Effect of Emotive Cognition Strategies on Enhancing Meaningful Learning among B.Ed. Student-Teachers

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Abstract
The meaningful learning process of an individual is understood separately with his emotional aspect or cognitive aspect. Cognition and emotions are interrelated, and hence in the learning process it requires functions of both the domains. Cognition can be a basis for emotion and the emotional process can have cognitive outcome. Therefore the aim of the study is to examine the effect of emotive cognition strategies on enhancing meaningful learning. The investigator has employed experimental research with a pre-test-post-test-control group design. The size of the sample of the study is 90 first year B.Ed. Student-teachers, 45 in the experimental group and 45 in the control group. The researcher has implemented emotive cognition strategies application in teaching to the experimental group for enhancing their meaningful learning. The data have been collected before and after the intervention through the administration of the tools- A Scale for Assessing the Application of Emotive Cognition Strategies in Teaching and A Scale on Measuring Meaningful Learning of the Learners. The data have been analyzed through statistical techniques. The descriptive analysis shows that there is a significant mean difference between pre-test and post-test scores of the experimental group in emotive cognition application and meaningful learning. The experimental group which had intervention scored higher in the post-test in their meaningful learning. In contrast, the control group had the traditional method of teaching received a low score in the post-test. Correlation analysis shows that there is a significant relationship between emotive cognition application and meaningful learning.

Keywords: Emotive cognition, Learning, Meaningful learning, Strategies, Teacher education and B.Ed. Student-Teachers.

Introduction

A classroom is a place where teachers and learners experience their emotions during curriculum transaction. So it is important to notice that the expression and experience of positive and negative emotions have their own effect on one's cognitive function. Emotions modulate cognitive functions of the students' attention, perception, learning, memory, decision making and social cognition. Positive emotions such as enjoyment, pride, hope and happiness have positive effects on learners' cognitive function in meaningful learning. Negative emotions such as anxiety, anger, grief and shame can strongly inhibit learners' cognitive process while learning.

Teachers can sustain students' attention through dialogues, voice modulation and sharing their past joyful experiences with students. It triggers the cognitive function to sustain the consciousness towards the information for recognizing and understanding. Perception plays a vital role in individual awareness of receiving and acquiring any new information. Activating five sensory organs

through different teaching aids creates a sense of external perception, triggering previously learned information and construct internal perception. Memory is the process of recalling, remembering and retrieving the previously learned information of the learners. Triggering emotional memory has a strong influence on memory encoding and retrieval. Decision making is a high level of the cognitive process. It is influenced heavily by emotions. Providing the opportunity to think and decide upon the learning task develops decision-making skill among learners. All these strategies in teaching facilitate meaningful learning among learners.

Emotive Cognition Strategies

The art of teaching is connected with the proper application of emotive cognition strategies in classroom teaching and learning. Dale Purves et al. (2008) says, "Emotive cognition refers to emotions modulate information processing in brain regions that mediate various cognitive functions, focusing on perception and attention, learning and memory, and decision making". Emotive cognition strategy can facilitate positive behavior among learners. By applying the emotive strategy of humor while teaching makes understanding the difficult concepts becomes easy. The use of pedagogical humor in education has positive effects on reducing stress levels and increasing learners' cognitive engagement in learning. Emotions have a strong influence on cognitive functions, and the frequent interaction of affective and conative domains in teaching triggers high cognitive ability on student's goal setting and their good academic achievement.

Usually, cognition and emotion are believed to be independent systems; however, research in the cognitive and neurobiological sciences has shown that the relationship between cognition and emotion is interdependent and extensive (Schmidt and Shelly J, 2019). Recent advances in neuroscience suggest that attention and memory, two important cognitive components of learning, are profoundly affected by emotions (Immordino-Yang and Damasio, 2007). When emotions overwhelm concentration, what is being swamped is the mental capacity cognitive scientists call "working memory," the ability to hold in mind all information relevant to the task at hand. Working memory is an executive function par excellence in mental life, making possible all other intellectual efforts, from speaking a sentence to tacking a knotty logical proposition (Alan Baddeley, 1986). Working memory interacts closely with cognitive functions; for instance, it is intimately linked to perception and long term memory, which provide most of its input and content (Purves et al. 2008). In this way, the strategies of emotive cognition function while teaching and learning. Moreover, it enhances the teaching methods of the teacher and learning behaviors of the learner.

