Detailed Report

Seminar on- "Design Experimentation in Research Methodology"

Subject Area- Research Methodology

Organized by- Department of Computer Science and Engineering

Experimental design is the process of researching in an objective and controlled manner to optimize precision and reach conclusions about a hypothesis statement. The goal is to determine the effect a factor or independent variable has on a dependent variable. While experimental research is a type of scientific examination in which one or more independent variables are changed and then applied to one or more dependent variables to see how they affect the latter. However, it is rarely articulated how the experiments were carried out in order to test a hypothesis, to begin a fruitful journey into unexplored design terrain or just gradually build knowledge. So, a seminar on the topic **"Design Experimentation in Research Methodology"**was held on 08/10/2021.

An experiment deliberately imposes a treatment on a group of objects or subjects in the interest of observing the response. This differs from an observational study, which involves collecting and analysing data without changing existing conditions. Because the validity of a experiment is directly affected by its construction and execution, attention to experimental design is extremely important. The main advantage of using this method is that it avoids bias and controls the role of chance. This method provides a solid foundation

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for Statistical analysis as it allows the use of probability theory.It was our privilege that well-acclaimed Dr. Mayank Singh, Shanti Niketan Degree College, Agra was the resource person of this seminar. He conceptualized three essential elements of

- Time, which is a critical aspect in establishing a cause-and-effect link,
- Cause-and-effect behaviour that is consistent and
- Comprehending the significance of cause and effect,
- The concept of experimental design applied to Engineering, Natural Science and Social Science as well. The areas in which the experimental designs used are- Evaluation of physical structures, materials and components, Chemical formulations, Computer programs, Opinion polls, Natural experiments, Statistical surveys.

for a better understanding of Design Experimentation among students and faculty alike. This collaborative effort encompassed 39 students accompanied by esteemed faculty in attendance. The seminar ended with distribution of certificates to the most enthusiastic participants to encourage and motivate them.

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