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ACTIVATING STUDENTS' EMOTIONAL AFFECT: UNRAVELING THE FUNCTIONS OF THEIR AMYGDALA

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ABSTRACT

Three domains are essential dimensions that make up a person's attitude: cognitive, affective, and conative. Affect, emotion, and feelings are manifested in others in the classroom. It can give a holistic view of one's attitude towards teaching. It can also further explain how a person's amygdala unravels attitude since it is known that the amygdala is a section of the brain that is responsible for detecting one's emotions. Based on the video clip presentation, the researchers explored the relationship between the emotional affect of the 43 students from third year BEED students in the College of Education—Pulilan Extension of Bulacan State University during the 1st semester of the school year 2019-2020 and the functions of their amygdala to reveal their views about teaching so that pedagogical implications may be drawn. As the amygdala is construed to be responsible for the bodily expression of emotional responses, it was found that the affect is not affected by the amygdala. Based on the researcher-made questionnaire and interview protocols' reactions, it was suggested that curriculum planners look into some possible mechanisms of integrating reward systems into instructional strategies. Conclusions were drawn, and future research directions were offered.

Key Words: Emotional Affect, Amygdala, Cognitive Appraisal, Bodily Symptoms, Action Tendencies, Expression, Feelings.

1. INTRODUCTION

To have a better standpoint on why some students do not have motivation, educators may consider the students' tri-componential constructs towards teaching and learning. These tri-componential constructs can be classified into three types that make up the whole concept. These types are cognitive, affective, and conative domains (Millon, Lerner & Weiner, 2013). The cognitive domain covers what people think about the subject; the affective domain focuses on what a person feels. The conative or behavioral domain concentrates on how a person behaves about the subject. These three domains are essential components that make up a person's attitude. In the field of psychology, attitude is an emotional concept that explains the differing preferences among people. Attitude encompasses one's beliefs and opinions about basically everything (King, 2008). It includes how people conceive and feel about people, objects, ideas, and other things. Liking and disliking something or someone may significantly depend on how they perceive them and think about them (Myers, 2010).Since attitude is an idea or a concept that is not concrete or readily observable, observers have to infer attitude based on how people behave or respond to things. People gain knowledge of objects and subjects through direct experiences

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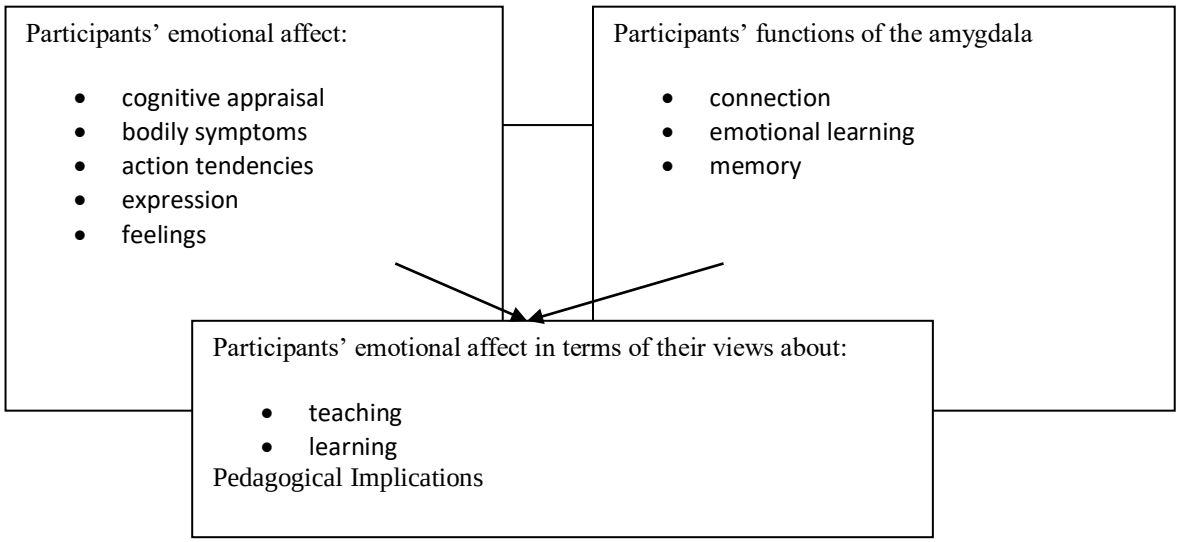
and indirect bases such as information gained through outside sources like parents, peers, media, and written materials. Another independent domain of the first one claims that some of the students' attitudes are based on feelings or emotions. This affective domain explains how negative feelings result from negative attitudes and positive feelings yield positive attitudes.