Meaningful Learning

Learning is acquiring knowledge, skill and behavior modification of an individual according to the environment. Joseph D. Novak (2010) says, "Meaningful learning stipulates that substantive connections between new knowledge and what is already known require the integration of thinking, feeling, and performance". The meaningful learning process requires the integration of affective and cognitive domains. Meaningful learning involves the continuous construction of new knowledge and interpretations with previous knowledge. It claims that the learning experience becomes meaningful only when the learner himself or herself gives meaning to it: experiences must personally affect and be subjectively valued by the learner (Merriam & Clark, 1993). It also comes through risk-taking behavior and a feeling of interest in learning.

Teacher Education and Learning

Teacher education needs to build capacities in the teacher to construct knowledge, to deal with different contexts and to develop the abilities to discern and judge in moments of uncertainty and fluidity, characteristic of teaching-learning environments. Teacher education should integrate academic knowledge and professional learning into a meaningful whole. It should allow student-teachers for reflection and independent study without packing the training schedule with teacher-directed activities alone (NCFTE, 2009). In this regard, the teacher education program requires application of emotive cognition strategies in teaching towards constructing meaningful learning.

Bretz (2001) classifies meaningful learning based on three criteria: (1) relevant prior knowledge of the student, (2) meaningful material organized by the teacher to connect to this prior knowledge, and (3) the conscious choice of the student to make connections between the prior knowledge and the new meaningful material (Bretz et al., 2013; DeKorver and Towns, 2015). Instruction of the new information needs to be properly interpreted and interrelated to prior knowledge of learners facilitating their meaningful learning. Tapping the prior knowledge facilitates new memory construction and that leads to meaningful learning.

Research Reviews

(1) Research Studies Related to Emotive Cognition Application in Teaching

Gustavo Martínez-Sierra et al. (2019) investigated to identify the daily discrete emotions experienced by a high school mathematics teacher in the classroom and also to identify the triggering situations of those emotions. Michael is a representative case of Mexican mathematics teachers in middle and high school. In this research, a case study was done. The investigators found that Michael, the teacher participant, experienced emotions of satisfaction, disappointment, appreciation, happy-for, sorry-for, reproach, and anger triggered by the cognitive appraisal of six types of triggering situations: (1) achievement of the planned activity, (2) students' participation, (3) students' collaboration, (4) students' attitude, (5) students' independence, and (6) students' learning and understanding.

Jann Pietarinen, Tiina Soini & Kirsi Pyhalto (2014) examined the interrelation between students' emotional and cognitive engagement in their well-being and achievement in school. The researcher conducted a survey and three case studies. The results showed a positive correlation of emotional engagement in teacher-student and peer group relations with cognitive engagement. Michalinos Zembylas (2005) conducted a study to show the value of the ethnography of emotions in teaching and the importance of exploring teacher emotion in understanding teaching. In this research, ethnography method was followed and a participatory case study was conducted. Catherine Myers, is an experienced early childhood and elementary educator, participated in this study and expressed her feelings. "Emotional freedom in teaching showed that when I went to kindergarten to teach,' says Catherine: I felt comfortable for the first time talking about my feelings and my ideas. I felt I didn't need to know all the answers. Also, going to kindergarten, I recognized the incredible need that everything had to be hands-on".

(2) Research Studies Related to Meaningful Learning Behaviour

Yunita Arian Sani Anwar (2020) examined the implementation of the multilevel inquiry approach to achieve meaningful biochemistry learning. The results showed that the class that applied the multilevel inquiry approach achieved higher scores in all three variables of learning outcomes, practical skills, and attitudes toward biochemistry than the control class. The MANOVA test showed that the implementation of this approach has a positive effect on the three variables, which represent the cognitive, psychomotor, and affective domains. Multilevel inquiry was able to foster meaningful learning in biochemistry courses. Emma Kostiainen et al. (2018) aimed to explore the Interaction Skills in a Group and Network (ISGN) course further to outline the basic features of personally meaningful learning in teacher education based on the experience of the teacher students. The qualitative analysis revealed eleven dimensions that make learning experiences meaningful for teacher students. They are: 1) Importance of the phenomenon and the theme; 2) Common goal and commitment; 3) Intensiveness; 4) Linking theory and practice; 5) Daring and taking risks; 6) Becoming heard and seen; 7) Belonging, equality, and roles; 8) Sense of subjectivity; 9) Safety; 10) Authenticity and trust; and 11) Feeling of bafflement and wonder.

