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Promoting Research Aptitude through Inquiry-Based Learning: A Study among Students

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Abstract

In the evolving landscape of education, developing research aptitude among students has emerged as a critical priority, particularly in alignment with the objectives of NEP 2020. Traditional pedagogical approaches often emphasize rote learning and limit opportunities for critical inquiry, thereby hindering the development of analytical and investigative skills. In this context, Inquiry-Based Learning (IBL) presents itself as an effective student-centered pedagogical approach that promotes active engagement, curiosity, and knowledge construction.

The present study investigates the impact of inquiry-based learning on enhancing research aptitude among students. Grounded in Constructivist Learning Theory, Dewey's Experiential Learning Theory, and Bruner's Inquiry Learning Model, the study adopts an experimental research design. A sample of 100 students was selected through random sampling, and data were collected using a structured questionnaire based on a Likert scale. Pre-test and post-test methods were employed to measure changes in research aptitude.

The findings reveal a significant improvement in research aptitude among students exposed to inquiry-based learning compared to those taught through traditional methods. The mean score for the inquiry-based group (85) was substantially higher than that of the traditional group (60), indicating the effectiveness of IBL in enhancing research-oriented competencies. Additionally, skill-based analysis demonstrated notable improvements in critical thinking, problem-solving, analytical ability, and curiosity. The pre-post comparison further confirmed significant gains in research skills, data analysis, and question formulation.

The study concludes that inquiry-based learning not only enhances research aptitude but also fosters higher-order thinking skills and independent learning. It is recommended that educators integrate inquiry-based strategies into classroom practices to cultivate a strong research culture among students and prepare them for the demands of the knowledge-driven society.

Keywords: Inquiry-Based Learning, Research Aptitude, Critical Thinking, Experiential Learning, Student Engagement, Higher-Order Skills

Introduction

In the contemporary educational landscape, fostering research aptitude among students has become a crucial objective. Traditional teaching methods, which often emphasize rote learning and passive knowledge acquisition, fail to develop critical thinking and inquiry skills. Inquiry-Based Learning (IBL) emerges as a dynamic pedagogical approach that actively engages students in questioning, investigating, and constructing knowledge.

Inquiry-based learning promotes curiosity, analytical thinking, and problem-solving skills, all of which are essential for developing research aptitude. It transforms students from passive recipients into active knowledge creators. The present study examines how inquiry-based learning contributes to enhancing research aptitude among students.

Theoretical Background of the Study

(1) Constructivist Learning Theory (Piaget, Vygotsky)- Learning is constructed through active engagement. IBL aligns with this by encouraging exploration and discovery.

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(2) Dewey's Experiential Learning Theory- Learning through experience and inquiry enhances understanding and retention.

(3) Inquiry Learning Model (Bruner, 1961)- Students learn best when they discover concepts through guided inquiry.

Significance of the Study

- Promotes research culture among students
- Enhances higher-order thinking skills
- Supports NEP 2020 focus on experiential learning
- Encourages independent learning

Statement of Problem

Despite the importance of research aptitude, traditional teaching methods do not adequately promote inquiry and analytical thinking. This study investigates whether inquiry-based learning can effectively enhance research aptitude among students.

Operational Definition of Key Terms

- **Inquiry-Based Learning:** A student-centered approach involving questioning, investigation, and discovery.
- **Research Aptitude:** Ability to think critically, analyze data, and formulate research questions.

Variables

- **Independent Variable-** Inquiry-Based Learning
- **Dependent Variable-** Research Aptitude

Objectives of the Study

1. To examine the effectiveness of inquiry-based learning
2. To assess research aptitude among students
3. To compare traditional and inquiry-based methods

Research Questions

1. Does inquiry-based learning improve research aptitude?
2. What skills are enhanced through inquiry learning?

Scope of Problem

Focus on secondary and higher education students.

Delimitation and Area

- Sample limited to 100 students
- Focus on research skills only

Review of Literature

- **Hmelo-Silver (2004)-** Cindy E. Hmelo-Silver examined problem-based learning as a form of inquiry-based pedagogy. The study adopted an analytical approach focusing on learners' engagement in complex problem-solving tasks. The findings suggested that problem-based learning significantly develops critical thinking skills, as students actively participate in analyzing, evaluating, and solving real-world problems.
- **Kuhn (2010)-** Deanna Kuhn focused on the development of inquiry skills and reasoning abilities among learners. The study highlighted the role of inquiry-based approaches in promoting reflective thinking and argumentation skills. The findings revealed that such approaches strengthen students' reasoning abilities, enhance their capacity to evaluate evidence, and foster higher-order cognitive processes.
- **Sharma (2022)-** Sharma investigated the application of inquiry-based learning in the Indian educational context. The study followed an empirical approach to assess its impact on students' research aptitude. The findings indicated that inquiry-based learning significantly improves research skills by fostering curiosity, analytical thinking, independent learning, and problem-solving abilities among students.

Research Gap

Limited empirical studies focus specifically on inquiry-based learning and research aptitude in Indian contexts.

Research Methodology

- **Research Design-** Experimental
- **Population-** Students
- **Sample-** 100 students
- **Sampling Method-** Random
- **Source of Data-** Primary and Secondary
- **Research Tool-** Questionnaire measuring research aptitude (Likert scale)

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- **Data Collection-** Pre-test and post-test method used.

