

ABSTRACT of the Ph.D. Thesis

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Topic: Development of TPACK Based Self learning e-Module for Pre-Service Teachers

Objectives of the Study

- 1) To study the utilization of selected e-Learning tools by pre-service teachers.
- 2) To study the existing level of TPACK, computer self-efficacy and attitude towards e-Learning of pre-service teachers.
- 3) To compare the mean scores of attitudes towards e-Learning, TPACK and computer self-efficacy of pre-service teachers.
- 4) To study the relationship between TPACK and attitude towards e-Learning of pre-service teachers.
- 5) To study the relationship between computer self-efficacy and attitude towards e-Learning of pre-service teachers.
- 6) To study the relationship between TPACK and computer self-efficacy of pre-service teachers.
- 7) To study the influence of TPACK and computer self-efficacy and their interaction on attitude towards e-Learning of pre-service teachers.
- 8) To study the individual and joint contributions of TPACK and computer self-efficacy on prediction of attitude towards e-Learning of pre-service teachers.
- 9) To develop regression equation to predict attitude towards e-Learning from TPACK and computer self-efficacy.
- 10) To develop TPACK based self-learning e-Module to enhance awareness on pre-service teachers on technology integration in Physics teaching based on TPACK framework.
- 11) To compare the mean scores of awareness on technology integration in Physics teaching based on TPACK framework of experimental group of pre-service teachers before and after intervention of TPACK based self-learning e-Module.

Hypotheses of the Study

- 1) There is no significant difference in the mean scores of attitude towards e-Learning of male and female pre-service teachers.
- 2) There is no significant difference in the mean scores of attitude towards e-Learning of first year and second year pre-service teachers.
- 3) There is no significant difference in the mean scores of TPACK of male and female pre-service teachers.
- 4) There is no significant difference in the mean scores of TPACK of first year and second year pre-service teachers.
- 5) There is no significant difference in the mean scores of computer self-efficacy of male and female pre-service teachers.
- 6) There is no significant difference in the mean scores of computer self-efficacy of first year and second year pre-service teachers.
- 7) There is no significant relationship between TPACK and attitude towards e-Learning of pre-service teachers.

- 8) There is no significant relationship between computer self-efficacy and attitude towards e-Learning of pre-service teachers.
- 9) There is no significant relationship between TPACK and computer self-efficacy of pre-service teachers.
- 10) There is no significant main effect and interaction effects of TPACK and computer self-efficacy on attitude towards e-Learning of pre-service teachers.
- 11) There is no significant individual and joint contributions of TPACK and computer self-efficacy on attitude towards e-Learning of pre-service teachers.
- 12) There is no significant difference in the mean scores of awareness on technology integration in Physics teaching based on TPACK framework of experimental group of pre-service teachers before and after intervention of TPACK based self-learning e-Module.

Variables of the Study

- **Independent Variables:** TPACK and computer self-efficacy and TPACK based Self-Learning e-Module.
- **Dependent Variables:** Attitude towards e-Learning and Technology Integration based on
- **Classificatory Variables:** Gender and Year of Study
- **Confounding Variables:** Age, Mental Ability, Time of Instruction, Teacher Factor, etc.

Methodology

Descriptive cum experimental research.

Population and Sample

The affiliated colleges and Universities located in the state of Delhi and offer B.Ed. teacher training programmes constitute the population. The approximate population size is 1800. The sample consists of 300 pre-service teachers for survey and 40 for experimental study.

Tools of the Study

Questionnaire on Utilization of E-Learning Tools, TPACK Inventory, Computer Self-Efficacy Scale, Scale on Attitude towards e-Learning, Need Analysis Questionnaire, TPACK based Self Learning e-Module, Evaluation Proforma **and** Test on Technology Integration based on TPACK.

Major Findings of the Study

The study found that mobile, computer, learning management system, and YouTube are some of the most used and podcast/vodcast, flipped classroom, and really simple syndication the least used technologies by pre-service teachers. The study also found significant difference in the scores of computer self-efficacy and TPACK among male and female, and first year and second year pre-service teachers. The study also found significant relationship among the variables TPACK, computer self-efficacy and e-Learning and TPACK can successfully predict the attitude towards e-Learning of pre-service teachers. Therefore, the study developed a regression equation to predict attitude towards e-Learning from TPACK and computer self-efficacy. The study also found that the TPACK based self-learning e-Module is effective in enhancing the awareness on technology integration in Physics teaching using TPACK framework.