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Faculty Development Programs and Their Influence on Teaching Method Adoption: A Study in Higher Education Institutions

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ABSTRACT

The purpose of this research is to investigate how Faculty Development Programs (FDPs) affect higher education faculty in Madhya Pradesh's Harda district's adoption of cutting-edge teaching techniques. The study focuses on the effects of FDP involvement on pedagogical knowledge, attitudes toward innovative teaching methods, and the actual use of contemporary teaching techniques in the classroom. A sample of 120 faculty members from Harda's higher education institutions participated in a mixed-methods study. In addition to semi-structured interviews with 20 chosen individuals, standardized questionnaires were used to gather data both before and after FDP participation. While qualitative data was subjected to theme analysis, quantitative data were examined using descriptive and inferential statistics. The adoption of learner-centered teaching strategies, technological integration, and creative assessment techniques were shown to be significantly positively correlated with FDP participation. Important facilitators and obstacles affecting the transfer of FDP learning to classroom practice were also discovered by the study. This study adds to the little literature on the efficacy of FDP in semi-urban Indian higher education settings and offers evidence-based suggestions for creating successful faculty development programs in comparable environments.

Keywords: Faculty Development Programs, Teaching Method Adoption, Higher Education, Pedagogical Innovation, Teacher Competencies, Harda District

1. INTRODUCTION

In higher education institutions across the globe, faculty development programs (FDPs) have become essential tools for promoting pedagogical innovation and instructional efficacy. Faculty members now need to engage in ongoing professional development due to the rapid changes in the educational environment brought about by technology breakthroughs, shifting student demographics, and shifting job demands. Understanding how FDPs affect the adoption of teaching methods becomes crucial for educational planners and policymakers as institutions work to improve student learning outcomes and educational quality [1].

The National Education Policy (NEP) 2020, which highlights the need of ongoing professional development and the incorporation of cutting-edge pedagogical practices in higher education, has



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further increased the significance of faculty development in the Indian setting. Since teaching quality is closely related to student learning outcomes and institutional performance, the University Grants Commission (UGC) has required regular faculty orientation courses and induction programs [2]. Despite these legislative efforts, there is still a great deal to learn about how FDP involvement affects real classroom instruction, especially in rural and semi-urban learning environments.

The research location, Madhya Pradesh's Harda district, is representative of a typical semi-urban higher education setting where faculty members often have particular difficulties in obtaining chances for high-quality professional development. Serving a varied student body from rural and semi-urban backgrounds, the region is home to a number of government and private institutions connected to different universities. Designing contextually appropriate FDPs that may successfully address local requirements and restrictions requires an understanding of the dynamics of teaching method adoption in such situations.

This study is based on a number of theoretical frameworks. Meaningful professional development, according to adult learning theory, especially Mezirow's transformational learning theory, requires participants to critically examine their presumptions about teaching and learning [3]. The theory of planned behavior offers a framework for comprehending how faculty members' intentions to use new teaching techniques are influenced by attitudes, subjective standards, and perceived behavioral control [4].

The method by which innovative instructional techniques proliferate throughout academic institutions is explained by Rogers' diffusion of innovation theory [5].

This study's importance goes beyond its scholarly value. Understanding the elements that promote or hinder the adoption of teaching methods may help higher education administrators and legislators create and administer more successful FDPs.

Understanding how participants apply what they have learned to classroom practice may help faculty developers design follow-up support systems. Faculty members may participate more in professional development events if they are aware of the possible advantages of FDP involvement [6].

There are six parts in the paper. Section 2 provides a thorough analysis of pertinent literature after this introduction. The goals and hypotheses of the study are described in Section 3. The research approach is explained in Section 4. The results and data analysis are shown in Section 5, and the conclusions and ramifications are covered in Section 6.



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2. LITERATURE REVIEW

2.1 Evolution and Conceptual Framework of Faculty Development Programs

Over the last several decades, faculty development programs have changed significantly, moving from seminars with a limited emphasis on teaching abilities to all-encompassing professional development efforts that cover all facets of academic duties. According to recent research, FDPs are specialized professional development activities created especially for educational settings with the goal of boosting faculty effectiveness and teaching in higher education settings [7].

A shift from improving individual skills to organizational-level change mechanisms may be seen in the historical trajectory of faculty development. The main goal of early FDPs was to address perceived shortcomings in teaching abilities, especially among faculty members who had gotten little to no formal instruction in pedagogy during their doctoral studies. However, modern methods acknowledge that systematic support mechanisms are necessary to link faculty capabilities with corporate aims in order to achieve lasting educational change [8]. This development indicates a wider understanding that continuous institutional commitment and structural support are necessary for teaching improvement, which cannot be attained via individual workshops.

Effective faculty development, according to Amundsen and colleagues, must go beyond technical training to address institutional cultures; complete FDP designs are increasingly reflecting this idea [9]. Modern FDPs usually include a variety of elements, including as chances for reflective practice, training in technology integration, creation of evaluation strategies, and pedagogical knowledge building. Effective program design now relies heavily on the incorporation of adult learning concepts, especially transformational and self-directed learning [3].

2.2 Faculty Development in the Indian Higher Education Context

One of the biggest higher education systems in the world, India, has particular difficulties when it comes to faculty development. There is a huge demand for professional development since there are more than 1,000 universities and 42,000 institutions that employ around 1.5 million instructors [10]. To meet these demands via frequent faculty induction programs, refresher courses, and subject-specific seminars, the University Grants Commission developed a network of Teaching Learning Centers and Human Resource Development Centers.

Research, however, shows that the majority of FDPs in India are not discipline-specific and usually include a broad variety of subjects, such as interdisciplinary studies, student psychology, research methodology, and creative instructional approaches [11]. Although this scope guarantees thorough treatment, it could restrict the depth of engagement with pedagogical issues unique to a certain topic. Additionally, casual conversations with teaching staff indicate that



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college or university management often does not emphasize creating compelling instructional techniques, especially at institutions with limited resources [2].