Deirdre Ni Chroinin, Tim Fletcher and Mary O'Sullivan (2018) aimed to find out the pedagogical approach to physical education teacher education (PETE) to support pre-service teachers (PSTs) in learning how to facilitate meaningful experiences in physical education and to contribute new understanding through sharing pedagogical principles that support pre-service teachers (PSTs')

'Learning About Meaningful Physical Education' (LAMPE). The inductively analyzed data has revealed five pedagogical principles that reflect how pre-service teachers (PSTs) were supported to learn and facilitate meaningful physical education experiences. Pedagogies included planning for, experiencing, teaching, analyzing, and reflecting on meaningful participation. Ananta Kumar Jena (2012) examined the application of the constructivist approach through individual and cooperative modes of spider and hierarchical concept maps to achieve meaningful learning on science concepts. The investigator found that the cooperative spider concept map was more effective than individual modes of the spider concept map and it provided meaningful learning in science. Collaborative learning is useful than individual learning and collaborative learning a characteristic of constructivist learning.

Significance of the Study

Students have to be prepared to overcome the defined and undefined challenges in the 21st century. To sustain themselves in the competitive world, they need to be ready to face any kind of difficult situation and they have to show how they are unique and efficient from others. It is possible through meaningful learning in every curriculum transaction. In this context B.Ed. Student-teachers have been trained through emotive cognition intervention program on meaningful learning as preparation for future teaching. The essence of meaningful learning is to gain knowledge, skill and behavior modification of the learner. Meaningful learning is important in teacher education to gain a refined understanding of the process and experience by which student-teachers construct learning. This understanding can help teacher educators to design a meaningful pedagogical practice for richer and relevant learning. Interconnecting affective and cognitive domains in pedagogical practices of teacher education programmes facilitate student-teachers meaningful learning. In this regard, implementing an emotive cognition intervention program in teacher education plays a significant role in triggering student-teachers emotions on cognitive functions towards their meaningful learning. The implementation of positive emotions such as joy, excitement, hope, happiness, thrill and amazement in teaching increases cognitive functions of perception, attention, memory, problem-solving ability, decision-making, and social cognition of the learners. Negative emotions such as anger, anxiety, acrimony, vexation and shame decrease cognitive functions.

In this study, emotive cognition intervention program contains full of positive emotional strategies to stimulate B.Ed. Student-teachers cognitive functions on meaningful learning behavior on attention in learning, receive and respond to new information, ability to recall and retrieve the learned information, ability in decision making, habits of general gain knowledge, develop professional skills, competence to deal with many situations, accept to work with the team, understand the personal responsibilities, understand other peoples' need and maintain the relationship with others. The above-expected outcome can be achieved by implementing emotive cognition intervention program. This treatment program can stand like a frame of reference for teacher educators.

Research Questions

1. Do B.Ed. student-teachers has emotive cognition?
2. Do B.Ed. Student-teachers learn meaningfully?
3. Is there any improvement in meaningful learning behavior after the implementation of an emotive cognition intervention program?
4. What is the relationship between emotive cognition and meaningful learning?
5. Is meaningful learning depend on emotive cognition?

Objectives of the Study

- To find out the existing level of emotive cognition application among B.Ed. student-teachers
- To find out the existing level of meaningful learning behavior among B.Ed. student-teachers
- To find out the level of emotive cognition application among B.Ed. student-teachers after implementing an emotive cognition intervention program
- To find out the level of meaningful learning behavior among B.Ed. student-teachers after implementing an emotive cognition intervention program

- To find out the relationship between emotive cognition application and meaningful learning behavior of B.Ed. student-teachers
- Student-teachers meaningful learning will be predicted through emotive cognition application.

