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Meta-Cognition and Emotional Intelligence: A Dual Approach to Enhance Effectiveness of Prospective Teacher Educators

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ABSTRACT

Meta-cognition and emotional intelligence are two cognitive processes that play significant roles in how individuals perceive, interpret, and regulate their emotions. Meta-cognition involves the awareness and understanding of one's own thoughts and thought processes, while emotional intelligence refers to the ability to recognize and manage emotions in ourselves and others. This paper explores the relationship between meta-cognition and emotional intelligence, highlighting their complementary nature. Sample of 120 pre-service teachers was selected from the Jammu district. It is descriptive study; Analysis of Variance was used for the analysis and interpretation of data. The results of the study reflected that there found significant difference in the Regulation of Cognitive Process between male and female pre-service teachers. But there is no significant difference in the knowledge of cognitive process on the basis of gender. It was also found that emotional intelligence and meta-cognition are related to each other.

Keywords :- Meta-cognition, Emotional Intelligence, Prospective Teachers

Meta-cognition is higher order thinking that entails active control of the cognitive processes involved in learning. Because it is vital to successful learning, it is necessary to investigate meta-cognitive activity and development in order to identify how students might be trained to employ their cognitive resources through meta-cognitive control.

The word "meta-cognition" is most often linked with John Flavell (1979), who claimed that meta-cognition encompasses both meta-cognitive knowledge and meta-cognitive experiences or control. Flavell separates meta-cognitive information into three categories: person variables, task variables, and strategy factors.

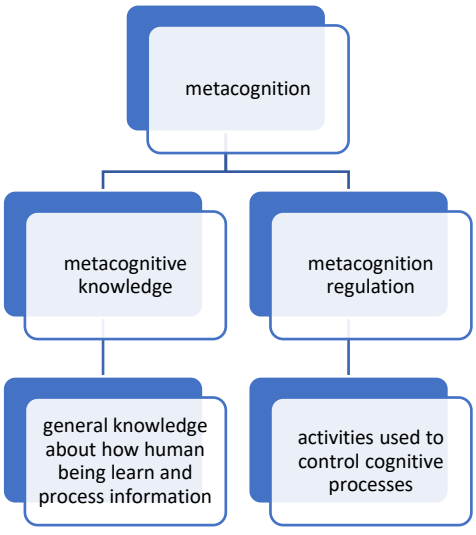

Figure 1: components of meta-cognition

Cognitive and Meta-cognitive Abilities

Cognitive strategies are employed to assist individuals attain certain goals. Meta-cognitive strategies are employed to guarantee that the aim is fulfilled. While reading usage of self questioning can increase the knowledge is cognitive strategy and keep monitoring what you learn is meta-cognitive strategy

(Livingston, 2003). Meta-cognitive strategies can significantly enhance students' learning by acquisition of new knowledge and skills in a more effective manner. (McLeskey, Rosenberg & Westling, 2013)

Emotional Intelligence

Emotions play a crucial role in all human activities, influencing every action, decision, and judgment. Individuals with high emotional intelligence understand this dynamic and leverage their cognitive abilities to regulate their emotions, rather than allowing their emotions to dictate their behavior. Over the past twenty years, the concept of Emotional Intelligence (EI) has emerged as a vital measure of an individual's competencies in professional, academic, and personal contexts. Integrating EI into higher education can provide numerous advantages for students, enhancing their effectiveness and fulfilling their aspirations in their respective fields (Tripathi, 2018). Emotional intelligence includes a range of attributes and competencies that represent a diverse array of personal skills and traits, commonly known as soft skills or interpersonal and intrapersonal abilities. These qualities extend beyond conventional domains of specialized knowledge, general intelligence, and technical or professional expertise. Emotions are fundamentally accompanying us to the workplace each day, significantly shaping our actions and interactions (Gupta, 2014). Emotionally intelligent adults make better decisions and they use their emotions as a source of energy and direction (Engelberg and Sjoberg , 2004)

Emotions related to achievement play a vital role in an academic environment, as they influence the learning strategies and the cognitive and Metacognitive resources that students employ, ultimately impacting their academic success (Daniels & Stupnisky, 2012).