Emotions areessential for these influence the feelings, thoughts,and behaviors of others; others' reactions can influence their future interactions with the individual expressing the original feeling and that individual's future emotions and behaviors.

Affect, emotion, or feeling is manifested to others through facial expressions, hand gestures, posture, voice characteristics, and other physical manifestations. Emotions are also shown in the classrooms, where some students display their feelings towards something. From this vantage point, emotional affect is construed to be grounded on one's belief which often attracts solid emotions and mayresult in a particular behavior. It can give a holistic view of one's attitude towards teaching. This concept introduces how education students think of teaching, how they feel about teaching, and how they behave. Since most studies give more attention to the cognitive variables, studying the emotional affect may have a more substantial attitude. It can also further explain how a person's amygdala unravels attitude since it is known that the amygdala is a section of the brain that is responsible for detecting one's emotions(Lalumiere, 2014).

Conceptual Model of the Study

Based on the video clip presentation, the researchers wanted to identify the relationship between the participants' emotional affect and their amygdala functions to reveal their views about teachingso that pedagogical implications may be drawn.



The researchers used the above conceptual model. In this study, they tested the null hypothesis.

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H0 There is no significant relationship between the participants' emotional affect and the functions of their amygdala.

Statement of the Problem

The major problem of this study was: "How does the video clip presentation nudge the participants' emotional affectconcerning their views about teaching to unravel the functions of amygdala so that pedagogical implications may be drawn. Therefore, it was the researcher's main objective to navigate the 43 BEED third year students' emotional affect during the 1st semester of School Year 2019-2020 to reveal the functions of the amygdala so that pedagogical implications to teaching may be drawn.

Specifically, the researchers answered the following questions:

1. Based on the video clip presentation, how may the participants' emotional affect be described in terms of:

   1.1 cognitive appraisal;

   1.2 bodily symptoms;

   1.3 action tendencies;

   1.4 expression; and

   1.5 feelings?

2. Based on the video clip presentation, how may the participants' functions of the amygdala be measured as to:

   1.1 connection;

   1.2 emotional learning; and

   1.3 memory?

3. How may the video clip presentation help nudge the participants' emotional affect in terms of their views about:

   3.1 teaching; and

   3.2 learning?

4. Is there a significant relationship between the participants' emotional affect and their amygdala functions?

5. What pedagogical implications may be drawn from the findings of this study?

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2. METHOD

Participants

The participants used in this study included 43 students from third-year BEED students in the College of Education—Pulilan Extension of Bulacan State University during the 1st semester of the school year 2019-2020).

Instruments

The instruments for data collection were the researcher-made questionnaire and interview protocols. The questionnaire was composed of three parts: one for the participants' emotional affect (cognitive appraisal, bodily symptoms, action tendencies, expression & feelings); part two: the participants' functions of the amygdala (connection, emotional learning & memory) and part three: the participants' emotional affect in terms of their views (teaching &learning). All in all, 70 items were developed; 7 items were made for each sub-category.Additionally, an interview protocol was made to verify the responses expressed in the questionnaire.

Data Collection and Analysis

Items in the questionnaire were modified based on the experts' suggestions after the dry-run had been conducted. Then, the final draft was reproduced for the actual conduct of the study. Questionnaires were distributed to the target participants. The data were gathered, sorted, tallied, tabulated, and analyzed using frequency counts and means to describe the relationship between the participants' emotional affect and their amygdala functions.

The researchers used Pearson r (through SPSS) to determine the relationship between the students'emotional affect and their amygdala functions. Also, the researcher used a z-test for the significance.

To measure the level of relationship, a five-point Likert scale was used.

Mean Numerical Rating	Verbal interpretation	Descriptive Equivalent
4.50-5.00	Strongly Agree	Very Functional
3.50-4.49	Agree	Highly Functional
2.50-3.49	Undecided	Moderately Functional
1.50-2.49	Disagree	Minimally Functional
1.0-1.49	Strongly Disagree	Low Functional

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3. RESULTS AND DISCUSSION

This section of the paper provides the results and discussion.

Students' Emotional Affect

For the participants' emotional affect, the researchers described: cognitive appraisal, bodily symptoms, action tendencies, expression, and feelings.