Faculty development has received more attention as a result of the National Education Policy 2020, which requires all faculty members to participate in at least 50 hours of ongoing professional development each year. The policy places a strong emphasis on the need for faculty members to regularly update their pedagogical knowledge and use cutting-edge teaching strategies that are in line with the demands of modern education [12]. For institutions in places like Harda, where infrastructure and resource constraints may hinder implementation, this policy direction has presented both possibilities and problems.

2.3 Models of Faculty Development and Teaching Method Adoption

The impact of faculty development on the adoption of teaching methods is explained by a number of theoretical frameworks. According to Desimone's fundamental conceptual framework for researching the benefits of professional development, successful professional development enhances teachers' knowledge and abilities, which in turn influences classroom practices and, eventually, improves student learning outcomes [13]. The mediating function of teacher learning in the transition from professional development to instructional transformation is highlighted by this concept.

An alternate viewpoint is offered by Guskey's model of teacher transformation, which contends that modifications to teachers' methods in the classroom often come before modifications to their attitudes and beliefs [14]. This paradigm states that instructors change their perceptions of the efficacy of their instruction after using new techniques and seeing favorable results in students' learning. Programs should provide chances for experimentation and reflection on classroom results, according to this cyclical concept, which has significant implications for FDP design.

The significance of critical reflection in promoting significant educational change is emphasized by Cranton's work on transformational learning in professional development environments [15]. Faculty members are more receptive to using cutting-edge strategies that go against conventional wisdom when they are challenged to reevaluate their presumptions about teaching and learning. This viewpoint supports Mezirow's transformational learning theory [3], which contends that long-term acceptance of new techniques requires profound shifts in teaching philosophy.

2.4 Factors Influencing Teaching Method Adoption

Numerous variables have been shown to affect faculty members' choices to use new teaching strategies after participating in FDP. Previous teaching experience, disciplinary background, self-efficacy views, and desire for professional development are examples of individual-level characteristics [16]. Higher teaching self-efficacy among faculty members increases the



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likelihood that they will try out novel strategies and stick with them in spite of early difficulties [17].

Adoption of teaching methods may be greatly aided or hindered by institutional issues. Environments that foster instructional innovation include supportive leadership, resource availability, collegial cooperation, and acknowledgment of teaching quality [18]. On the other hand, major obstacles to adoption include excessive teaching loads, a lack of time for preparation and reflection, and a lack of institutional incentives for improving instruction [19].

Adoption results are influenced by the FDP design itself. Higher rates of following classroom implementation are shown in programs that provide chances for practical experience, offer continuous follow-up assistance, and encourage peer cooperation [20]. Furthermore, programs that combine instructional information with real-world implementation techniques are often more successful than those that just concentrate on theoretical elements [21].

2.5 Research Gap and Rationale for the Study

There are still a number of gaps in the expanding collection of research on the efficacy of faculty development. With little focus on semi-urban and rural higher education settings, the majority of previous research has been carried either in Western contexts or large metropolitan centers of developing nations [22]. Particular research is necessary due to the special possibilities and problems that academics in these situations face, such as restricted access to resources for professional development, varied student populations, and institutional limitations.

Additionally, fewer research have used mixed-methods techniques that capture both the quantity and character of teaching method adoption, despite quantitative studies establishing connections between FDP involvement and self-reported teaching practices [23]. Designing contextually appropriate FDPs requires an understanding of both whether faculty embrace new approaches and how they modify them to fit their particular circumstances.

By concentrating on higher education institutions in the Harda region, the current research fills in these gaps and offers insights into the dynamics of faculty growth in a semi-urban Indian setting. The study attempts to provide both broadly applicable results and a deep contextual knowledge of teaching method adoption processes by using a mixed-methods methodology.

3. RESEARCH OBJECTIVES AND HYPOTHESES

3.1 Research Objectives

Based on the literature review and identified research gaps, the following objectives have been formulated:

Objective 1: To examine the extent to which participation in Faculty Development Programs enhances faculty members' pedagogical knowledge and skills related to innovative teaching methods in higher education institutions of Harda district.



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Objective 2: To assess the influence of Faculty Development Programs on faculty members' attitudes toward adopting innovative teaching approaches in their classroom practice.

Objective 3: To investigate the relationship between FDP participation and the actual implementation of innovative teaching methods, while identifying key facilitators and barriers affecting adoption in the Harda district context.

3.2 Research Hypotheses

Corresponding to the research objectives, the following hypotheses have been developed:

Hypothesis 1 (H₁): There is a significant positive difference in faculty members' pedagogical knowledge and skills scores before and after participation in Faculty Development Programs.

Null Hypothesis 1 (H₀₁): There is no significant difference in faculty members' pedagogical knowledge and skills scores before and after participation in Faculty Development Programs.

Hypothesis 2 (H₂): Faculty members who participate in FDPs demonstrate significantly more positive attitudes toward adopting innovative teaching methods compared to those who have not participated in such programs.

Null Hypothesis 2 (H₀₂): There is no significant difference in attitudes toward adopting innovative teaching methods between faculty members who have participated in FDPs and those who have not.

Hypothesis 3 (H₃): There is a significant positive correlation between the quality of FDP participation (as measured by engagement level, relevance perception, and follow-up support) and the extent of innovative teaching method implementation in classroom practice.

Null Hypothesis 3 (H₀₃): There is no significant correlation between the quality of FDP participation and the extent of innovative teaching method implementation.

4. RESEARCH METHODOLOGY

4.1 Research Design

A mixed-methods research strategy that included quantitative and qualitative techniques was used in this study. In order to quantify changes in faculty knowledge, attitudes, and behaviors after FDP participation, a quasi-experimental pre-test-post-test design without a control group was used for the quantitative component. In order to comprehend faculty members' actual experiences of incorporating FDP learning into classroom practice, the qualitative component used a phenomenological method [24].

Because it enables the triangulation of results from many data sources, offers a greater understanding of the processes underpinning teaching method adoption, and captures both the magnitude and character of FDP effect, the mixed-methods approach is especially suitable for this research [25].