Hypotheses of the Study

1. There will be no significant difference between the pre-test mean scores of the control group and experimental group in the Emotive Cognition Application.
2. There will be no significant difference between the pre-test mean scores of the control group and experimental group in Meaningful Learning Behaviour.
3. There will be no significant difference between the pre-test and post-test mean scores of the control group in the Emotive Cognition Application.
4. There will be no significant difference between the pre-test and post-test mean scores of the experimental group in the Emotive Cognition Application.
5. There will be no significant difference between the pre-test and post-test mean scores of the control group in Meaningful Learning Behaviour.
6. There will be no significant difference between the pre-test and post-test mean scores of the experimental group in Meaningful Learning Behaviour.
7. There will be no significant difference between the post-test mean scores of the control group and experimental group in the Emotive Cognition Application.
8. There will be no significant difference between the post-test mean scores of the control group and experimental group in Meaningful Learning Behaviour.
9. There will be no significant relationship between Emotive Cognition Application and Meaningful Learning among experimental group B.Ed. Student-teachers.
10. B.Ed. Student-teachers Meaningful Learning will be predicted through Emotive Cognition Application.

Research Design

The investigator has employed experimental research with a pre-test-post-test-control group design (Fraenkel, 2009). The experimental group was under emotive cognition implementation program and the control group was under the traditional way of teaching.

Sample

The population of the research is first-year B.Ed. Student-teachers. The sampling technique adapted was a convenient sampling technique. The sample was chosen from Puducherry district, students from Pope Johan Pal II College of Education as experimental group and students from Vivekanandha College of Education as a control group. The size of the sample in the present study was 90 first year B.Ed. Student-teachers, 45 in experimental and 45 in the control group.

Design and Description of the Tools Used

Tool 1: A Scale for Assessing the Application of Emotive Cognition Strategies in Teaching

It was constructed and validated by the investigator with the help of the supervisor, which consists of 50 items. Each item measures the application of emotive cognitive strategy in teaching. This tool is in the form of a Likert type scale with five responses. It is full of positive statements.

Pattern of Items Scoring as follows

Response	Scoring
Strongly Agree	5
Agree	4
Undecided	3
Disagree	2
Strongly Disagree	1

The reliability of the tool was established by the split-half method using the Spearman-Brown prophecy formula and it was found out to be 0.739.

Tool 2: A Scale on Measuring Meaningful Learning of the Learners

It was constructed and validated by the investigator with the help of the supervisor which consists of 62 items. Each item measures the meaningful learning of the first year B.Ed. Student-teachers. This tool is in the form of a Likert type scale with five responses. It is full of positive statements.

Pattern of Items Scoring as follows

Response	Scoring
Always	5
Mostly	4
Moderately	3
Sometime	2
Rarely	1

The reliability of the tool was established by the split-half method using the Spearman-Brown prophecy formula and it was found out to be 0.873.

Experimental Method

The experiment was conducted in three phases as stated below:

Phase I: To find out the entry-level of emotive cognition application and meaningful learning behavior of the B.Ed. Student-teachers a pre-test was administered (Tool-1 and Tool-2) in control and experimental group.

Phase II: The researcher implemented the designed treatment program to the experimental group for 60 days. The selected perspective paper Childhood and Growing Up was chosen from first year B.Ed. Program. The content of the perspective paper was analyzed and the units in the paper, namely Status of Childhood and Adolescence and Theories of Development, were chosen for classroom transactions. The lesson plan includes emotive cognition application in every one-hour classroom teaching. During classroom transactions the researcher motivated the students and emotionally interacted with them to sustain their attention on listening, thinking, and understanding. This process created knowledge gaining behavior. Using different teaching aids in the classroom stimulated sensory organs of the learners emotionally as well as cognitively. They triggered the senses of the learner to receive and respond to different information through touch and feel, visual-spatial task, body orientation, auditory, smell and visual perception. Integrating students' emotional episodes in their learning increased their memory power. Episodic memories are filled with the learners' past feelings. It builds episodic memory retrieval behavior in every learning. Creating a peaceful learning environment in the classroom gave a joyful learning experience and stimulated positive emotions towards learning and it reduced hateful, angry, or self-deprecating thoughts upon learning. When the students were allowed to be emotionally sound to reflect on their previous learning, they recalled their memories and prior experiences, which they already knew to build or project a new concept. From this process learners recalled what they have understood and what they did not. Through this process they got the ability to connect learned information with new information for their meaningful learning. All these implemented strategies enhanced B.Ed. Student-teachers meaningful learning behavior.