There is connection between affect and cognition, highlighting how emotions influence our thoughts and feelings, shaping our perceptions and actions, which ultimately impacts our achievements and setbacks (Nuhfer 2017). Furthermore, research indicates that assisting college students in enhancing their emotional intelligence can significantly improve their retention and persistence rates (Mendez, Aronold, Erjavec, & Lopez, 2018-2019). Holistic approaches targeting non-cognitive factors may have the most significant impact on aiding students in their academic recovery (Friedlander, Reid, Shupak, & Cribbie, 2007). Metacognition thoughts can play an important role in understanding psychological processesrelevant to EI. (Alavinia & Mollahossein, 2012).Meta-cognition and EI contribute significantly to the prediction of problem-solving ability (Sharei et al 2012). It is important to remember that individuals are inherently motivated when they possess a profound understanding of themselves, which includes their emotional self. students who exhibit high intrinsic motivation tend to be more productive, resilient, and experience greater emotional well-being. (Froiland, Oros, Smith, & Hirchert, 2012). Shields (2010) and Wheatley (1999) explored that students of the medical university who achieved higher EI scores were found to experience higher stress during examination (Arora et al.2011). Enhancement of self-regulation and meta-cognitive skills in students is a crucial determinant of their academic success. (Sellen et al.,1997). Students who possess advanced meta-cognitive abilities tend to achieve greater success in their learning endeavors. (Wilson &, Bai,2010), Metacognition thoughts can play an important role in understanding psychological processes relevant to EI. (Alavinia & Mollahossein, 2012). Sharei et al. (2012) discovered that both metacognition and emotional intelligence (EI) play a crucial role in forecasting problem-solving capabilities. EI is a unique meta-cognitive skill that encompasses a structured hierarchy of abilities related to the perception, comprehension, and management of emotions across various life scenarios (Pluzhnikov, 2010). Understanding one’s own goals and setting them in accordance with the available opportunities helps one to achieve results (Perikova & Bysova, 2018). Rural and urban sportsperson have equal meta-cognitive abilities (Appaso and Ramchandra, 2018).

Objectives of the study

1. To study the meta-cognitive abilities of pre-service teachers.
2. To study the level of emotional intelligence of pre service teachers.
3. To study the main effect of the emotional intelligence on the KCP (Knowledge of cognition process) taken as a criterion of pre-service teachers.
4. To study the main effect of gender on the KCP (Knowledge of cognitive process) taken as a criterion of the pre-service teachers.
5. To study the interaction of emotional intelligence and gender on the KCP (Knowledge of cognitive process) taken as a criterion of the pre-service teachers.
6. To study the main effect of emotional intelligence on the RCP (Regulation of cognitive process) taken as a criterion of pre service teachers.
7. To study main effect of gender on the RCP (Regulation of cognitive process) taken as a criterion of pre-service teachers.
8. To study the interactional effects of emotional intelligence and gender on the RCP (Regulation of cognitive process) taken as a criterion of pre service teachers.
9. To study the significant main effect of gender on meta-cognitive abilities of pre-service teachers
10. To study the significant main effect of emotional intelligence on meta-cognitive abilities of pre-service teachers.
11. To study the significant interactional effect of gender and emotional intelligence on meta-cognitive abilities of pre-service teachers.

Hypothesis of the study

1. There will be no significant main effect of emotional intelligence on the KCP(Knowledge of cognition process) taken as a criterion of pre-service teachers.
2. There will be no significant main effect of gender on the KCP(Knowledge of cognition process) taken as a criterion of pre-service teachers.
3. There will be no significant interactional effect of emotional intelligence and gender on the KCP (Knowledge of cognitive process) taken as a criterion of the pre-service teachers
4. There will be no significant main effect of emotional intelligence on the RCP (Regulation of cognitive process) taken as a criterion of pre service teachers.
5. There will be no significant main effect of gender on the RCP (Regulation of cognitive process) taken as a criterion of pre-service teachers.
6. There will be no significant interactional effects of emotional intelligence and gender on the RCP (Regulation of cognitive process) taken as a criterion of pre service teachers.
7. There will be no significant main effect of gender on meta-cognitive abilities of pre-service teachers.
8. There will be no significant main effect of emotional intelligence on meta-cognitive abilities of pre-service teachers.
9. There will be no significant interactional effect of gender and emotional intelligence on meta-cognitive abilities of pre-service teachers.

Methodology of the study

The study is descriptive in nature. Population of the study constituted prospective teachers of Jammu district. The sample was drawn through random sampling method. 120 prospcetive teachers were selected as sample of the study.

Tools employed

1. Meta-cognition Inventory by Dr.Punita Govil
2. Mangal emotional intelligence inventory

Analysis and interpretation

For analysis of data, Analysis of Variance was used in the study. Following section contain table that predict the results of the study.

Table 1: Summary of the two way ANOVA for 2x2 factorial design for knowledge of cognition process

Source of variable	**SS**	**Df**	**MS**	**F**	**Level of significance**
SS_A	174.05	1	174.05	**0.23**	Not significant
SS_B	80	1	80	**0.10**	Not significant
SS_{AXB}	9.8	1	9.8	**0.013**	Not significant
SS_{within}	57964.1	76	762.68		

INTERPRETATION AND DISCUSSION FOR KCP

The table shows that F-ratio for the main factor emotional intelligence not came significant with Knowledge of Cognitive Progress, as criteria. The F-ratio value emotional intelligence has came 0.23 , which is less than the table value i.e. 3.96 at 0.05 level again (1, 75) df. It means that there is found no significant difference in the Meta-cognitive abilities between high emotional intelligent and low emotional intelligent pre service teachers. Thus accepting the null hypothesis stating that" There will be no significant main effect of emotional intelligence on the knowledge of cognitive process taken as a criterion of the pre service teachers". This finding is disagreed with the Ekaterina and Valentina, (2009) where the results drawn shown that increase in meta-cognitive abilities improves emotional skills.