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4.2 Study Area

Higher education establishments in Madhya Pradesh, India's Harda district served as the study's sites. The region of Harda, which is mostly rural, is home to a variety of public and private universities that provide undergraduate and graduate courses in the arts, sciences, business, and professional fields. Colleges connected to Bhopal, Barkatullah University, and other state institutions make up the district's higher education scene.

4.3 Population and Sample

Target Population: All faculty members employed by higher education institutions in the Harda district made up the target population. District education data show that around 350 faculty members work in the district's several institutions.

Sample Size: For the study's quantitative phase, 120 faculty members were chosen as a sample. Krejcie and Morgan's table for calculating sample size from a given population [26] was used to estimate this sample size, guaranteeing representativeness at a 95% confidence level with a 5% margin of error. Twenty participants were purposefully chosen from the quantitative sample for the qualitative phase in order to maximize variety in terms of experience, discipline, and FDP participation patterns [27].

Sampling Technique: Stratified random sampling was employed for the quantitative phase, with strata based on:

- I. Type of institution (government vs. private)
- II. Teaching discipline (sciences, arts, commerce, professional)
- III. Years of teaching experience (early career: 0-5 years; mid-career: 6-15 years; late career: 15+ years)

For the qualitative phase, purposive sampling was used to select information-rich cases that could provide deep insights into the phenomenon under study [28].

4.4 Data Collection Instruments

Quantitative Instrument: A structured questionnaire was developed comprising four sections:

Section A: Demographic Information - Collecting data on age, gender, qualification, teaching experience, discipline, and prior FDP participation.

Section B: Pedagogical Knowledge and Skills Scale - Adapted from existing instruments [29], measuring self-reported knowledge and skills related to innovative teaching methods (learner-centered approaches, technology integration, active learning strategies, innovative assessment). Items were rated on a 5-point Likert scale.

Section C: Attitudes Toward Teaching Innovation Scale - Adapted from Taylor and colleagues [30], measuring cognitive, affective, and behavioral components of attitudes toward adopting innovative teaching methods. Items were rated on a 5-point Likert scale.



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Section D: Teaching Method Adoption Inventory - Developed specifically for this study, measuring the extent to which faculty have implemented various innovative teaching methods in their classrooms. Items assessed frequency of use and perceived effectiveness.

The questionnaire was pilot tested with 30 faculty members from a neighboring district to establish reliability (Cronbach's alpha > 0.70) and validity (content validity index through expert review) [31].

Qualitative Instrument: A semi-structured interview guide was developed covering:

- Motivations for FDP participation
- Most valuable learning from FDPs
- Challenges encountered in implementing new teaching methods
- Institutional support and barriers
- Adaptation of FDP learning to local context
- Suggestions for improving FDP effectiveness

4.5 Data Collection Procedure

The data collection proceeded in the following phases:

Phase 1 (Pre-FDP Assessment): The questionnaire was administered to selected faculty members prior to their participation in an FDP. This established baseline measures of pedagogical knowledge, attitudes, and current teaching practices.

Phase 2 (FDP Participation): Faculty members participated in a standardized Faculty Development Program organized by the researcher in collaboration with local colleges. The program covered innovative teaching methods, technology integration, and active learning strategies over five days.

Phase 3 (Post-FDP Assessment - Immediate): The same questionnaire was administered immediately after the FDP to measure immediate changes in knowledge and attitudes.

Phase 4 (Post-FDP Assessment - Delayed): Three months after the FDP, the questionnaire was administered again to measure sustained changes and actual implementation of teaching methods.

Phase 5 (Qualitative Interviews): Semi-structured interviews were conducted with 20 purposively selected participants to gain in-depth understanding of their experiences.

4.6 Data Analysis Plan

Quantitative Data Analysis:

- Descriptive statistics (means, standard deviations, frequencies) were computed for all variables.
- Paired t-tests were used to compare pre-test and post-test scores (Objective 1, Hypothesis 1).



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- Independent t-tests compared attitudes between FDP participants and non-participants (Objective 2, Hypothesis 2).
- Pearson's correlation coefficient examined relationships between FDP participation quality and teaching method implementation (Objective 3, Hypothesis 3).
- Multiple regression analysis identified predictors of teaching method adoption.
- All analyses were conducted using SPSS version 26 with significance level set at $p < 0.05$ [32].

Qualitative Data Analysis:

- Interviews were audio-recorded, transcribed verbatim, and translated where necessary.
- Thematic analysis following Braun and Clarke's six-phase framework was employed [33]:
 1. Familiarization with data
 2. Generating initial codes
 3. Searching for themes
 4. Reviewing themes
 5. Defining and naming themes
 6. Producing the report
- NVivo software assisted in data organization and analysis.
- Member checking and peer debriefing ensured trustworthiness [28].

4.7 Ethical Considerations

The study adhered to established ethical guidelines for educational research [34]:

- Informed consent was obtained from all participants after explaining the purpose and procedures of the study.
- Participants were assured of confidentiality and anonymity.
- Participation was voluntary, with the right to withdraw at any time without consequences.
- Data were stored securely and accessible only to the research team.
- Institutional permission was obtained from all participating colleges.
- The research was conducted in accordance with UGC guidelines for ethical research in higher education.

5. RESULTS AND DATA ANALYSIS

5.1 Demographic Profile of Respondents

A total of 120 faculty members from higher education institutions in Harda district participated in the study. Table 5.1 presents the demographic characteristics of the sample.



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Table 5.1: Demographic Profile of Respondents (N=120)

Demographic Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	68	56.7
	Female	52	43.3
Age Group	25-35 years	45	37.5
	36-45 years	42	35.0
	46-55 years	23	19.2
	Above 55 years	10	8.3
Educational Qualification	Master's Degree	78	65.0
	M.Phil.	22	18.3
	Ph.D.	20	16.7
Teaching Experience	0-5 years	38	31.7
	6-15 years	52	43.3
	15+ years	30	25.0
Discipline	Sciences	35	29.2
	Arts	32	26.7
	Commerce	28	23.3
	Professional	25	20.8
Institution Type	Government	72	60.0
	Private	48	40.0
Prior FDP Participation	Yes	45	37.5
	No	75	62.5

The demographic profile shows a balanced representation across gender, age groups, and disciplines. The majority of respondents (60%) were from government institutions, and 62.5% had no prior FDP participation, indicating the relevance of the intervention.



