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Metacognitive Awareness on Teaching and Teaching Competence of Secondary Prospective Teachers

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Abstract

Metacognition is the individual's awareness of how he learns and what he does, employment of proper knowledge to gain his ends; the ability to employ cognitive skills that are required in an ordinary test, the knowledge of which strategies be employed with which goals, and the assessment of individual processes before and after the performance” (Flavell, 1997). Here, an attempt was made to investigate the relationship and differences of metacognitive awareness on teaching and teaching competence of prospective secondary teachers. The main objective of the study was to compare the significant mean differences and relationship of of metacognitive awareness on teaching and teaching competence of male and female secondary prospective teachers. A sample of 100 secondary prospective teachers consisted of 50 males and 50 females from Dr. PMIASE, Sambalpur, and Panchayat College, Bargarh, were selected randomly. For this study, both correlational and causal-comparative method was employed by the researcher. To collect data, the researcher used the Inventory of Metacognitive Awareness for Teachers (MAIT) developed by C. Balcikanli (2011) and the General teaching Competence scale (GTC) developed by B.K. Passi and Lalitha (1994). The obtained data were analyzed using “t” test and Pearson correlation coefficient “r.” It was that found the mean scores of male teachers are significantly better than the female teachers when metacognitive awareness was compared with teaching and teaching competence. Lastly, the result indicated there existed a strong positive correlation of metacognitive awareness on teaching and teaching competency concerning male and female student teachers.

Keywords: Metacognitive awareness, Teaching, Teaching competence, Teacher, Secondary prospective teacher

The Background

Meta cognition is not a new concept in education in recent years. It usually gives importance to thinking over one's thinking process and regulation of what he/she is thinking. “Metacognition is the ability to reflect, control and understand in a self-aware mode, one's own learning and cognition” (Schraw and Dennison, 1994). The concept of ‘metacognition’ was first suggested by Flavell in 1976. “It is the ability to control and understand by his self, about own learning and cognition” (Schraw and Dennison, 1994). When we concern about teachers' metacognition, we can emphasize the extent of the teachers about their professional life and their regular activities regarding their teaching competency, classroom practices, managerial and evaluative strategies. In the case of the prospective teachers, it is very much important to know about their

content knowledge, the process of teaching, techniques of teaching, etc. Many researchers have viewed that metacognitive awareness about teaching makes a teacher think dynamically and strategically towards his regular teaching process. According to Balcikanli (2011), metacognitive awareness in teaching plays an accelerating element of the whole teaching-learning process Ozcan's (2007) study revealed that metacognitively aware teachers could use some strategies to improve the students' awareness of metacognition.

On the other hand, to teach successfully, teaching competency is so vital for a teacher. Hence, a teacher must possess the general teaching competencies like planning, presentation, evaluation, and managerial because a competent teacher is capable of making a good lesson plan, develop appropriate teaching strategy and valid evaluation procedure along with good classroom management. Moreover, teachers should be competent enough to deal with the learners' behaviors and give proper feedbacks and reinforcement, which help in their high learning achievement.

Review of Related Literature

Huseyin (2014) studied pre-service English teachers' metacognitive awareness and academic achievement with a sample of 134 Turkish teachers. It was found that a significant correlation between metacognitive awareness, exam scores, and grade points existed. Choudhury and Chowdhury (2015) studied the metacognition awareness levels of teacher educators related to their teaching competency on a sample of 170 teacher educators. They found a significant difference between male and female teacher educators in favor of male teacher educators. Bars and Oral (2016) investigated prospective teachers' metacognitive awareness in terms of some variables such as social, numeric group, and fine arts. They revealed that the metacognitive awareness of the numeric group was found higher than the other groups, whereas, the metacognitive awareness of female teacher candidates was found superior to males. Premachandran and Jaleel (2016) conducted a study to determine the metacognitive awareness level of secondary school students on a sample of 180 secondary students. They found no