The F-ratio value for another main factor i.e. Gender has came significant with KCP as a criterion. The F-ratio value for gender has came 0.10 which is less than the table value at 3.96 at 0.05 level. It means the hypothesis stating that" there is no significant main effect of Gender on the KCP as criterion of pre service teachers" is accepted. This finding is in agreement with the findings of Veloo, et al, (2015) whereas this is further contrasted by Logan and Johnston (2009), who found that females exhibited a more favorable meta-cognitive abilities.

The F-ratio value for the interactional effect of social competence and Gender has not come significant with KCP as a criterion. The f-ratio value came 0.013 which is less than the table value i.e 3.96 at .05 levels. Therefore hypothesis stating "there will be no significant interactional effect of emotional intelligence on the knowledge of cognitive process of pre-service teachers" is accepted. This may be due to the fact that both male and female pre-service teachers got enough scope of sharing their emotional side

Table 2. : Summary of the two way ANOVA for 2x2 factorial design for regulation of cognition process

Source of variables	**SS**	**Df**	**MS**	**F**	**Level of significance**
SS_A(emotional intelligence)	180	1	180	**2.87**	**Not significant**
SS_B(gender)	312.5	1	312.5	**4.98**	**Significant**
SS_{AXB}	32.8	1	32.8	**0.52**	**Not significant**
$SS_{With\ in}$	4768.9	76	62.75		

The table 4.6 shows that f-ratio value for the main factor has not came significant with RCP as a criterion. the f-ratio value came 2.87 which is less than the table value i.e. 3.96 at 0.05 against(1,76)df. It means that there found no significant in the RCP between the pre service teachers having high and low emotional intelligence. Thus accepting the null hypothesis stating "there will be no significant main effect of emotional intelligence on the regulation of cognitive process taken as a criterion of pre service teachers.". The activities conducted in the B.Ed colleges ensure the interaction and equal participation of both males and female pre-service teachers.

The f-ratio for the main factor gender has not come significant with regulation of cognitive process as a criterion. The f-ratio value came 4.98 which is more than the table value i.e 3.96 at 0.05 level against (1,76) df. It means that there found significant difference in the RCP between male and female pre-service teachers. Thus rejecting the null hypothesis stating." there will be no significant main effect of gender on the regulation of cognitive process taken as a criterion of preservice teachers." The findings were consistent with Logan and Johnston (2009), who found that females have better regulation on their cognitive processes.

The f-ratio for the interaction of emotional intelligence and gender has not come significant with the regulation of cognitive process taken as a criterion. The f-ratio value came 0.013 which is less than the table value. Thus the null hypothesis stating "there will be no significant interaction effect of emotional intelligence and gender on the regulation of cognitive process taken as a criterion of pre-service teachers" is accepted. The findings of the study were in disagreement with results of Kalia et al., (2016), where it was found that there was significant positive relationship between declarative knowledge, conditional knowledge, information management strategies and the emotional intelligence of adolescents.

Table 3. : Summary of the two way ANOVA for 2x2 factorial design for total meta-cognition process

Source of variables	**SS**	**Df**	**MS**	**F(value)**	**Level of significance**
SS_A	125	1	125	**0.67**	Not significant
SS_B	470.45	1	470.45	**2.8**	Not significant
SS_{AXB}	530.45	1	530	**3.25**	Not significant
$SS_{with\ in}$	12407.3	76	163.25		

The f-ratio value for the main factor emotional intelligence is not significant with the meta-cognitive abilities. The calculated value for the social competence came 0.77 which is less than the table value i.e 3.96 at 0.05 level against (1,76)df. It means that there is no significant difference in the metacognitive abilities of pre service teachers having high and low emotional intelligence. Thus hypothesis stating "there will be no significant main effect of emotional intelligence on the meta-cognitive abilities of pre-service teachers" is accepted."This is because both males and females are working nowadays and both face challenges, and to resolve them they equally use problem solving strategies. The activities conducted in the B.Ed colleges ensure the interaction and equal participation of both males and female pre-service teachers. The findings of the study were not in agreement with Kalia et al., (2016).

The f-ratio value for the main factor gender has not come significant with meta-cognitive abilities. The f-ratio value for the gender came 2.88 which is less than the table value at 0.05 against (1,76) df. Thus the null hypothesis stating "there will be no significant main effect of gender on the meta-cognitive abilities of pre-service teachers" is accepted, because both males and females use their thinking process to carry out every task. Both regulate their thinking process by monitoring and evaluation.

The f-ratio value for the emotional intelligence and gender came 3.25 which is less than the table value at 0.05 level against (1,76)df. It means that there is no significant difference in the meta-cognitive of male and female pre-service teachers having low and high low emotional intelligence.

Educational Implications

1. **Holistic Development**: Integrating meta-cognitive and emotional intelligence skills in education promotes the holistic development of students, addressing both cognitive and emotional aspects of learning
2. **Resilience and Adaptability**: Students equipped with these skills are more resilient and adaptable, better prepared to face challenges both in and out of the classroom[2].
3. **Enhanced Teaching Practices**: Teachers who incorporate meta-cognitive and emotional intelligence strategies into their teaching can better support diverse learners and create more inclusive and effective learning environments.

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