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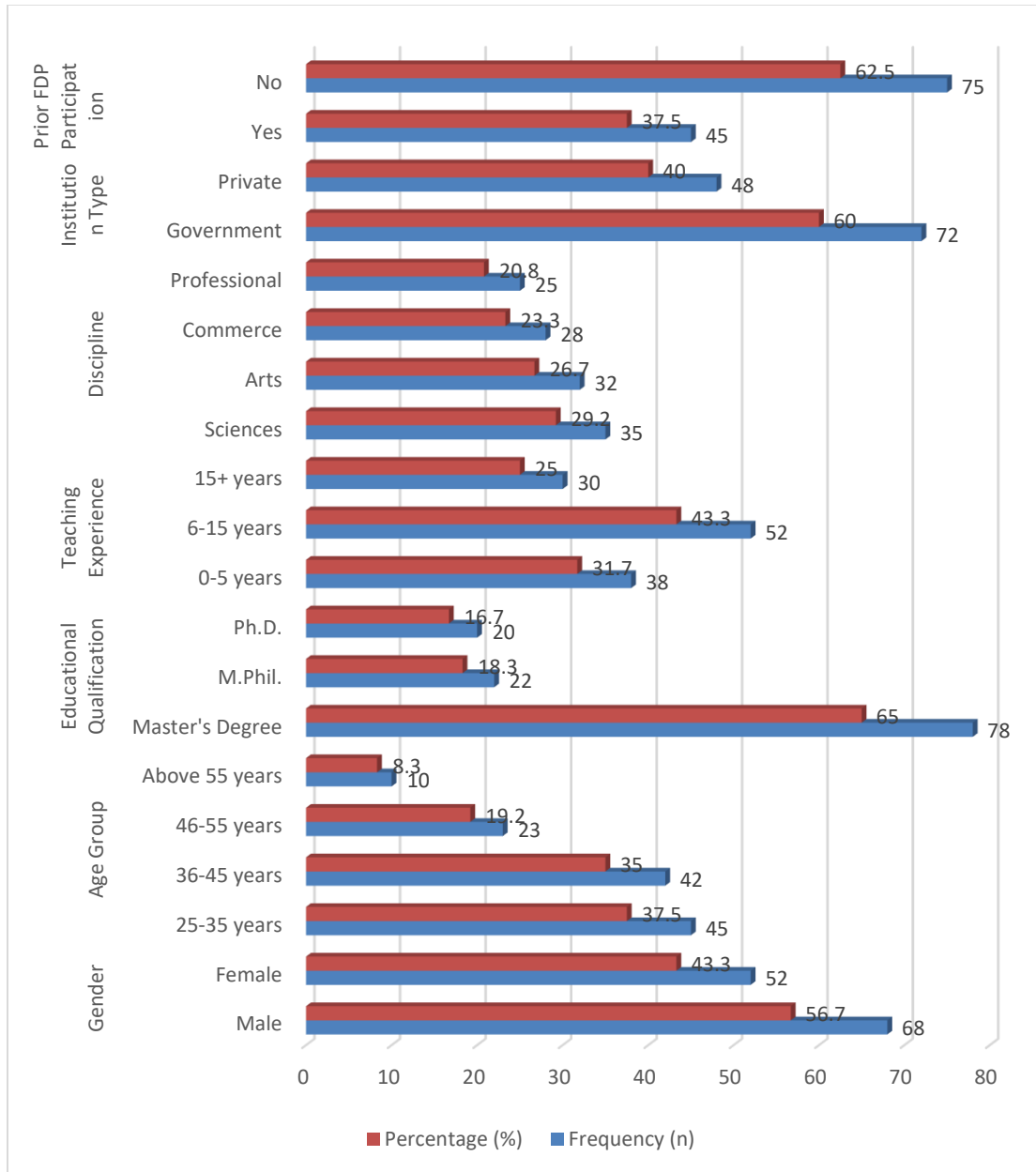


Figure 5.1: Demographic Profile of Respondents (N=120)

5.2 Objective 1: Enhancement of Pedagogical Knowledge and Skills

Paired t-tests comparing pre-test and post-test results were used to assess how much faculty members' pedagogical knowledge and abilities were improved by FDP involvement. The t-test results and descriptive data are shown in Table 5.2.



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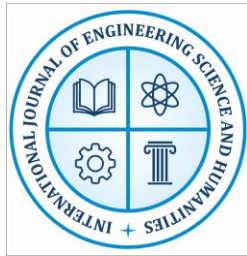
Table 5.2: Comparison of Pre-test and Post-test Pedagogical Knowledge and Skills Scores (N=120)

Pedagogical Domain	Pre-test Mean (SD)	Post-test Mean (SD)	Mean Difference	t-value	df	p-value	Effect Size (Cohen's d)
Learner-Centered Approaches	2.84 (0.72)	3.98 (0.65)	1.14	12.45	119	<0.001	1.67
Technology Integration	2.56 (0.81)	3.87 (0.71)	1.31	13.28	119	<0.001	1.73
Active Learning Strategies	2.91 (0.68)	4.02 (0.62)	1.11	11.89	119	<0.001	1.58
Innovative Assessment Methods	2.63 (0.77)	3.79 (0.69)	1.16	12.01	119	<0.001	1.62
Overall Pedagogical Knowledge	2.74 (0.63)	3.92 (0.58)	1.18	14.56	119	<0.001	1.92

Note: Scores are based on a 5-point Likert scale where 1=Very Low, 5=Very High*

The findings show significant gains in every educational area after FDP involvement. With a mean difference of 1.18, the total pedagogical knowledge score rose from a pre-test mean of 2.74 (SD=0.63) to a post-test mean of 3.92 (SD=0.58). The null hypothesis (H_{01}) is rejected since the t-value of 14.56 (df=119) is statistically significant at $p<0.001$. A very high practical significance is shown by the effect size (Cohen's $d = 1.92$).