significant difference between students concerning their gender and local and type of management of the school. Bogdanovic et al. (2017) studied students' metacognitive awareness and physics learning efficiency and the correlation between them. Results showed a significant moderate correlation between metacognitive skills and student achievement in physics. Ozturk (2018) studied the relation between the teachers' self-reported metacognitive awareness on a sample of 30 English language teachers and found out that only highly metacognitive instructors could transfer their metacognitive understanding to prepare lesson plans and create useful strategies. Zarrabi (2017) examined the relationship between learning style and metacognitive listening awareness of EFL learners and found a statistically significant relationship between the two variables. Yildiz et al. (2018) studied students' cognitive and metacognitive competencies according to different variables on 366 lower middle school students. A quantitative method, including t-test and one-way ANOVA, was adopted for data analysis. The findings revealed that female students were more competent than male students in both cognitive and metacognitive competency. Duman and Semerci (2019) aimed to study the consequence of metacognition based instructional practice on the awareness of the prospective teachers in metacognition. A quantitative method was used through Pre-test and post-test control group design. The findings reported there was no significant difference between metacognition awareness in pre-test mean scores and post-test of the control group and experimental group. Iwai (2019) studied pre-service teachers' use of literacy performance assessment to plan, implement, and analyze metacognitive strategies. They found that the pre-service teachers selected appropriate metacognitive strategies based on their students' needs lesson objectives and increased their awareness of teaching skills. Perry et al. (2019) investigated metacognition in school's what literature says the effectiveness of teaching with metacognition. A meta-analysis adopting a qualitative approach for the study was taken and found that the available evidence strongly suggests metacognitive approaches to teaching and learning have the potential to radically improve the outcomes of children.

Justification of the Study

Today's education system is a dynamic one, and teacher education is an interdisciplinary area of education. So, the prospective teachers should be aware of their metacognitive level about their teaching competence, whereby they can manage, regulate, and modify their teaching strategies as per the needs of the future classrooms. It is very important to know one's metacognitive abilities to make successful outcome-based learning in the classrooms in a more upgraded and advanced manner. To be upgraded with the present education system, a teacher should be capable of certain metacognitive skills to recognize and evaluate his/her efforts. Metacognitive awareness of a teacher shows the path of his teaching-learning process and its extent of success. A competent teacher helps in understanding and enhancing the conceptual knowledge of learners. Therefore, teacher education institutions should emphasize developing the competencies required for quality assurance and effective teaching-learning practices. Many research types have been conducted to study the metacognitive awareness related to the teaching process and competency and derived various conclusions about the differences between gender, relationships among variables, and effects of metacognitive interventions and strategies. Therefore, the investigator has interested to study in this field and predict that metacognitive awareness will work as an accelerating agent in enhancing the teaching competence of future teachers at the secondary level. From the above researches, the investigator has found the research gap to conduct the study and analyzed that metacognitive awareness has remained an area of research that has not been taken into account to a greater extent. Hence it is highly important to gain more detailed and specified empirical research in this field. Despite all, the investigator wanted to encompass their view point that teacher education is an interdisciplinary field that should not only focus on the training or professional take off but also to consider the futuristic aspirations of modern dynamic classrooms along with a paradigm shift in the teaching-learning strategies.

Problem Statement

As per the above-felt need of the study, the researcher took some interest in filling the gap found in the literature studies, and for getting a solution to the above-cited need, the topic can be entitled as, "Metacognitive Awareness on Teaching and Teaching Competence of Secondary Prospective Teachers."

Objectives

- To compare the difference of metacognitive awareness levels of male and female secondary prospective teachers on teaching and teaching competence.
- To compare the mean scores of metacognitive awareness of teaching concerning male and female secondary prospective teachers.
- To compare the mean scores of teaching competence concerning male and female secondary prospective teachers.
- To study the correlation of metacognitive awareness on teaching and teaching competence of male secondary prospective teachers.
- To study the correlation of metacognitive awareness on teaching and teaching competence of female secondary prospective teachers.
- To study the correlation of metacognitive awareness on teaching and teaching competence of male and female secondary prospective teachers.

Hypotheses

- There exists no difference in the levels of metacognitive awareness on teaching and teaching competence of secondary prospective teachers.
- There is no significant difference in the mean scores of metacognitive awareness on the teaching of male and female secondary prospective teachers.
- There is no significant difference in the mean scores of teaching competence of male and female secondary prospective teachers.
- There is no significant correlation of metacognitive awareness on teaching and teaching competence of male secondary prospective teachers.
- There is no significant correlation of metacognitive

awareness on teaching and teaching competence of female secondary prospective teachers.

- There is no significant correlation between metacognitive awareness on teaching and teaching competence of male and female secondary prospective teachers.

Delimitations of the Study

The present study was delimited to second year B.Ed. Students of Dr.PMIASE and Panchayat college located in Sambalpur and Bargarh district, respectively. Further, it was delimited to the second-year students of two years B.Ed. Program.

Method and Materials

Method

Since the objective of the present study was to investigate the impact of metacognitive awareness and teaching competence of male and female prospective teachers and to study the relationship of metacognitive awareness and teaching competence on teaching about male and female secondary prospective teachers, the researcher used the Casual-comparative method with a co relational design.

