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Development and Validation of Soft Skills and Cognitive Strategies Scales for B.Ed. Students

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Abstract

Soft skills and cognitive strategies are widely recognized as essential competencies for effective teaching and professional development among prospective teachers. In the present study, two research instruments—namely the Soft Skills Scale and the Cognitive Strategies Scale—were developed and validated specifically for B.Ed. students. Initially, a comprehensive review of related literature was undertaken to identify the major dimensions of soft skills and cognitive strategies relevant to teacher education. Based on these dimensions, a preliminary pool of items was prepared and reviewed by experts in education and psychology to ensure content validity. The tools were then administered to a pilot sample of B.Ed. students. Item analysis was carried out using the upper 27% and lower 27% group method to determine the discriminating power of each item. Based on the results, 30 suitable items were selected for each scale. The reliability coefficients obtained were 0.83 for the Soft Skills Scale and 0.82 for the Cognitive Strategies Scale, indicating that the instruments are valid and highly reliable for research purposes.

Keywords: Soft skills, Cognitive strategies, Teacher education, Scale development, Validity, Reliability.

1. Introduction

Teacher education plays a crucial role in preparing future teachers with the competencies required for effective teaching and professional success. In the present educational scenario, the focus of teacher preparation has expanded beyond subject knowledge to include essential soft skills and cognitive learning strategies. Soft skills such as communication, teamwork, adaptability, emotional regulation, and interpersonal relationships enable teachers to interact effectively with students, colleagues, and the academic community. These skills are vital for creating a positive classroom environment and fostering meaningful learning experiences.

Similarly, cognitive strategies play an important role in helping learners understand, organize, and apply knowledge effectively. Cognitive strategies include planning, monitoring, evaluating, and reflecting on learning processes. B.Ed. students, as prospective teachers, must develop these strategies to enhance their academic performance and professional competence. Effective use of cognitive strategies also helps teachers guide students in adopting appropriate learning methods.

Despite the growing importance of these competencies, there is a lack of suitable standardized tools to measure soft skills and cognitive strategies among B.Ed. students. Therefore, the present study aims to develop and validate two scales: the Soft Skills Scale and the Cognitive Strategies Scale. These tools are intended to assess the level of soft skills and cognitive strategies among B.Ed. students.

2. Review of Related Literature

The importance of soft skills and cognitive strategies in teacher education has been widely emphasized in educational research. These competencies play a significant role in enhancing teaching effectiveness, professional development, and student learning outcomes. The following review highlights major studies related to soft skills and cognitive strategies among learners and prospective teachers.

Soft skills have been recognized as essential competencies required for success in education and the workplace. Research by Robles (2012) identified communication, teamwork, integrity, and responsibility as the most important soft skills expected by employers. In the context of teacher education, soft skills help prospective teachers build positive relationships with students and create supportive learning environments. Similarly, Goleman (1995) emphasized that emotional intelligence, which is closely related to soft skills, plays a vital role in interpersonal effectiveness and professional success. Teachers with strong emotional intelligence are better able to manage classroom situations and understand students' needs.

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Studies have also shown that soft skills contribute to academic success and professional competence. Heckman and Kautz (2012) highlighted that soft skills such as perseverance, motivation, and teamwork significantly influence educational achievement and career outcomes. In teacher education programs, the development of soft skills helps B.Ed. students become confident and effective educators. Furthermore, Kechagias (2011) reported that soft skills training enhances communication abilities, problem-solving skills, and adaptability among students.

Cognitive strategies are another important aspect of effective learning. These strategies enable learners to process information, organize knowledge, and apply learning in meaningful ways. According to Pintrich (2002), cognitive strategies such as elaboration, organization, and critical thinking help students regulate their learning and improve academic performance. Similarly, Zimmerman (2000) emphasized the role of self-regulated learning strategies, including planning, monitoring, and evaluating learning activities.

Research conducted by Weinstein and Mayer (1986) explained that cognitive learning strategies involve mental processes that help learners understand and remember information effectively. These strategies include rehearsal, elaboration, and organization techniques that support deeper learning. In teacher education, the use of cognitive strategies helps prospective teachers become reflective practitioners who can guide students in effective learning practices.

Several studies have also examined the relationship between cognitive strategies and academic achievement. Hattie (2009) reported that students who actively use cognitive and metacognitive strategies show higher levels of academic success. The study highlighted that effective learning strategies significantly influence students' understanding and retention of knowledge. Similarly, Schraw and Dennison (1994) found that learners who apply metacognitive strategies demonstrate improved problem-solving skills and academic performance.

In the context of teacher education, research by Darling-Hammond (2017) emphasized that teacher preparation programs should focus on developing both professional skills and cognitive competencies. Prospective teachers need to understand how students learn and apply appropriate strategies to facilitate learning. The integration of cognitive strategies in teacher education enhances critical thinking, reflective practice, and instructional effectiveness.

