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Assessment of the Integrated Teacher Education Program (ITEP) in Enhancing Students' Proficiency: An Attempt to Envisage the Effectiveness of the Initiative

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Abstract

The purpose of the Integrated Teacher Education Program (ITEP) is to improve the teaching-learning environment and contribute to social reform by producing dedicated citizens. As teacher educators play a crucial role in social reconstruction, it is essential to develop problem-solving skills in them. The study focused on assessing seven competencies: critical thinking, data gathering and processing, selecting tools, lateral conceptualization, weighing alternatives, risk assessment, perception and judgment, related to problem-solving and decision-making ability (PSDM) in 200 students (100 male and 100 female) enrolled in ITEP program in the Jharkhand state, a tribal populated area, India. The study used ANOVA (Analysis of Variance) to analyze the data. The results showed that the mean diversity within the group was relatively low (reading of 0.50), indicating minimal variation in competencies among individuals within the same group. However, the reading between groups is higher (3.60), suggesting a more significant difference in competencies between male and female students. Furthermore, the p-value of male students was greater than the alpha (α) level, indicating that the null hypothesis (H_0) was accepted. The effect size η^2 was found to be 0.01, which means that the group (gender) explained only 1% of the variance in the average scores. The small effect size indicates that gender has a minimal impact on the student's overall PSDM behavior. The findings of the study may contribute to the ongoing efforts to enhance learning methodologies and promote effective problem-solving and decision-making skills in both educational and real-world context contexts.

Keywords: ITEP, PSDM behavior, critical thinking, conceptualization.

Introduction

The process of learning is intricately connected to the development of problem-solving and decision-making abilities, forming a crucial aspect of educational pursuits. This engagement takes place through a variety of sensory channels and cognitive processes, where persistence in tackling challenges becomes paramount (Anderson & Anderson 1995; Prabhu M., 2017). To ensure Quality teaching, it is essential to consider three key perspectives; cognitive resource, performance and effect as emphasized by Kennedy (2008). When it comes to making decisions or solving problems, addressing all aspects such as content knowledge, conflicts, cross frame discussion, and standard responses in a positive and clear manner becomes crucial (Kim, J.Y., Choi, D.S., Sung, CS. *et al.*, 2018; Ko & Butler, 2003). Regardless of the nature and dimensions of the problem it is important to solve it with skills (Warner J., 2002).

The four years integrated teacher education program (ITEP) implemented by the regulatory body, i.e; National council for Teacher's Education (NCTE) in India is designed to harmoniously blend general studies encompassing sciences (B.Sc.-B.Ed.), social sciences and humanities (B.A.-B.Ed.). This work attempts to find out the extent and type of problem-solving and decision-making (PSDM), thinking levels, conceptualization and performance abilities of the ITEP students of a tribal dominant state- Jharkhand, India. The result will reflect the ability of problem solving and decision making (PSDM) behavior in student.

Material and methods

In this study, the questionnaire developed by Dr. Jon Warner (2002) was utilized to assess PSDM abilities and attitudes in ITEP students of Jharkhand, India. The seven competencies were measured (table-1). These competencies collectively play a crucial role in addressing problems comprehensively. Individually, each competencies provides valuable insights into an individual’s problem-solving profile, contributing to a more accurate overall assessment. The study population consisted of 200 students (100 male and 100 female students) who were enrolled in the ITEP program. In the final step, the scores from each section, based on the five -point rating scale, are summed up. The

average score thus obtained were analyzed. A higher average score indicates a greater need for improvement in that specific area. An average score of 2 or less in each section is considered favorable, indicating proficiency in that particular competency. Scores running from 2-4 warrant further thought and reflection. Scores exceeding 4 demand immediate attention, as they indicate significant areas requiring improvement. Analysis of mean competency differences between gender using t-test and ANOVA with Levene’s test for variance equality ($p=0.30378$) Assumption checked with Shapiro-wilk test ($\alpha=0.05$).

Table- 1: Description of the seven competencies.