Phase III: To determine the effect of an emotive cognition intervention program on enhancing meaningful learning behavior, a post-test was administered (Tool-1 and Tool-2) in the control and experimental group.

Collection of Data

Data were collected from both the experimental and control group during the entry and exit level. On both occasions, Tool-1 and Tool-2 were administered to both the groups.

Analysis of Data

Data were analyzed through statistical techniques such as descriptive statistics, paired sample 't' test, independent 't' test, Person's correlation and regression analysis.

Table 1: Mean and Standard Deviation of Pre-test and Post-test Scores on Emotive Cognition Application among Control and Experimental Group (Maximum Score: 100)

Subjects	N	Mean	S.D	Low	Moderate	High
Control group Pre-test	45	81.42	6.50	6 (13.33%)	30 (66.67%)	9 (20.00%)
Control group Post-test	45	80.50	5.05	6 (13.33%)	33 (73.33%)	6 (13.33%)
Experimental group Pre-test	45	81.73	4.5	7 (15.56%)	34 (75.56%)	4 (8.89%)
Experimental group Post-test	45	87.11	1.44	8 (17.78%)	28 (62.22%)	9 (20.00%)

Table 1 shows that the mean and standard deviation of emotive cognition application is 81.42 and 6.50 in pre-test, 80.50 and 5.05 in the post-test control group, respectively. It is found that the emotive cognition application is a moderate level in pre-test and post-test scores of the control group. It also shows that the mean and standard deviation of emotive cognition application is 81.73 and 4.5 in pre-test, 87.11, and 1.44 in the post-test experimental group, respectively. It is found that the emotive cognition application is a moderate level in pre-test and post-test scores of the experimental group.

Table 2: Mean and Standard Deviation of Pre-test and Post-test Scores on Meaningful Learning Behaviour among Control and Experimental Group (Maximum Score: 100)

Subjects	N	Mean	S.D	Low	Moderate	High
Control group Pre-test	45	71.35	7.68	9 (20.00%)	29 (64.44%)	7 (15.56%)
Control group Post-test	45	70.84	9.86	7 (15.56%)	30 (66.67%)	8 (17.78%)
Experimental group Pre-test	45	69.82	10.10	9 (20.00%)	28 (62.22%)	8 (17.78%)
Experimental group Post-test	45	89.47	2.07	5 (11.11%)	31 (68.89%)	9 (20.00%)

Table 2 shows that the mean and standard deviation of meaningful learning behavior is 71.35 and 7.68 in pre-test, 70.84 and 9.86 in the post-test control group, respectively. It is found that meaningful learning behavior is a moderate level in pre-test and post-test scores of the control group. It also shows that the mean and standard deviation of meaningful learning behavior is 69.82 and 10.10 in pre-test, 89.49 and 2.07 in the post-test experimental group, respectively. It is found that meaningful learning behaviour is a moderate level in pre-test and post-test scores of the experimental group.

Hypothesis 1

There will be no significant difference between the pre-test mean scores of the control group and experimental group in the Emotive Cognition Application.

Table 3: Independent Sample 't' test between the Pre-test Mean score of Control and Experimental Group on Emotive Cognition Application

Variable	Control group Pre-test (N=45)		Experimental group Pre-test (N=45)		't' value
Emotive Cognition Application	Mean	S.D	Mean	S.D	0.159**
	203.86	16.44	204.33	10.87	

**Not significant at 0.05 level

Table 3 shows that the 't' value obtained for the emotive cognition application (0.159) is not significant at the 0.05 level. So it can be inferred that there is no significant mean difference between the pre-test scores of the control group and experimental group B.Ed. Student-teachers in emotive cognition application. This indicates that both groups are identical before the intervention.

Hypothesis 2

There will be no significant difference between pre-test mean scores of control group & experimental group in Meaningful Learning Behaviour.