The greatest mean benefit was seen in technology integration (1.31), which was followed by learner-centered approaches (1.14) and creative assessment techniques (1.16). These results imply that FDPs are especially successful in raising faculty proficiency in pedagogical domains connected to technology.



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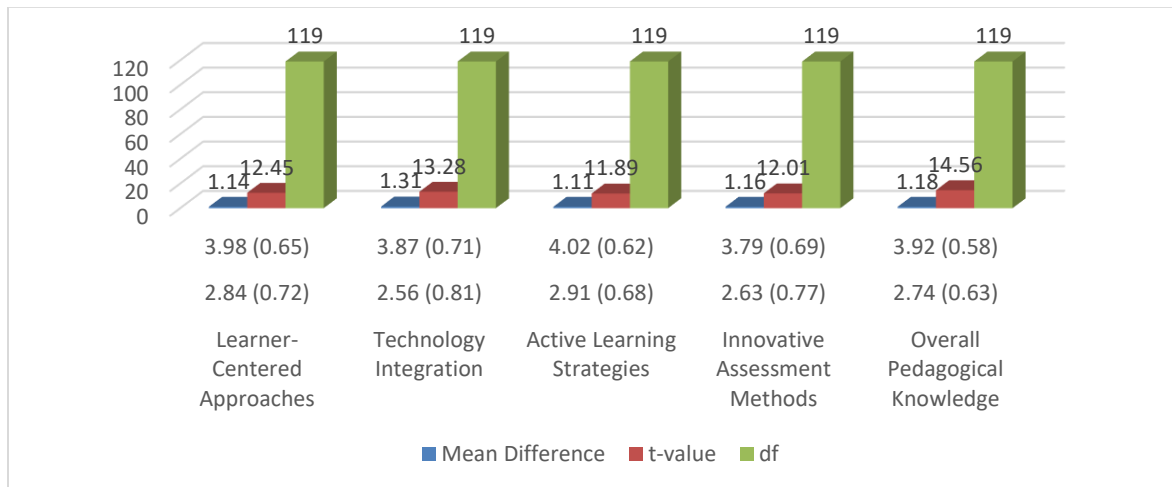


Figure 5.2: Demographic Profile of Respondents (N=120)

5.3 Objective 2: Influence on Attitudes Toward Teaching Innovation

Independent t-tests were used to compare FDP participants (n=75) with non-participants (n=45) in order to evaluate the impact of FDP participation on faculty attitudes regarding using innovative teaching approaches. The findings are shown in Table 5.3.

Table 5.3: Comparison of Attitudes Between FDP Participants and Non-Participants

Attitude Component	Participants Mean (SD) (n=75)	Non-Participants Mean (SD) (n=45)	Mean Difference	t-value	df	p-value	Effect Size (Cohen's d)
Cognitive (Beliefs about innovation)	4.12 (0.54)	3.28 (0.71)	0.84	7.23	118	<0.001	1.35
Affective (Feelings toward innovation)	4.08 (0.61)	3.15 (0.68)	0.93	7.81	118	<0.001	1.46
Behavioral (Intention to adopt)	4.21 (0.58)	3.09 (0.73)	1.12	9.12	118	<0.001	1.71
Overall Attitude Score	4.14 (0.52)	3.17 (0.64)	0.97	8.98	118	<0.001	1.68



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Note: Scores are based on a 5-point Likert scale where 1=Strongly Disagree, 5=Strongly Agree

The findings show that FDP participants had much greater positive views in each of the three attitude components. With a mean difference of 0.97, participants' overall attitude score (M=4.14, SD=0.52) was significantly higher than non-participants' (M=3.17, SD=0.64). The null hypothesis (H_{02}) is rejected since the t-value of 8.98 (df=118) is statistically significant at $p < 0.001$. A very high practical significance is shown by the effect size (Cohen's $d = 1.68$).

The behavioral component (intention to adopt) had the biggest difference (1.12), indicating that faculty members' willingness to use cutting-edge teaching strategies is significantly influenced by their involvement in FDP.

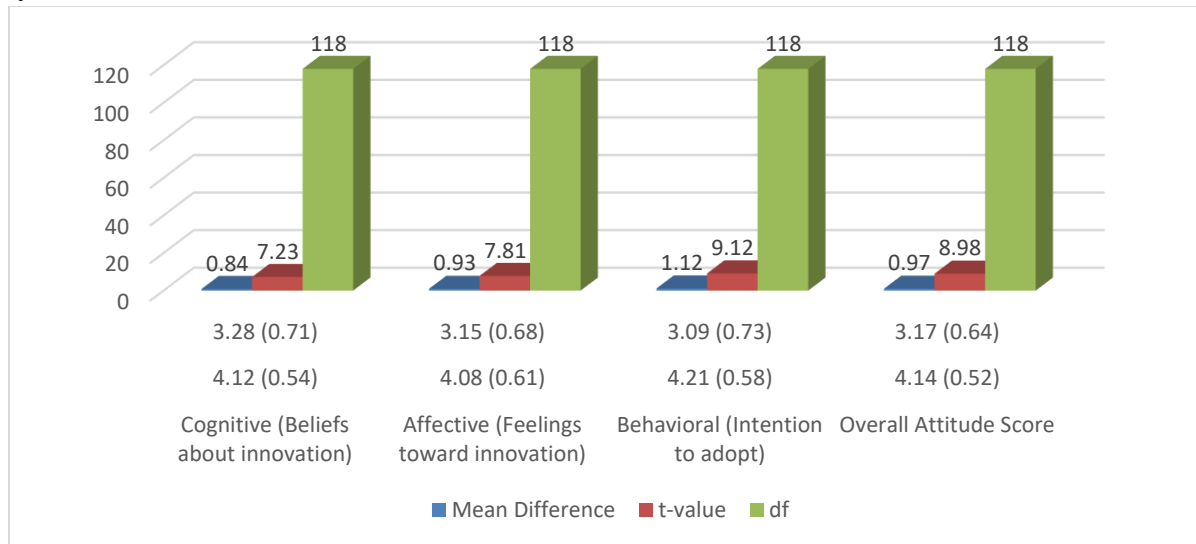
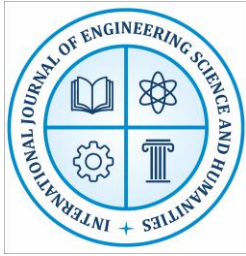


Figure 5.3: Comparison of Attitudes Between FDP Participants and Non-Participants

5.4 Objective 3: Relationship Between FDP Participation Quality and Teaching Method Implementation

Pearson's correlation coefficients were calculated to examine the connection between the quality of FDP participation and the real use of creative teaching techniques. The correlation matrix is shown in Table 5.4.