Population and Sample

All the prospective teachers of Sambalpur and Bargarh districts' colleges affiliated to Sambalpur University constituted the population of the present study. A sample of 100 prospective teachers (50 male and 50 female) from two B.Ed. Colleges, namely Dr. P.M.I.A.S.E., Sambalpur and Bargarh Panchayat College, Bargarh, were selected randomly; out of 50 prospective teachers from each institute, 25males and 25 females were taken as the sample. The samples were selected through purposive and random sampling technique.

Instruments Used

As tools and techniques are concerned, in this present study, the investigator has adopted two standardized tools, such as the "Metacognitive Awareness Inventory for Teachers" developed by (C. Balcikanli, 2011). The validity of the inventory was 0.794whereas; the reliability of the tool was found high and ranged from 0.79 to 0.85. Secondly, the "General Teaching Competence Scale" was

developed and standardized by (B. K. Passi and S. Lalitha, 1994). The inter-observer reliability of the scale was reported to be ranging from 0.85 to 0.91, and the factorial validity was measured, which ranged from 0.78 to 0.82.

Procedure of Data Collection

The data of the present study was collected personally by the investigator in a systematic manner. Before collecting the data, the investigator visited the principals of both the institutions to take permission for data collection. Initially, the data were collected by the researcher with the help of field visits to the institutions from where samples were taken. Before administering the tools, important instructions were given clearly to the participants by the investigator. Lastly, the researcher collected all the necessary information from the participants with two above-cited standardized tools.

Statistical Techniques Used

To find out the differences and relationship between metacognitive awareness on teaching and teaching competence about gender, the investigator employed the statistical techniques, i.e., t-test and Product moment correlation, for analyzing the obtained data and for drawing necessary results.

The Results

The analysis and interpretation of the present research have been made by using appropriate statistical techniques. The details are given in the following manner.

Table 1: Analysis of the Percentage of Metacognitive Awareness on Teaching and Teaching Competence of Prospective Teachers

Variable	Category	Level (in %)		
		High	Average	Low
Metacognitive awareness in Teaching	Male	78	22	0
	Female	82	18	0
Teaching competence	Male	32	56	0
	Female	44	68	0

As can be seen in table 1 that approximately 78%, 22 %, and 0% of prospective male teachers had high, average, and low level of metacognitive

awareness in teaching while, about 82%, 18%, and 0% of female prospective teachers had a high, average and low level of metacognitive awareness in teaching respectively. Furthermore, the table revealed that about 32%, 56%, and 0% of prospective male teachers were found high, average, and low levels of teaching competence; on the other hand, 44%, 68%, and 0% of female prospective teachers were seen high, average and low levels of teaching competence.

Here, the null hypothesis there exists no difference in the levels of metacognitive awareness on teaching and teaching competency of secondary prospective teachers was rejected. Hence, it was clear that both male and female prospective teachers differed in the percentages of metacognitive awareness in teaching and teaching competence. The metacognitive awareness in the teaching of males was higher than the female, and the teaching competence of females was found comparatively more elevated than male.

The percentage of metacognitive awareness in teaching and teaching competence was being depicted in the following graph.

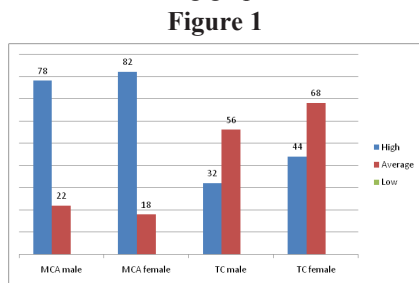


Table 2: Analysis of Significance means a Difference in Metacognitive Awareness on Teaching of Male and Female Prospective Teachers

Variable	Category	N	Mean	SD	SED	Df	't' value
Metacognitive awareness on teaching	Male	50	98.8	10.15	.413	98	2.90 (significant at 0.05 level and 0.01 level)
	Female	50	97.61	10.14			

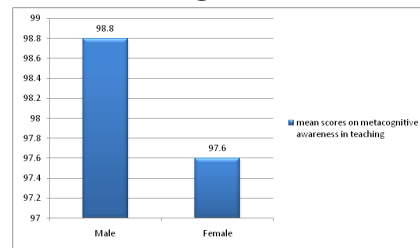
Results of Significance mean the Difference between Male and Female Prospective Teacher on Teaching

Table 2 and figure 2 indicates that the calculated 't' value (2.90) is greater than the table value in 98 df at 0.05 level of significance (1.98) and 0.01 level of significance (2.62). Therefore, the second null hypothesis is that no significant difference

Percentage of Metacognitive Awareness on Teaching and Teaching Competence of Prospective teachers

The graph revealed that both male and prospective female teachers possessed high metacognitive awareness in teaching, i.e., 78% and 82%. The average teaching competence was found high (22%) among prospective male teachers than the prospective female teachers who were 18%. No prospective teachers of either sex had a low level of metacognitive awareness in teaching. Likewise, the graph depicted that both the male and prospective female teachers acquired a high level of teaching competence, i.e. 32%, and 56%. The average level of teaching competence was found more than their high-level teaching competence. About 68% of prospective female teachers had an average level of teaching competence that was more than the prospective male teachers, that are 56%. Lastly, it was found that no teacher had a low level of teaching competence.