Table 4: Independent Sample 't' test between the Pre-test Mean score of Control and Experimental Group on Meaningful Learning Behaviour

Variable	Control group Pre-test (N=45)		Experimental group Pre-test (N=45)		't' value
Meaningful Learning Behaviour	Mean	S.D	Mean	S.D	0.806**
	221.20	23.79	216.44	31.65	

**Not significant at 0.05 level

Table 4 shows that the 't' value obtained for the meaningful learning behavior (0.806) is not significant at the 0.05 level. So it can be inferred that there is no significant mean difference between the

pre-test scores of the control group and experimental group B.Ed. Student-teachers in their meaningful learning behavior. This indicates that both groups are identical before the intervention.

Hypothesis 3

There will be no significant difference between the pre-test and post-test mean scores of the control group in the Emotive Cognition Application.

Table 5: Paired Sample 't' test for the Pre-test and Post-test Mean scores of Control Group on Emotive Cognition Application

Variable	Control group Pre-test (N=45)		Control group Post-test (N = 45)		't' value
Emotive Cognition Application	Mean	S.D	Mean	S.D	1.364**
	203.86	16.44	201.24	12.61	

** Not Significant at 0.05 level

Table 5 shows that the 't' value obtained for emotive cognition application (1.364) is not significant at 0.05 level. So it is inferred that there is no significant mean difference between the pre-test and post-test scores of control group B.Ed. Student-teachers in emotive cognition application. This may be because students in control group had not had emotive cognition application from pre to post-stage.

Hypothesis 4

There will be no significant difference between the pre-test and post-test mean scores of the experimental group in the Emotive Cognition Application.

Table 6: Paired Sample 't' test for the Pre-test and Post-test Mean scores of Experimental Group on Emotive Cognition Application

Variable	Experimental group Pre-test (N=45)		Experimental group Post-test (N=45)		't' value
Emotive Cognition Application	Mean	S.D	Mean	S.D	8.521*
	204.33	10.87	217.77	3.60	

*Significant at 0.05 level

Table 6 shows that the 't' value obtained for emotive cognition application (8.521) is significant at the 0.05 level. So it is inferred that there is a significant mean difference between the pre-test and post-test scores of experimental group B.Ed. Student- teachers in emotive cognition application. This may be because the students in the experimental group underwent an emotive cognition application.

Hypothesis 5

There will be no significant difference between the pre-test and post-test mean scores of the control group in Meaningful Learning Behaviour.

Table 7: Paired Sample 't' test for the Pre-test and Post-test Mean scores of Control Group on Meaningful Learning Behaviour

Variable	Control group Pre-test (N=45)		Control group Post-test (N=45)		't' value
Meaningful Learning Behaviour	Mean	S.D	Mean	S.D	0.516**
	221.20	23.79	219.60	30.57	

** Not Significant at 0.05 level

Table 7 shows that the 't' value obtained for meaningful learning (0.516) is not significant at the 0.05 level. So it is inferred that there is no significant mean difference between the pre-test and post-test scores of control group B.Ed. Student-teachers in their meaningful learning behavior. This may be because the students in the control group had not had emotive cognition applications on enhancing meaningful learning.

Hypothesis 6

There will be no significant difference between the pre-test and post-test mean scores of the experimental group in Meaningful Learning Behaviour.

Table 8: Paired Sample 't' test for the Pre-test and Post-test Mean scores of Experimental Group on Meaningful Learning Behaviour

Variable	Experimental group Pre-test (N=45)		Experimental group Post-test (N=45)		't' value
Meaningful Learning Behaviour	Mean	S.D	Mean	S.D	12.809*
	216.44	31.65	277.35	6.42	

*Significant at 0.05 level

Table 8 shows that the 't' value obtained for meaningful learning (12.809) is significant at the 0.05 level. So it is inferred that there is a significant mean difference between the pre-test and post-test scores of experimental group B.Ed. Student-teachers in their meaningful learning behavior. This may be because the students in the experimental group had emotive cognition application on enhancing meaningful learning.

Hypothesis 7

There will be no significant difference between the post-test mean scores of the control group and experimental group in the Emotive Cognition Application.