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Table 5.4: Correlation Between FDP Participation Quality and Teaching Method Implementation (N=75)

Variable	Engagement Level	Relevance Perception	Follow-up Support	Overall FDP Quality	Implementation Extent
Engagement Level	1.00				
Relevance Perception	0.62**	1.00			
Follow-up Support	0.48**	0.53**	1.00		
Overall FDP Quality	0.84**	0.81**	0.76**	1.00	
Implementation Extent	0.67**	0.71**	0.69**	0.78**	1.00

**Correlation is significant at the 0.01 level (2-tailed)

The degree of teaching technique implementation and all aspects of FDP participation quality are significantly positively correlated, according to the correlation study. Overall FDP quality and implementation extent had the highest link ($r = 0.78$, $p < 0.01$), followed by engagement level ($r = 0.67$, $p < 0.01$), relevance perception ($r = 0.71$, $p < 0.01$), and follow-up support ($r = 0.69$, $p < 0.01$). The null hypothesis (H_{03}) is rejected as a consequence of these findings, which also support Hypothesis 3 (H_3).

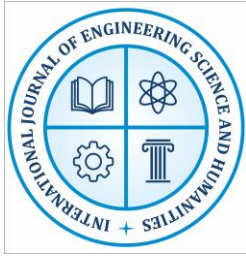
Multiple regression analysis was performed using the three FDP quality aspects as predictors and implementation extent as the dependent variable in order to better understand the factors that influence the adoption of teaching methods. The regression results are shown in Table 5.5.

Table 5.5: Multiple Regression Analysis Predicting Teaching Method Implementation

Predictor Variable	B	SE	β	t	p	VIF
(Constant)	0.42	0.18		2.33	0.022	
Engagement Level	0.23	0.09	0.21	2.56	0.012	1.68
Relevance Perception	0.41	0.08	0.38	5.12	<0.001	1.72
Follow-up Support	0.35	0.07	0.32	5.00	<0.001	1.54

$R^2 = 0.64$, Adjusted $R^2 = 0.62$, $F(3,71) = 42.18$, $p < 0.001$

The regression model explained 64% of the variation in teaching technique implementation ($R^2=0.64$) and was significant ($F(3,71)=42.18$, $p < 0.001$). Relevance perception was the biggest



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predictor ($\beta=0.38$, $p<0.001$), followed by follow-up support ($\beta=0.32$, $p<0.001$) and engagement level ($\beta=0.21$, $p=0.012$). All three predictors provided substantial unique contributions. Multicollinearity issues are not present when VIF values are less than 2.

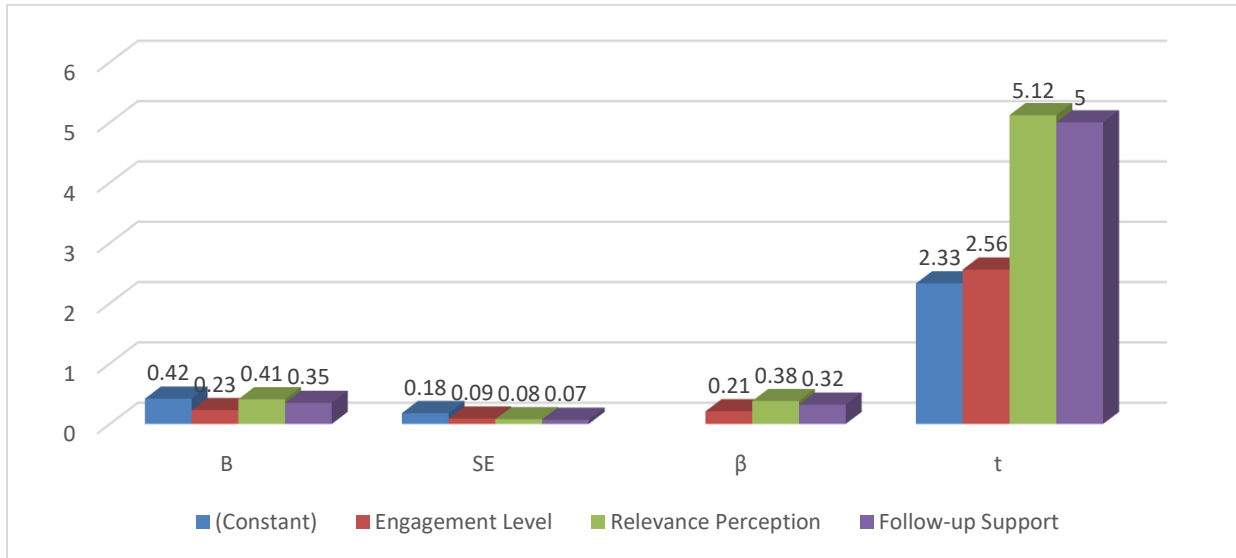


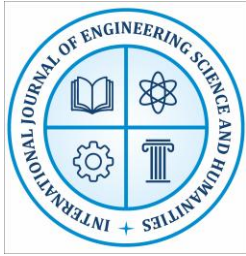
Figure 5: Multiple Regression Analysis Predicting Teaching Method Implementation

5.5 Qualitative Findings: Facilitators and Barriers to Teaching Method Adoption

Thematic analysis of 20 participants' interviews identified a number of important themes on the obstacles and enablers of using creative teaching techniques. Table 5.6 provides exemplary quotations that highlight the key concepts.