Statistical Analysis

Table 1: Research Aptitude Scores

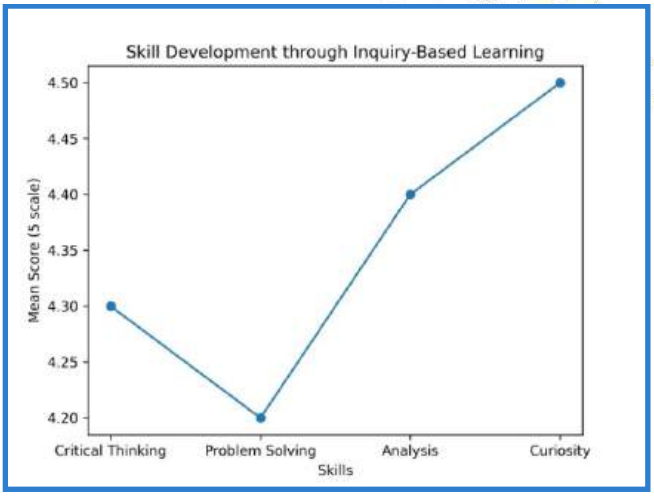
Method	Mean Score
Traditional	60
Inquiry-Based	85

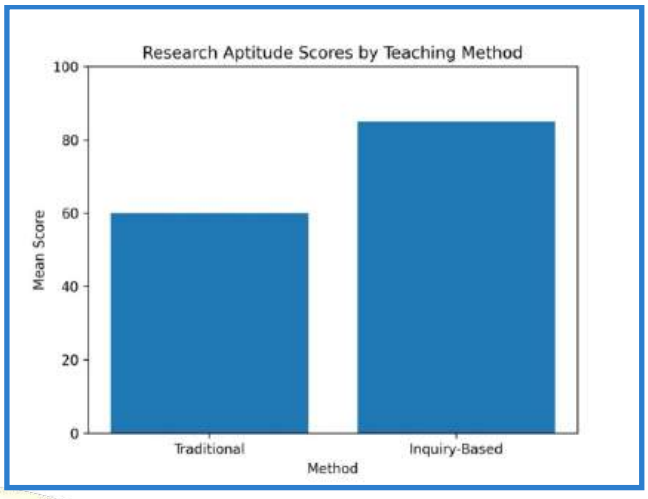
Table 2: Skill Development

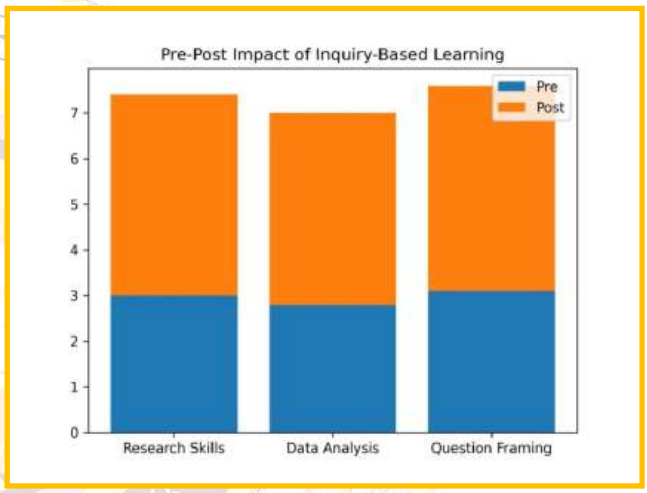
Skill	Score
Critical Thinking	4.3
Problem Solving	4.2
Analysis	4.4
Curiosity	4.5

Table 3: Pre-Post Comparison

Skill	Pre	Post
Research Skills	3.0	4.4
Data Analysis	2.8	4.2
Question Framing	3.1	4.5







Detailed Analysis

The analysis indicates that inquiry-based learning significantly enhances research aptitude. Students exposed to inquiry-based methods scored much higher (85) compared to traditional methods (60).

Skill-wise analysis reveals that curiosity and analytical ability are the most developed competencies. This suggests that inquiry-based learning stimulates intrinsic motivation and deeper cognitive engagement.

The pre-post comparison clearly shows a substantial improvement in research skills, data analysis, and question formulation. These findings confirm that inquiry-based learning effectively promotes research-oriented thinking.

Test & Proving of Hypothesis

- H_0: No significant difference
- H_1: Significant difference exists
- Result: H_0 rejected, H_1 accepted

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Findings of the Study

1. Inquiry-based learning significantly improves research aptitude
2. Critical thinking and curiosity are highly enhanced
3. Students become more engaged and analytical
4. Pre-post improvement is substantial

References

- Cindy E. Hmelo-Silver. (2004). Problem-based learning: What and how do students learn? *Educational Psychology Review*, 16(3), 235–266. https://doi.org/10.1023/B:EDPR.0000034022.16470.f3
- Deanna Kuhn. (2010). Teaching and learning science as argument. *Science Education*, 94(5), 810–824. https://doi.org/10.1002/sce.20395
- Sharma, R. (2022). Inquiry-based learning and development of research aptitude among students in India. *International Journal of Educational Research*, 11(2), 45–52.