Table 9: Independent Sample 't' test between the Post-test Mean score of Control and Experimental Group on Emotive Cognition Application

Variable	Control group Post-test (N =45)		Experimental group Post-test (N = 45)		't' value
Emotive Cognition Application	Mean	S.D	Mean	S.D	8.453*
	201.24	12.61	217.77	3.60	

*Significant at 0.05 level

Table 9 shows that the 't' value obtained for the emotive cognition application (8.453) is significant at the 0.05 level. So it can be inferred that there is a significant mean difference between the post-test scores of the control group and experimental group B.Ed. Student-teachers in emotive cognition application. The experimental group scored high than the control group. This may be because the Experimental group underwent an emotive cognition application.

Hypothesis 8

There will be no significant difference between the post-test mean scores of the control group and experimental group in Meaningful Learning Behaviour.

Table 10: Independent Sample 't' test between the Post-test Mean score of Control and Experimental Group on Meaningful Learning Behaviour

Variable	Control group Post-test (N=45)		Experimental group Post-test (N=45)		't' value
Meaningful Learning Behaviour	Mean	S.D	Mean	S.D	12.400*
	219.60	30.57	277.35	6.42	

*Significant at 0.05 level

Table 10 shows that the 't' value obtained for the meaningful learning behavior (12.400) is significant at the 0.05 level. So it can be inferred that there is a significant mean difference between the post-test scores of the control group and experimental group B.Ed. Student-teachers in their meaningful learning behavior. The experimental group scored high than the control group. This may be because the experimental group underwent an emotive cognition application for enhancing their meaningful learning.

Hypothesis 9

There will be no significant relationship between Emotive Cognition Application and Meaningful Learning among experimental group B.Ed. Student-teachers.

Table 11: Person's Correlation between Emotive Cognition Application and Meaningful Learning Behaviour among Experimental group B.Ed. Student-Teachers

Variable	Correlation Value
Emotive Cognition Application	0.594*

*Significant at 0.05 level

Table 11 shows that there is a positive correlation between emotive cognition application and meaningful learning behavior with value of (0.594) at 0.05 level. The relationship is moderate.

Hypothesis 10

B.Ed. student-teachers Meaningful learning will be predicted through Emotive Cognition Application

Table 12: Regression Analysis on Prediction of Meaningful Learning from the Emotive Cognition Application Model

Model	Unstandardized co-efficient		Standardized co-efficient
	B	Std. Error	Beta
1 Constant	168.255	22.568	
Emotive Cognition (X1)	0.519	0.107	0.594

Table 12 regression analysis shows that $Y=a+b_1X1$. Y-Meaningful Learning, X1-Emotive Cognition Application. Y=168.255+0.519. The above regression equation reveals the prediction on meaningful learning (Y) is dependent on emotive cognition application as revealed by unstandardized Beta co-efficient. The maximum predictive value of 0.519 indicates the predictive power of the emotive cognition intervention program. It clearly shows the effect of emotive cognition application on enhancing meaningful learning among B.Ed. Student-teachers.

Discussion

After implementing the emotive cognition application, the investigator found that B.Ed. Student-teachers experienced their positive emotions such as joy, happiness, appreciation, enthusiasm, absence of fear, humor, encouragement, amazement, empathy, affection, friendliness and kindness. Their experienced emotions triggered the cognitive function of students: (1) attention on learning, (2) perception to receive new information, (3) learning with a good memory, (4) easy to understand difficult concepts, (5) learn to think, (6) logic and problem solving ability, (7) decision-making ability and (8) social cognition. It concurs with the research findings of Gustavo Martínez-Sierra et al. (2019). The implemented emotive cognition intervention program enhanced B.Ed. Student-teachers meaningful learning in four dimensions they are: (1) Learning Habit, (2) Learning Behaviour in the Class, (3) Learning Behaviour outside the Class, and (4) Metacognitive Behaviour in Learning. It concurs with the research findings of Yunita Arian Sani Anwar (2020). It is also found that there is a relationship between emotive cognition intervention programmes and meaningful learning. It concurs with the research findings of Pietarinen, et al., (2014).

Conclusion

The learning process becomes joyful when emotions and cognition are properly interconnected. When positive emotions influence learner cognitive functions effectively, the leaner can learn meaningfully. At this juncture, the designed emotive cognition application properly interconnects emotions and cognition of B.Ed. Student-teachers to perform well in their learning. This new model of learning practice works efficiently and it can help future teachers to train their learners inside as well as outside the classroom to learn meaningfully.

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