Although several studies have explored soft skills and cognitive strategies separately, limited research has focused on developing standardized tools to measure these competencies among B.Ed. students. Most available scales are either general in nature or designed for different populations. Therefore, there is a need to construct reliable and valid instruments specifically for teacher education students.

Based on the review of related literature, it is evident that soft skills and cognitive strategies are crucial for the professional development of prospective teachers. These competencies not only improve teaching effectiveness but also contribute to better learning outcomes among students. Hence, the present study attempts to develop and validate scales to measure soft skills and cognitive strategies among B.Ed. students.

3. Objectives of the Study

i). To develop a Soft Skills Scale for B.Ed. students.
ii). To establish the validity and reliability of the Soft Skills Scale.
iii). To develop a Cognitive Strategies Scale for B.Ed. students.
iv). To establish the validity and reliability of the Cognitive Strategies Scale.

4. Methodology

4.1. Research Design: The present study adopted a descriptive survey method to develop and validate two research tools, namely the Soft Skills Scale and the Cognitive Strategies Scale, for B.Ed. students. The study focused on constructing reliable and valid instruments to measure soft skills and cognitive learning strategies among prospective teachers.

4.2. Participants/Sample: The pilot study was conducted with 50 B.Ed. students selected randomly from colleges located in both urban and rural areas. The sample included students with diverse academic backgrounds to ensure the applicability of the developed scales. The respondents were informed about the purpose of the study, and their responses were collected voluntarily.

4.3. Pilot Study: A pilot study was conducted to examine the clarity, relevance, and effectiveness of the items included in the preliminary versions of the Soft Skills Scale and the Cognitive Strategies Scale. The initial Soft Skills Scale consisted of 40 items, while the Cognitive Strategies Scale consisted of 38 items.

Both tools were administered to the selected sample of B.Ed. students with clear instructions. The respondents were asked to indicate their level of agreement with each statement using a five-point Likert scale: Strongly Agree, Agree, Undecided, Disagree, and Strongly Disagree.

The responses collected from the pilot study were scored and tabulated. Positive items were scored from 5 to 1, while negative items were scored in the reverse order. The data obtained from the pilot study were used for item analysis, validity, and reliability testing of the scales.

4.4. Development of Research Tools

i). Soft Skills Scale

The Soft Skills Scale was developed by the investigator and Dr. K. Saileela to assess B.Ed. students' interpersonal, communication, and collaborative competencies. The items were prepared based on a review of journals, books, magazines, and existing frameworks related to professional soft skills.

The initial scale consisted of 40 statements, including both positive and negative items. Each item had five response alternatives:

Strongly Agree, Agree, Undecided, Disagree, and Strongly Disagree.

The scale aimed to measure key dimensions such as:

- Communication skills
- Teamwork
- Adaptability
- Emotional regulation
- Conflict resolution
- Self-management

After item analysis, 30 items were retained for the final scale.

ii). Cognitive Strategies Scale

The Cognitive Strategies Scale was developed by the investigator and Dr. K. Saileela to assess B.Ed. students' use of cognitive learning strategies in academic settings. The initial version of the scale consisted of 38 items reflecting different aspects of cognitive engagement such as:

- Understanding concepts
- Planning and organization

- Reflection and evaluation
- Application of knowledge

Each item had five response options similar to the Soft Skills Scale. After item analysis, 30 items were retained for the final tool.

4.5. Item Analysis

Item analysis was conducted using the upper 27% and lower 27% group method to determine the discriminating power of each item. The total scores obtained by the respondents in the pilot study were arranged in ascending order. Based on the scores, the top 27% of respondents formed the upper group, and the bottom 27% formed the lower group.

The mean scores of both groups for each item were calculated, and the t-test was applied to determine the significance of the difference between the two groups.

The formula used for calculating the t-value is:

The discriminating power of each item was determined using the t-test. The formula used for calculating the t-value is:

$$t = \frac{\overline{X}_H - \overline{X}_L}{\sqrt{\frac{s_H^{\,2}}{n_H} + \frac{s_H^{\,2}}{n_L}}}$$

Where:

$\overline{X}_H$ = The mean score of the high group for a given statement

$\overline{X}_L$ = The mean score of the low group for a given statement

X_H = The score of the given individual for the given statement in the high group

X_L = The score of the given individual for the given statement in the low group

N = Number of subjects in the criterion groups

A 't' value greater than 2 was considered significant.

Based on the analysis, items 1 to 30 were selected for the final study. Items 31 to 40 did not meet the criteria and were excluded.

After calculating the t-value for each item, the values were compared with the standard criterion. Items with t-values equal to or greater than 2.00 were considered to have adequate discriminating power and were retained in the final scale. Items with t-values less than the criterion value were considered weak and were rejected.