Cognitive appraisal

In terms of students' cognitive appraisal, item 6 "The video presentation creates a strong feeling of love and joy about teaching," received the highest weighted mean of 4. 78, which was interpreted as *Strongly Agree*. It means that students felt something upon viewing the clip presentation. A positive behavior by the teacher is manifested in the teacher-student relationship characterized by open communication and emotional and academic support (Aquino, 2018). During the cursory interview, some disclosed that they could not explain what touched their awareness about teaching. There was an intense emotion to like being a teacher someday. Table 1 shows the data.

Table 1 .Mean and Standard Deviation Distribution Table of Participants' Emotion (Cognitive Appraisal)

Cognitive Appraisal	Weighted Mean	Standard Deviation	Verbal Interpretation
The overall presentation is interesting and suited for prospective teachers.	4.59	0.69	Strongly Agree
The video clip appeals to my emotion.	4.65	0.68	Strongly Agree
The video clip helps develop my love for teaching.	4.68	0.63	Strongly Agree
The story is about the duties of a teacher.	4.68	0.63	Strongly Agree
The presentation creates a strong inclination for teaching.	4.62	0.68	Strongly Agree

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The video presentation creates a strong feeling of love and joy about teaching.	4.78	0.53	Strongly Agree
The presentation evokes a feeling of joy in teaching.	4.70	0.62	Strongly Agree
General	**4.67**	**0.23**	**Strongly Agree**

Bodily symptoms

For bodily symptoms, the item "The video clip creates an emotional experience" received the highest mean of 3. 73. This item was followed by "It makes me cry" and the item "It makes me love teaching" with the same mean score of 3.70. During the cursory interviews, participants disclosed that they were moved and touched by the video clip presentation. The bodily symptoms were their tears while watching the video clip.

Table 2 .Mean and Standard Deviation Distribution Table of Participants' Emotion (Bodily Symptoms)

Bodily Symptoms	Weighted Mean	Standard Deviation	Verbal Interpretation
The video clip creates an emotional experience.	4.73	0.56	Strongly Agree
It makes me cry.	4.70	0.52	Strongly Agree
It makes me feel great about teaching. I want to be a teacher soon.	4.65	0.63	Strongly Agree
It makes me feel excited about teaching.	4.62	0.72	Strongly Agree
It makes me love teaching.	4.70	0.57	Strongly Agree

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It creates an ardent desire in me to be a teacher.	4.65	0.68	Strongly Agree
It evokes a feeling of joy and satisfaction in my choice to be a teacher.	4.68	0.63	Strongly Agree
General	**4.68**	**0.24**	**Strongly Agree**

Action tendencies

For action tendencies, items "It motivates me to value the duties of a teacher" and "It motivates me to value learning" got the highest mean score of 4.68 with a standard deviation of 0.63 and are interpreted as *Strongly Agree*.

Such findings only showed a desire among the participants to behave in certain situations or important actions connected to a particular feeling. For example, teaching comprises a desire to be compassionate, and that such a feeling of concern incorporates a desire to care for others. When they feel the urge to teach, they also desire to be of service to children. They havethe feeling that arises when they have the desire to help and care about others. Table 3 shows the data.

Table 3 .Mean and Standard Deviation Distribution Table of Participants' Emotion (Action Tendencies)

Action Tendencies	Weighted Mean	Standard Deviation	Verbal Interpretation
The video clip presentation motivates me to be a good teacher.	4.65	0.63	Strongly Agree
It motivates me to study better.	4.65	0.59	Strongly Agree

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It motivates me to love teaching.	4.65	0.68	Strongly Agree
It motivates me to value learning.	4.68	0.63	Strongly Agree
It motivates me to value the duties of a teacher.	4.68	0.63	Strongly Agree
It moves me to do better next time.	4.43	0.69	Strongly Agree
It motivates me to let my students learn from me.	4.59	0.60	Strongly Agree
General	**4.62**	**0.20**	**Strongly Agree**

Expression

In terms of expression, the highest in rank was item "I feel I almost shout for joy," with a weighted mean of 4.65 and is interpreted as *Strongly Agree*. It was confirmed by items "I feel I almost shout upon watching the video" and "I feel I want to cry with joy," both with a weighted mean of 4.62 and interpreted as *Strongly Agree*. These findings indicate that students have different feelings of expression. Sometimes they will need to express emotion such as joy or sorrow to something they see or watch. They are carried away by what they see in the video clip about the crucial role. In other words, expression is a manifestation of feelings. It is a vehicle or a means through which emotion is revealed. Table 4 shows the data.