Table 6: Thematic Analysis of Facilitators and Barriers

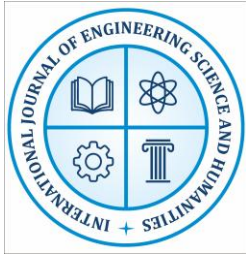
Theme	Category	Sub-themes	Representative Quote	Frequency (n=20)
Facilitators	Individual Factors	Self-efficacy, Motivation, Prior experience	"After the FDP, I felt confident to try new methods. The hands-on practice really helped me believe I could do it." (Participant 7, Female, Arts)	18 (90%)
	Institutional Support	Collegial collaboration, Leadership encouragement, Resource	"My Head of Department was very supportive. She gave me permission to experiment and even observed my class to give feedback." (Participant	15 (75%)



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		availability	12, Male, Science)	
	FDP Design Factors	Practical orientation, Follow-up support, Peer learning	"The WhatsApp group they created after the FDP helped us share experiences and solve problems together." (Participant 3, Female, Commerce)	17 (85%)
	Student Factors	Positive student response, Improved engagement	"When I used group discussions, students were more attentive. That motivated me to continue." (Participant 9, Male, Professional)	14 (70%)
Barriers	Institutional Constraints	Large class sizes, Heavy workload, Examination pressure	"With 80 students in a class, it's difficult to implement learner-centered methods. We have to complete syllabus quickly." (Participant 5, Female, Science)	19 (95%)
	Resource Limitations	Lack of technology, Insufficient infrastructure	"We don't have smart classrooms or reliable internet. Technology-based methods are difficult to implement." (Participant 11, Male, Arts)	16 (80%)
	Personal Challenges	Time constraints, Habit persistence	"Old habits die hard. Sometimes I fall back to lecture method because it's easier and faster." (Participant 2, Male, Commerce)	13 (65%)
	Systemic Issues	Rigid curriculum, Assessment system	"The university exam pattern doesn't reward innovative teaching. Students want to focus on exam preparation." (Participant 8, Female, Professional)	15 (75%)



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The qualitative results provide a deep contextual knowledge of the variables impacting the adoption of instructional methods. 95% of responders saw institutional limitations as major obstacles, especially big class numbers and a hard workload. Eighty percent of participants mentioned resource constraints, such as a lack of infrastructure and technology, which reflects the difficulties of semi-urban learning environments.

On the other hand, FDP design elements like practical orientation and follow-up assistance (85%) and individual qualities like self-efficacy and motivation (90%) were shown to be important facilitators. The need of establishing supportive settings for educational innovation is shown by the significance of institutional assistance, which was noted by 75% of participants.

5.6 Summary of Hypotheses Testing

Table 5.7 presents a summary of the hypotheses testing results.

Table 5.7: Summary of Hypotheses Testing

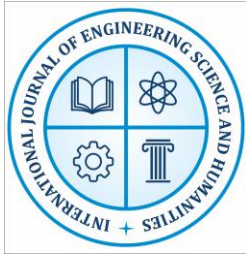
Hypothesis	Statement	Result	Statistical Evidence
H ₁	Significant positive difference in pedagogical knowledge after FDP	Accepted	t(119)=14.56, p<0.001, d=1.92
H ₀₁	No significant difference in pedagogical knowledge	Rejected	-
H ₂	FDP participants show more positive attitudes toward innovation	Accepted	t(118)=8.98, p<0.001, d=1.68
H ₀₂	No difference in attitudes between participants and non-participants	Rejected	-
H ₃	Significant positive correlation between FDP quality and implementation	Accepted	r=0.78, p<0.01
H ₀₃	No correlation between FDP quality and implementation	Rejected	-

6. DISCUSSION

6.1 Discussion of Findings Related to Objective 1

The result that faculty members' pedagogical knowledge and abilities are greatly improved by FDP participation (mean gain of 1.18, d=1.92) is consistent with other studies showing the efficacy of well-designed professional development programs [7, 20]. The FDP's emphasis on technology-enhanced teaching techniques is reflected in the exceptionally substantial increases in technology integration (mean gain of 1.31), which also indicate that faculty in semi-urban environments are open to adopting technology when given sufficient training and support.

The FDP had a significant practical impact that went beyond statistical significance, as shown by the substantial effect sizes across all pedagogical areas. This result is consistent with Desimone's



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fundamental conceptual framework [13], which holds that better teacher knowledge and abilities are the result of successful professional growth. Although the size of increases in this research looks slightly bigger, perhaps because of the comparatively low baseline knowledge levels in the semi-urban environment, the findings are also consistent with Indian studies that indicate favorable consequences of faculty development efforts [11].

6.2 Discussion of Findings Related to Objective 2

FDP participants' much more favorable views regarding teaching innovation (mean difference of 0.97, $d=1.68$) support earlier studies on the beneficial effects of professional development on attitudes [30]. According to the idea of planned behavior, behavioral intention is a good predictor of actual behavior, hence the biggest change in the behavioral component (intention to adopt) is especially promising [4].

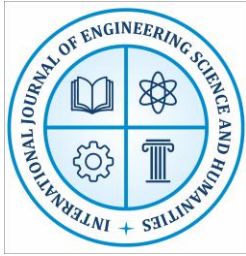
The qualitative results provide light on the process of attitude modification. Following the FDP, participants reported feeling more confident and motivated, which is in line with studies that relate improved self-efficacy to professional advancement [17]. Positive attitudes seem to have been formed by exposure to effective examples of creative teaching and chances for practical experience, emphasizing the significance of experiential learning in professional development [15].

6.3 Discussion of Findings Related to Objective 3

Not all FDP involvement is equally successful, as seen by the high positive connection ($r=0.78$, $p<0.01$) between FDP participation quality and teaching technique adoption. According to the regression study, follow-up support ($\beta=0.32$) and engagement level ($\beta=0.21$) were the next best predictors of implementation, after relevance perception ($\beta=0.38$). These results are consistent with a study by Garet and associates [20] that identified essential components of successful professional growth.