Figure 2

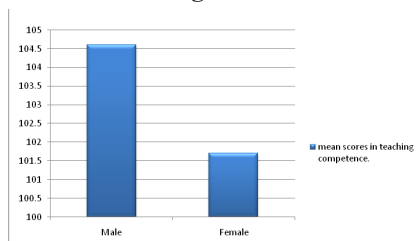


in the mean scores of metacognitive awareness on the teaching of male and female prospective teachers was rejected. It means both the male and female prospective teachers' mean scores differed significantly. It revealed that the mean scores of metacognitive awareness on the teaching of prospective male teachers are significantly greater than the female prospective teachers.

Table 3: Analysis of Significance means the difference in Teaching Competence of Male and Female Prospective Teachers

Variable	Category	N	Mean	SD	SED	Df	't' value
Teaching Competence	Male	50	104.6	12.58	2.40	98	4.287 (significant at 0.05 and 0.01 level)
	Female	50	101.7	11.22			

Figure 3



Results of the Significant Mean difference between Male and Female Prospective Teachers on Teaching Competence

The above table and graph-3clearly showed that the calculated 't' value (4.287) is greater than the critical value in 98 df at 0.05 level of significance (1.98) and 0.01 level of significance (2.62). As a result of which the third null hypothesis that is there exists no significant difference in the mean scores of teaching competence of male and female secondary prospective teachers was rejected. It means there exist significant mean differences in teaching competence of male and female prospective teachers. It can be said that the mean score of prospective male teachers is higher than the prospective female teachers.

Table 4: Correlation of Metacognitive Awareness on Teaching and Teaching Competence of Prospective Male Teachers

Variables	N	R	Df	Level of Significance
Metacognitive awareness on teaching and teaching competence	50	0.62	48	Significant at 0.05 level

The given table appeared to show the calculated 'r' value (0.62) is more than the table value (.279) in df 48at0.05 level of significance. Therefore, the fourth null hypothesis is that no significant correlation of metacognitive awareness on teaching and teaching competence of prospective male teachers was rejected. Simply, it points out that

there exists a significant correlation between metacognitive awareness and teaching competence of the prospective male teachers. Since the value of 'r' was found between the range ±.40 to .70, it can be interpreted that there is a moderate positive correlation between metacognitive awareness and teaching competence of prospective male teachers.

Table 5: Correlation of Metacognitive Awareness on Teaching and Teaching Competence of Prospective Female Teachers

Variables	N	df	R	Level of significance
Metacognitive awareness on teaching and Teaching competence	50	48	0.74	Significant at 0.01 level

The above table showed that the calculated 'r' value (0.74) is greater than the table value (.361) in df 48at 0.01 level of significance. Hence, the null hypothesis is that no significant correlation of metacognitive awareness on teaching and teaching competence of prospective female teachers was rejected. It shows there exists a significant correlation between metacognitive awareness and the teaching competence of prospective female teachers. Since the calculated value of 'r' lies between the range ±.70to .90, it can be implied that there is a high positive correlation between metacognitive awareness and the teaching competence of prospective female teachers.

Table 6: Correlation of Metacognitive Awareness on Teaching and Teaching Competence of Male and Female Secondary Prospective Teachers

Variables	N	df	R	Level of significance
Metacognitive awareness on teaching and Teaching competence	100	98	.392	Significant at 0.01 level

The above table described that the obtained 'r' value (.392) is greater than the table value (.361) in df 98 at 0.01 level of significance. Thus, the test was significant, and the last null hypothesis that no significant correlation between metacognitive awareness on teaching and teaching competence of male and female prospective teachers was rejected. There is a significant correlation between the metacognitive awareness on teaching and teaching competence of secondary prospective teachers concerning gender. Since the obtained value for 'r' ranged between $\pm .20$ to $\pm .40$, so it can be said that there is a weak positive correlation between metacognitive awareness and teaching competence of male and female prospective teachers.