Table 4 .Mean and Standard Deviation Distribution Table of Participants' Emotion - Expression

Expression	Weighted Mean	Standard Deviation	Verbal Interpretation
I feel I almost cry when I watch the video.	4.57	0.65	Strongly Agree

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I feel I almost shout upon watching the video.	4.62	0.59	Strongly Agree
I feel I almost shout for joy.	4.65	0.63	Strongly Agree
I feel I want to cry with joy.	4.62	0.68	Strongly Agree
I feel excited when I watch it.	4.49	0.73	Strongly Agree
I smile and think that I am Mrs. Thompson.	4.43	0.69	Strongly Agree
My blood pressure rises as I feel there is something that excites me.	4.59	0.60	Strongly Agree
General	**4.59**	**0.26**	**Strongly Agree**

Feelings

When it comes to feelings, the item "I experience a different feeling with this video" obtained the highest weighted mean of 4.68. Last in rank was item "I feel that there is a need for me to think deeply about teaching," with a weighted mean of 4.49. However, these items were both interpreted as *Strongly Agree*. Students have feelings of moral sensitivity, especially to how teachers deal with them. Students as human beings are naturally emotive creatures. Throughout their lifetimes, they experience different sensations. Data were depicted in Table 5.

Table 5 .Mean and Standard Deviation Distribution Table of Participants' Emotion - Feelings

Feelings	Weighted	Standard	Verbal

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	Mean	Deviation	Interpretation
I feel the video presentation is a must for all.	4.51	0.73	Strongly Agree
I feel that there is a need for me to think deeply about teaching.	4.49	0.73	Strongly Agree
I feel that I experience a different emotional state.	4.65	0.63	Strongly Agree
I feel elated if I am already a teacher.	4.62	0.64	Strongly Agree
I experience a different feeling with this video.	4.68	0.58	Strongly Agree
I feel this video is worth viewing.	4.57	0.60	Strongly Agree
I feel this video is a good tool to motivate prospective teachers.	4.57	0.65	Strongly Agree
General	**4.58**	**0.26**	**Strongly Agree**

Based on the video clip presentation, it was disclosed that of the five components of emotional affect (cognitive appraisal, bodily symptoms, action tendencies, expression and feelings), it was found that bodily symptoms ranked the highest (with a weighted mean of 4.68); it was followed by cognitive appraisal (4.67); third was action tendencies (4.62); fourth was expression (4.59); and fifth and last was feelings (4.58). Data were revealed in Table 6.

Table 6 .Summary of Mean and Standard Deviation Distribution Table of Participants' Emotion

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	Weighted Mean	Standard Deviation	Verbal Interpretation
Cognitive Appraisal	4.67	0.23	Strongly Agree
Bodily Symptoms	4.68	0.24	Strongly Agree
Action Tendencies	4.62	0.20	Strongly Agree
Expression	4.59	0.26	Strongly Agree
Feelings	4.58	0.26	Strongly Agree
General	**4.63**	**0.12**	**Strongly Agree**

Participants' functions of the amygdala in terms of: **Connection**

The first function of the amygdala is connection. Item "As if the video sends projection to my hypothalamus" obtained the highest weighted mean of 4.59 and was interpreted as *Strongly Agree*. Following were items "I feel it is connected to my neurons in the brain" and "I believe that my feelings about the video are connected to my brain,"which were both interpreted as *Strongly Agree.* Last in rank was item "It did not provide emotional arousal," with a weighted mean of 1. 46 and was interpreted as *Strongly Disagree*. The findings disclosed that the video clip presentation showed connection to the participants' cognition. It means that they did not only understand the meaning of the video but also developing connections in which they may apply what they learned in actual life situations. Table 7 has the data.

Table 7 .Mean and Standard Deviation Distribution Table of Participants' Functions of the Amygdala – Connections

Connections	Weighted	Standard	Verbal

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	Mean	Deviation	Interpretation
I believe that my feelings about the video are connected to my brain.	4.54	0.61	Strongly Agree
As if the video sends projection to my hypothalamus.	4.59	0.60	Strongly Agree
I feel it is connected to my neurons in the brain.	4.54	0.69	Strongly Agree
It is connected to how it is processed in my brain.	4.49	0.65	Strongly Agree
It provides input to my sensory system.	4.46	0.65	Strongly Agree
It does not provide emotional arousal.	1.46	0.61	Strongly Disagree
My excitement about the video is related to how I think about it.	4.49	0.73	Strongly Agree
General	**4.08**	**0.30**	Strongly Agree

Emotional Learning

The second function of the amygdala is emotional learning. Item "I can express my feelings about the video" got the highest weighted mean of 4.57. The lowest weighted mean of 4.41 were attributed to items "The video has the potential power to influence emotion" and "The video has become a part of my memory system." However, these items were interpreted as Strongly Agree. It means that with that video, participants can express their feelings about how it is to teach. Table 8 has the data.