Important contextual insight is provided by the qualitative results about implementation obstacles. The reality of semi-urban higher education in India is reflected in the preponderance of institutional restrictions (95% claiming large class numbers and severe workload) and resource limits (80% citing deficiencies in technology and facilities) [22]. These results imply that without sufficient institutional support and resources, even highly driven teachers may find it difficult to apply novel approaches.

The identified facilitators provide recommendations for improving implementation rates, including self-efficacy, realistic FDP design, and collegial support. Guskey's approach [14], which highlights the cyclical nature of teacher development, is supported by the significance of follow-up assistance (mentioned by 85% as a facilitator), which underlines the necessity for continued involvement beyond the first training.



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6.4 Integration of Quantitative and Qualitative Findings

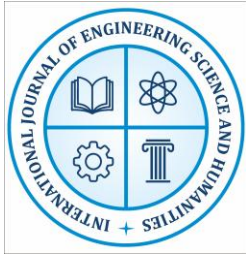
A thorough grasp of the impact of FDP on the adoption of teaching methods is provided by the synthesis of quantitative and qualitative results. The qualitative insights provide light on the procedures, difficulties, and modifications that define effective implementation in the Harda setting, while the quantitative findings determine the degree of change related to FDP engagement.

Confidence in these results is reinforced by the convergence of quantitative and qualitative data on the significance of follow-up assistance and relevance perception. Similarly, the statistically observed variation in implementation rates may be explained by identifying institutional restrictions as the main obstacles in qualitative data.

7. IMPLICATIONS, LIMITATIONS, AND RECOMMENDATIONS

7.1 Implications for Practice

- Programs should emphasize practical, hands-on activities that participants can immediately apply in their classrooms.
- Relevance to local context should be ensured through examples and case studies from similar settings.
- Follow-up support mechanisms, such as peer learning groups and online communities, should be built into program design.
- Technology integration training should address infrastructure constraints and provide low-tech alternatives where necessary.
- College administrators should recognize and reward teaching innovation to motivate faculty.
- Provision of basic technological infrastructure should be prioritized to enable implementation.
- Workload considerations should accommodate time for planning and experimentation with new methods.
- Collegial collaboration should be facilitated through teaching circles and peer observation programs.
- District-level and state-level policies should consider the unique needs of semi-urban institutions.
- Resource allocation for faculty development should include implementation support, not just training costs.



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- Flexible curriculum and assessment systems that accommodate innovative teaching approaches should be explored.

7.2 Implications for Theory

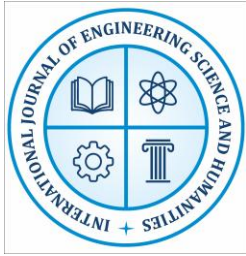
- Supporting the applicability of Desimone's framework [13] in Indian semi-urban contexts, while revealing the critical moderating role of institutional factors.
- Providing empirical evidence for the importance of perceived relevance in the attitude-behavior relationship posited by the theory of planned behavior [4].
- Elaborating the process of pedagogical change in resource-constrained settings, extending Rogers' diffusion of innovation theory [5] to semi-urban educational contexts.

7.3 Limitations

- The quasi-experimental design without control group limits causal inferences, though the large effect sizes strengthen confidence in findings.
- Self-report measures may be subject to social desirability bias, though triangulation with qualitative data mitigates this concern.
- The three-month follow-up period may not capture long-term sustained change; longer-term studies are needed.
- Findings from Harda district may have limited generalizability to other contexts, though they provide valuable insights for similar semi-urban settings.
- Resource constraints limited the depth of qualitative exploration; more extensive ethnographic research could provide additional insights.

7.4 Recommendations for Future Research

- Employ longitudinal designs tracking teaching method adoption over extended periods (1-2 years).
- Include classroom observations and student outcome measures to supplement self-report data.
- Compare FDP effectiveness across different types of institutions and regions in India.
- Investigate the role of technology in facilitating or constraining teaching innovation in semi-urban contexts.
- Examine the differential impact of various FDP formats (online, blended, face-to-face) on teaching method adoption.
- Explore the relationship between teaching method adoption and student learning outcomes in semi-urban settings.



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8. CONCLUSION

This research looked at how faculty development programs affected the adoption of teaching methods in Madhya Pradesh's Harda district's higher education institutions. The study produced deep qualitative knowledge of implementation processes as well as quantitative evidence of FDP success using a mixed-methods approach with 120 faculty participants.

The results show that FDP engagement improves attitudes toward teaching innovation (mean difference of 0.97, $d=1.68$), increases pedagogical knowledge and abilities (mean gain of 1.18, $d=1.92$), and has a good correlation with actual classroom implementation ($r=0.78$). 64% of the variation in the adoption of teaching methods was explained by relevance perception, follow-up assistance, and engagement level, which were shown to be important predictors of effective implementation.

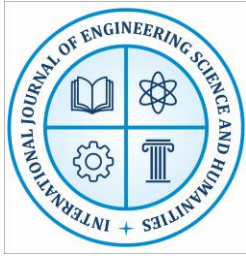
According to qualitative research, institutional limits including big class numbers, a severe workload, and a lack of resources present major obstacles to adoption, even while individual variables like motivation and self-efficacy help. Participants highlighted the significance of follow-up methods, collegial support, and practical FDP design.

These results have significant ramifications for educational policy, institutional support systems, and FDP design in semi-urban Indian environments. Stakeholders may increase the effect of investments in faculty development and make a significant contribution to improvements in teaching quality and student learning outcomes by addressing both individual and institutional variables.

Knowing how to optimize the efficacy of faculty development is becoming more and more important as higher education in India continues to grow and change. This research is a step toward evidence-based faculty development strategies that can maintain educational innovation and are sensitive to local settings.

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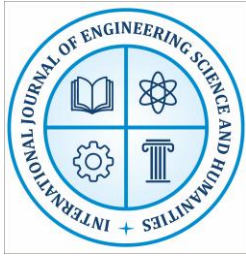
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