Thus, through this method of analysis, only those items that effectively differentiated between high and low scoring respondents were selected for the final form of the scales. This process ensured the reliability and validity of the tools developed for the study.

5. Results

The results of item analysis showed that:

- 30 items were selected in the Soft Skills Scale.
- 30 items were selected in the Cognitive Strategies Scale.

The reliability coefficients indicated high internal consistency.

Table 1: Soft Skills Scale

Item No	Statement	Nature
1	I communicate my ideas clearly to others.	Positive
2	I find it difficult to work with people who think differently from me.	Negative
3	I stay calm when unexpected problems arise.	Positive
4	I avoid taking responsibility when things go wrong.	Negative
5	I respect others' opinions even when I disagree.	Positive
6	I get upset easily when someone gives me feedback.	Negative
7	I try to solve conflicts peacefully.	Positive
8	I hesitate to ask for help when I need it.	Negative
9	I manage my time effectively to complete tasks.	Positive
10	I often procrastinate and delay important work.	Negative
11	I listen carefully when others are speaking.	Positive
12	I interrupt others when they are talking.	Negative
13	I try to understand the feelings of others.	Positive
14	I rarely think about how my actions affect others.	Negative
15	I am confident when interacting with new people.	Positive
16	I avoid social situations because I feel uncomfortable.	Negative
17	I adapt easily to new situations and changes.	Positive
18	I struggle when routines or plans change suddenly.	Negative
19	I work well in a team setting.	Positive
20	I find it hard to cooperate with others.	Negative
21	I take initiative without waiting to be told what to do.	Positive
22	I depend on others to make most decisions for me.	Negative
23	I remain positive even when faced with difficulties.	Positive
24	I easily lose hope when faced with small challenges.	Negative
25	I accept responsibility for my mistakes.	Positive
26	I usually blame others when something goes wrong.	Negative

27	I plan my work before starting it.	Positive
28	I work without planning and face problems because of it.	Negative
29	I try to improve myself based on feedback.	Positive
30	I ignore suggestions that could help me improve.	Negative

Table 2: Cognitive Strategies Scale

Item No	Statement	Nature
1	I try to understand concepts rather than just memorizing them.	Positive
2	I study lessons without planning how to learn them.	Negative
3	I break complex topics into smaller parts to understand them better.	Positive
4	I often read without trying to understand the meaning.	Negative
5	I use examples to help me understand difficult concepts.	Positive
6	I rarely review my notes after class.	Negative
7	I connect new information with what I already know.	Positive
8	I depend only on memorization during exams.	Negative
9	I summarize what I study in my own words.	Positive
10	I do not check whether I have really understood what I studied.	Negative
11	I use diagrams, charts, or mind-maps to understand topics.	Positive
12	I get confused easily when information is presented in different forms.	Negative
13	I clarify my doubts immediately when I don't understand something.	Positive
14	I postpone studying until the last minute.	Negative
15	I relate theories learned in class to real-life situations.	Positive
16	I do not organize my study materials properly.	Negative
17	I ask questions to deepen my understanding.	Positive
18	I find it difficult to remember what I learned earlier.	Negative
19	I review key points before tests.	Positive
20	I do not compare different ideas or viewpoints while studying.	Negative
21	I practice applying concepts instead of only reading them.	Positive
22	I feel lost when lessons involve problem-solving.	Negative
23	I evaluate my learning progress regularly.	Positive
24	I do not try alternative methods when one way of learning fails.	Negative
25	I look for relationships among ideas when studying.	Positive
26	I skip difficult topics instead of trying to understand them.	Negative
27	I reflect on my mistakes to improve my learning strategies.	Positive
28	I rarely seek additional resources beyond textbooks.	Negative
29	I organize the information I learn into meaningful categories.	Positive
30	I struggle to concentrate while studying academic materials.	Negative

6. Discussion

The developed scales exhibit strong psychometric properties, indicating that they are reliable and valid tools for assessing soft skills and cognitive strategies among B.Ed. students. The results of item analysis, expert validation, and reliability testing confirm that the instruments effectively measure the intended competencies. These findings highlight the importance of systematically designed tools in educational research. The scales can be effectively utilized by researchers, teacher educators, and institutions to evaluate and enhance essential skills required for effective teaching. Furthermore, the instruments may support teacher training programs by identifying areas where prospective teachers need improvement and by guiding interventions to strengthen their professional competencies.

7. Conclusion

In conclusion, the present study successfully developed and standardized two reliable instruments—the Soft Skills Scale and the Cognitive Strategies Scale—for B.Ed. students. The tools were carefully constructed through an extensive review of literature, expert validation, pilot testing, and item analysis using the upper and lower group method. The reliability coefficients obtained indicate that both scales possess a high level of consistency and accuracy in measuring the intended constructs. Therefore, these instruments can be effectively used by researchers and teacher educators to assess and enhance soft skills and cognitive strategies among prospective teachers, thereby contributing to.

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