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Table 8 .Mean and Standard Deviation Distribution Table of Participants' Functions of the Amygdala – Emotional Learning

Emotional Learning	Weighted Mean	Standard Deviation	Verbal Interpretation
The video clip provides formation and storage of memory.	4.51	0.65	Strongly Agree
It forms association between memory and feeling.	4.51	0.65	Strongly Agree
The video has become a part of my memory system.	4.49	0.65	Strongly Agree
The video has the potential power to influence emotion.	4.49	0.73	Strongly Agree
I can express my feelings about the video.	4.57	0.65	Strongly Agree
I realize that teaching is a rewarding experience.	4.51	0.61	Strongly Agree
I want to be like Mrs. Thompson someday.	4.54	0.65	Strongly Agree
General	**4.52**	**0.25**	**Strongly Agree**

Memory

The third and last function of the amygdala is memory. The item "I will always remember the story in the video because it is related to the sacrifices of a teacher" obtained the highest weighted mean of 4. 59 and was interpreted as *Strongly Agree*. The item "The video provides classical conditioning for me" got the lowest weighted mean of 4.30. However, such an item was

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still interpreted as *Strongly Agree*. It only shows that memory is an essential element of learning and cognition. Table 9 reveals the data.

Table 9 .Mean and Standard Deviation Distribution Table of Participants' Functions of the Amygdala – Memory

Memory	Weighted Mean	Standard Deviation	Verbal Interpretation
I recall the sacrifices of a teacher by merely watching the video.	4.49	0.61	Strongly Agree
I will always remember the story in the video because it is related to the sacrifices of a teacher.	4.59	0.60	Strongly Agree
The video is worth remembering.	4.32	0.88	Strongly Agree
The video provides classical conditioning for me.	4.30	0.74	Strongly Agree
I believe, the essence of that video is now a part of my long-term memory system.	4.35	0.72	Strongly Agree
I feel that the video possesses strong emotional impact in my memory.	4.43	0.73	Strongly Agree
The emotional arousal is connected to my memory.	4.38	0.68	Strongly Agree
General	**4.41**	**0.27**	**Strongly Agree**

Table 10 shows the summary of the mean and standard deviation of the amygdala functions among the participants. Here, it could be noted that of the three functions of the amygdala (connection, emotional learning, and memory), emotional learning obtained the highest weighted

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mean of 4.52 and was interpreted as *Very Functional*. Next in rank was memory (4. 41). This was followed by connection (4.08). These three functions of the amygdala were all interpreted as *Very Functional*. It means that the participants are complex human beings with infinite variables impacting who they are as people, what they are experiencing, and how they perceive and move forward in the world. In the realm of learning, they acquire and practice skills to manage emotions and navigate social interactions.

Table 10 .Summary of Mean and Standard Deviation Distribution Table of Participants' Functions of the Amygdala

	Weighted Mean	**Standard Deviation**	**Verbal Interpretation**
Connections	4.08	0.30	Very functional
Emotional Learning	4.52	0.25	Very functional
Memory	4.41	0.27	Very functional
General	**4.34**	**0.18**	**Very functional**

Table 11 reveals the mean and standard deviation distribution of how the video clip presentation helps nudge the participants' emotions regarding teaching. The item "It teaches me how to love teaching" received the highest weighted mean of 4.49. The lowest weighted mean of 4.32 was item "It reveals the sacrifices of a teacher." These items both received the verbal interpretation of *Strongly Agree*. However, the general weighted mean for this dimension on teaching was *Agree*.

Table 11 .Mean and Standard Deviation Distribution Table of How the Video Clip Presentation Help Nudge the Participants' Emotion in Teaching

Teaching	**Weighted Mean**	**Standard Deviation**	**Verbal Interpretation**
The video clip presentation does not give me an idea of what and how it is to be a teacher.	1.46	0.73	Strongly Disagree

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It teaches me to be a good teacher.	4.38	0.76	Strongly Agree
It shows how a teacher works well with students.	4.43	0.69	Strongly Agree
It reveals the sacrifices of a teacher.	4.32	0.82	Strongly Agree
It teaches me how to love teaching.	4.49	0.69	Strongly Agree
It shows me that teaching is not easy.	4.35	0.75	Strongly Agree
It develops my passion for teaching.	4.38	0.72	Strongly Agree
General	**3.97**	**0.30**	**Agree**

For the second dimension on learning, the item "It shows how a student works well with a teacher" got the highest weighted mean of 4.49. The lowest weighted mean of 1.54 was for item "It does not teach me to be a good learner." Table 12 has the data.