Critical thinking	rigorous and broad thinking direct problem-solving
Data gathering and processing	Efficient, comprehensive information gathering for effective problem-solving
Selecting tools	Effective problem-solving design
Lateral conceptualization	Openness to unconventional thinking, creative new insights
Weighing Alternatives	Fair assessment of data, ideas and experiences for informed decisions
Risk assessment	Systematic calculation of potential action implications
Perception and judgement	Effective synthesis for viable decision-making

Results and Discussion

Noteworthy results in specific competency sections were observed. Among the male participants, the section focusing on selecting tools boasts a commendable mean value of 1.99, indicating a proficient approach in this domain. Notably, the maximum scores of mean value hover

around two but do not surpass 2.2, suggesting a balanced performance in various competencies. In contrast female groups display mean scores above two across all sections, with the highest scores of 2.59 in critical thinking, showcasing a particularly strong inclination towards critical analysis and reasoning (Table-2).

Table – 2: mean, SD, p- value and f distribution of male and female student of ITEP.

Abilities	Male group				Female group			
	mean	SD	F distribution	P-value	mean	SD	F distribution	P-value
Critical thinking	2.0318	0.44	1.200815	0.30378	2.59	5.62	0.8208	0.5539
Data gathering & processing	2.0705	1.13			2.08	1.11		
Selecting tools	1.9948	0.58			2.04	0.56		
Lateral conceptualization	2.2003	0.66			2.32	0.68		
Weighing alternatives	2.0449	0.64			2.0	0.52		
Risk assessment	2.1865	0.65			2.23	0.62		
perception and judgment	2.0992	0.68			2.19	0.58		

The data insights offer valuable implications for educators and policy makers. The variations in competency mean value among male and female group underscore the importance of recognizing diverse problem-solving style and nurturing individual strengths. For male participants, emphasis could be placed on further enhancing lateral conceptualization skills, building upon their already proficient ability to select tools effectively. On the other hand, female participants might benefit from targeted support in weighing alternatives to foster more confident decision making. While there might be variation in mean scores between male and female groups, the study might have also revealed some areas where both genders displayed similar levels of competencies. Identifying these common areas of strength could help educators design gender-inclusive problem-solving strategies. Another finding is a positive correlation between critical thinking and lateral conceptualization could signifies that participants who excel in critical thinking tend to demonstrate higher proficiency in lateral conceptualization

as well. The ANOVA results (Table-3 & 4) showed that the mean diversity within group was relatively low (reading of 0.50), indicating minimal variation in competencies among individuals within the same group. However, the reading between groups are higher (3.60), suggesting more significant difference in competencies between male and female students. Upon further analysis, p-value of male students was greater than the alpha (α) level, indicating that the null hypothesis (H_0) was accepted. The effect size η^2 was found to be 0.01, which means that the group (gender) explained only 1% of the variance in the average scores. The small effect size indicates that gender has a minimal impact on the student’s overall PSDM behavior.

source	DF	Sum of square	Mean square	F-statistics	p-value
Between group	6	3.6427	3.6071	1.2008	0.3038
Within group	693	350.3713	0.5056		
total	699	354.014	0.5065		

A

Group	x2	x3	x4	x5	x6	x7
x1	0.039	0.037	0.17	0.013	0.15	0.067
x2	0	0.076	0.13	0.026	0.12	0.029
x3	0.076	0	0.21	0.05	0.19	0.1
x4	0.13	0.21	0	0.16	0.014	0.1
x5	0.026	0.05	0.16	0	0.14	0.054
x6	0.12	0.19	0.014	0.14	0	0.087

B

Table- 3: (A & B) One way ANOVA result using f-distribution (male student).

source	DF	Sum of square	Mean square	F-statistics	p-value
Between group	6	24.33	4.055	0.8208	0.5539
Within group	693	3423.71	4.9404		
total	699	3448.04	4.9328		

A

Group	x2	x3	x4	x5	x6	x7
x1	0.5	0.55	0.27	0.59	0.36	0.39
x2	0	0.043	0.23	0.085	0.14	0.11
x3	0.043	0	0.28	0.042	0.18	0.15
x4	0.23	0.28	0	0.32	0.094	0.12
x5	0.085	0.042	0.32	0	0.22	0.2
x6	0.14	0.18	0.094	0.22	0	0.029

B

Table- 4: (A & B) One way ANOVA result of female group.

Conclusion

As we conclude our exploration of the data distribution, it becomes evident that each gender exhibits unique PSDM attributes. The study have found that both male and female participants exhibited fairly competent problem-solving and decision-making abilities. This could indicate as a whole, possess the necessary skills to tackle various challenges effectively.

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