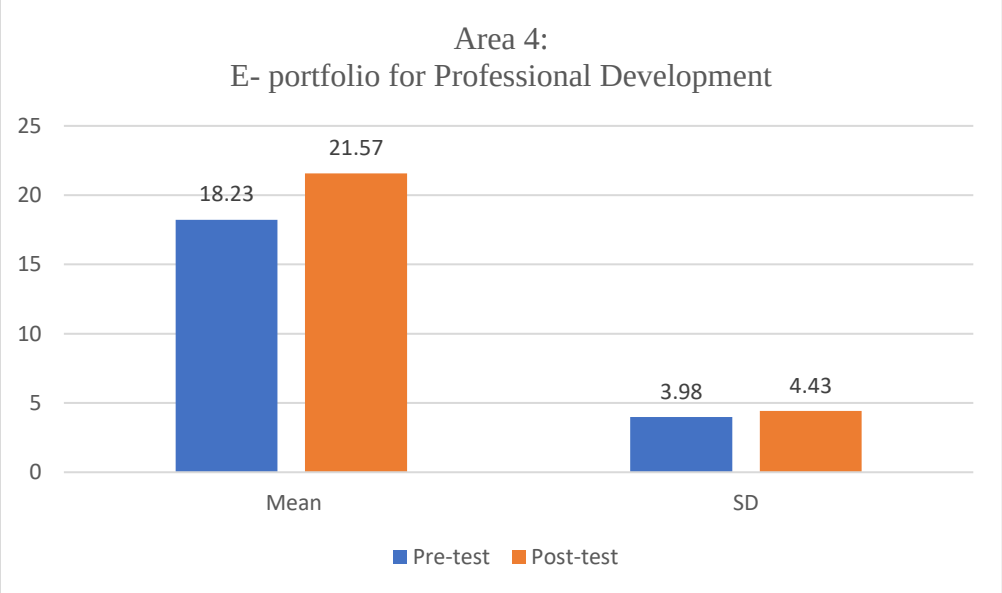


Figure 4. Bar Graph of Mean Scores in the pre-test and post-test scores of B.Ed. student-teachers with respect to their competencies in e-Portfolio development in the dimension of in the dimension of Professional Development.

Table-4 shows that the p-value obtained for the pre-test and post-test scores of B.Ed. student-teachers in the dimension of Professional Development is less than 0.01, indicating a statistically significant difference. Hence, the null hypothesis is rejected. The mean score of the post-test is higher than that of the pre-test, which shows an improvement in students' competency in the dimension of Professional Development. Therefore, it can be concluded that the ADDIE-based instructional package was effective in enhancing the competency of e-Portfolio development among B.Ed. student-teachers in this dimension.

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**Discussion**:

1. The analysis of first table Post-intervention, student-teachers demonstrated improved ability to systematically organize and document their academic and professional work through e-Portfolios. They were able to store lesson plans, assignments, and projects in a centralized digital space, there achievements, and maintain records of professional development.
2. Findings of table 2 suggest that the ADDIE-based instructional package was effective in enhancing digital skills related to e-Portfolio development. Students reported improved technological skills, increased ability to learn and use new digital tools, greater confidence in applying ICT in teaching, and enhanced use of multimedia elements such as videos and images. Additionally, the development of e-Portfolios contributed to strengthening their overall digital literacy as future teachers.
3. The results of table 3 suggest that the use of e-Portfolios encouraged student-teachers to engage in reflective practices. They became more capable of reflecting on their learning experiences, evaluating their strengths and weaknesses, and thinking critically about their teaching practices. Additionally, the process of developing e-Portfolios motivated them to improve their teaching skills through continuous reflection and supported the development of reflective practitioner qualities.
4. The findings of table 4 reveal that the use of e-Portfolios enabled student-teachers to better showcase their professional skills and achievements, demonstrate teaching competencies, and prepare for career opportunities such as job interviews. Additionally, e-Portfolios supported their development as professional teachers and helped them systematically track their professional growth over time.

In conclusion, the ADDIE-based instructional package on the competency of e-portfolio development among B.Ed. student-teachers proved to be effective. The blended learning strategy significantly enhanced the student-teachers' competencies in developing e-portfolios, demonstrating its value as an innovative and practical approach to teacher education.

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