These findings show that participants are affected by how teachers care about students. As the former show their love and care, the latter feel a feeling of respect and belongingness. And so, the more they appreciate the sacrifices of their teachers.

Table 12 .Mean and Standard Deviation Distribution Table of Nudge the Participants' Emotion - Learning

Learning	Weighted Mean	Standard Deviation	Verbal Interpretation

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The video clip presentation gives me an idea of what and how it is to learn as a student.	4.30	0.78	Strongly Agree
It does not teach me to be a good learner.	1.54	0.65	Strongly Disagree
It shows how a student works well with a teacher.	4.49	0.61	Strongly Agree
It reveals the shortcomings of a student.	4.43	0.65	Strongly Agree
It teaches me how to love learning with a guide of a loving teacher.	4.43	0.77	Strongly Agree
It shows me that teaching is never an easy task.	4.49	0.73	Strongly Agree
It develops my love for teachers.	4.41	0.64	Strongly Agree
General	**4.01**	**0.23**	**Agree**

Table 13 shows the summary of mean and standard deviation distribution of how the video clip presentation nudges the participants' emotions. The same table reveals that "learning" (4.01) shows more connection than that of teaching (3.97). It means that the amygdala works better in learning than in teaching.

Table 13 .Summary of Mean and Standard Deviation Distribution Table of how the Video Clip Presentation Help Nudge the Participants' Emotion

Connections	Weighted Mean	Standard Deviation	Verbal Interpretation

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Teaching	3.97	0.30	Agree
Learning	4.01	0.23	Strongly Agree
General	**3.99**	**0.18**	**Agree**

The last table (Table 14) depicts the test for significance on the relationship between the participants' emotional affect and their amygdala functions. Here, it registers *no significant* relationship between the participants' emotional affect and their amygdala functions. Therefore, the null hypothesis is accepted.

Table 14 .Test for Significance on the Relationship between Participants' Emotional Affect and the Functions of Their Amygdala

	Test for Significance	**Verbal Interpretation**
Cognitive Appraisal – Connections	0.037	Significant
Cognitive Appraisal - Emotional Learning	0.159	Not Significant
Cognitive Appraisal – Memory	0.804	Not Significant
Bodily Symptoms – Connections	0.365	Not Significant
Bodily Symptoms - Emotional Learning	0.235	Not Significant
Bodily Symptoms – Memory	0.280	Not Significant
Action Tendencies – Connections	0.675	Not Significant
Action Tendencies - Emotional Learning	0.594	Not Significant
Action Tendencies – Memory	0.053	Not Significant

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Expression – Connections	0.870	Not Significant
Expression - Emotional Learning	0.570	Not Significant
Expression – Memory	0.879	Not Significant
Feelings – Connections	0.925	Not Significant
Feelings - Emotional Learning	0.869	Not Significant
Feelings - Memory	0.979	Not Significant
Participants' Emotional Affect and the Functions of Their Amygdala	**0.077**	**Not Significant**

Pedagogical Implications

As the amygdala is construed to be responsible for the bodily expression of emotional responses, in this study, it was found that the affect is not affected by the amygdala. Based on several studies, the amygdala mediates many aspects of emotion and memory. Although historically the amygdala was considered to be involved primarily in fear and other emotions related to aversive (unpleasant) stimuli, it is now known to be involved in positive emotions elicited by appetitive (rewarding) stimuli. Therefore, it is suggested that the curriculum planners look into some possible mechanisms of integrating reward systems into instructional strategies.

4. CONCLUSIONS AND FUTURE RESEARCH DIRECTIONS

In the light of the findings of this study, the researcher concluded that:

1. Bodily symptoms were the participants' emotional affect based on the video clip presentation.
2. The amygdala affected the participants' emotional learning.
3. The video clip presentation help nudged the participants' emotional affect in terms of their views about learning.
4. There is no significant relationship between the participants' emotional affect and the functions of their amygdala.
5. Interested researchers may probe into the amygdala functions by using other variables such as academic motivation and reward system.

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