Main Findings

Based on the analysis and interpretation of data presented in the tables and figures, the investigator is drawn the following findings:

- The level of metacognitive awareness on the teaching of female prospective teachers was found better at a high level than the prospective male teachers.
- The teaching competence of female prospective teachers was found higher than the prospective male teachers at an average level of teaching competence.
- The majority of male and female prospective teachers found in the average level of teaching competence.
- There exists a significant mean difference in metacognitive awareness on the teaching of male and female prospective teachers. Here, the mean scores of male teachers were significantly greater than the prospective female teachers.
- There exists a significant mean difference in teaching competence of male and female prospective teachers. It was found that the mean scores of prospective male teachers found comparatively higher than the female teachers.
- There exists a positive correlation between metacognitive awareness and the teaching competence of prospective male teachers.
- There exists a significant positive correlation between metacognitive awareness and teaching competence of female prospective teachers.

- Lastly, it was found that there exists a weak positive correlation between metacognitive awareness in teaching and teaching competence of both male and female secondary prospective teachers.

Discussion of Results

The finding of the study was matched with Choudhury and Chowdhury (2015), who found out that a significant relationship between teaching competency and metacognition awareness of secondary teacher educators existed. The findings of this study were matched with one variable of Hussain (2015) and found a significant correlation in metacognitive awareness of pre-service English teachers. The result was also matched with Premachandran and Jaleel (2016) found no significant difference between students concerning gender. The findings that the metacognitive awareness of female teachers' candidates was found superior to males is supported by Bars and Oral (2016). The findings of the present study are matched with the study of Bogdanovic et al. (2017), studied the correlation between students' metacognitive awareness and learning efficiency and found a significant moderate correlation between metacognitive skills and students' achievement. The findings that the female students were more competent than the male students in both cognitive and metacognitive competencies is supported by Yildiz et al. (2018). The results also matched with Iwai (2019), who found that the pre-service teachers who selected appropriate metacognitive strategies would enhance their teaching skills. The findings of this study didn't match with the study conducted by Duman and Semerci (2019). They found no significant difference between metacognition awareness in pre-test and post-test mean scores of prospective teachers. As a result, there exists a significant mean difference and a positive correlation between the metacognitive awareness on teaching and teaching competence of male and female prospective teachers.

Educational Implications

- It is recommended that the theoretical aspects of metacognitive awareness should be included in the curriculum of teacher education.

- The practical framework should be made to develop metacognitive awareness in teaching by the top-level educational bodies i.e., NCERT, NCTE, SCERT, etc.
- Teachers' training institutes should be introduce metacognitive intervention strategies to develop teaching awareness and competence among pupil teachers.
- Metacognitive awareness should be included as a core paper of instruction in teacher education programs.
- The prospective teachers should be motivated to develop a positive attitude towards their teaching profession.
- The government should focus and give more time on practice teaching activities of teachers that would help to strengthen their teaching competence.
- Problem-solving, project method, and reflective learning method should be adopted by the teacher educators.
- Quality teaching and possible efforts should be made by the teacher educators to enhance metacognitive awareness and teaching competence from a lower to a higher level.
- Importance should be given to self-development and self-awareness of the prospective teachers about their teaching competence skills.
- Motivational classes and group discussions on the concept of metacognition and teaching competence should be done regularly in teacher education institutions.
- Revision of the teacher education curriculum should be made compulsory from time to time based on needs and requirements of future teachers.
- The present study was only delimited to two teachers' training institutes of Sambalpur and Bargarh district, so it suggested covering other districts' prospective teachers.
- The study can be further extended by taking a sample of pupil teachers of CT schools and DIETs.
- A comparative study can also be undertaken on the Govt. and self-financing B.Ed. Trainees, teacher educators, and lecturers, Integrated B.Ed. And M.Ed. Training students.

Suggestions for Further Research

- The same kind of study may be undertaken on the other variables like the background of the students (rural, urban), different disciplines (arts, science&commerce), and various institutes (govt & private).
- It can be suggested that similar studies can be conducted on various levels of teachers' education such as pre-service, in-service, and distance education.

Conclusion

The present study reveals that most prospective teachers have a high level of metacognitive awareness in teaching, and a majority of prospective teachers possessed an average level of teaching competency. Further, it could be cleared from the above discussion that the mean scores of both male and female prospective teachers differ significantly. Again, it is found that there exists a positive correlation between metacognitive awareness and teaching competence of secondary prospective teachers. Therefore, it can be said that teaching competencies and metacognition are correlated. In this changing world, the role of the teacher is to develop various life skills that would help them to confront future problems. These metacognitive strategies are vital in the 21st century to create a metacognitive environment having all kinds of resources to make the child a life-long learner.

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