

Developing Emotional Intelligence of Primary Students in Teaching Mathematics through Experiential Activities in Vietnam

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Abstract The article presents the vital role and characteristics of emotional intelligence in teaching Mathematics through experiential activities at primary school. The authors analyze and show the outline/diagram and opportunities to develop the emotional intelligence of students in some areas in Viet Nam.

Keywords: *emotion, emotional intelligence, experiential activities, teaching mathematics through experiential activities*

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1. Introduction

The article will answer three questions as follows:

1. What is the emotional intelligence (EI)? What are its characteristics in teaching Mathematics in primary schools?

2. How does the emotional intelligence (EI) affect the learning process of Mathematics in primary schools? How to identify it?

3. Why is teaching Mathematics through experiential activities able to develop emotional intelligence for students?

At the same time, the article analyzes and illustrates some examples of developing emotional intelligence among students in math instruction through experiential learning.

To answer the three questions above, we will present works and research findings on emotional intelligence, as well as the applications in education of Vietnamese and international authors.

First of all, E. L. Thorndike was the first to attempt to identify emotional intelligence, and he called it social intelligence in the late 1930s. The next was the work of David Wechsler (1940), asserting that the non-intellectual factor is important for human adaptation and achievement in life; Howard Gardner (1983) argues that intelligence has not only IQ, but a broader intellectual scale; Reuven Bar-On (1985) was the first to use the term 'emotional intelligence' in his doctoral dissertation, which studied the types of intelligence that affect the success of a human being.

Peter Salovey and John Mayer are two American psychologists who published the first official definition of

emotional intelligence in 1990: "Emotional Intelligence includes the ability to engage in sophisticated information processing about one's own and others' emotions and the ability to use this information as a guide to thinking and behavior". In the same year, Peter Salovey and John Mayer, along with M. Tipapiolo, published the test of emotional intelligence. In 1997, Peter Salovey and John Mayer revised the definition of EQ, reflected in their ability model [2].

In another view, Daniel Goleman provided the definition of emotional intelligence in synthesized form along with many other findings published in his first book "Emotional Intelligence" published in 1995 in the United States, signifying a new evolution in research and application of EQ. Goleman's research does not stop at identifying the nature of emotional intelligence, but also introduces measures to educate emotional intelligence [3].

Examining the work of these international authors, it can be said that the three representatives represent the different stages of research on emotional intelligence with their own approaches share some characteristics, and have distinct directions of development at the same time. R. Bar-On approached emotional intelligence in terms of personality, P. Salovey and J. Mayer studied the cognitive perspective, while D. Goleman approached in terms of performance.

In Vietnam, Associate Professor Nguyen Huy Tu published an article on emotional intelligence in the Journal of Psychology No. 6 December 2000. State-level research project KX 05-06 in the period 2001 - 2005 of the Vietnam National Institute of Educational Sciences has identified emotional intelligence as one of the three components of intelligence (creativity, cognitive intelligence, emotional intelligence) on pupils, students, and young

workforce. This is the pioneering study that kick-started the research on emotional intelligence in Vietnam in the coming years. Some significant works are as follows: master thesis of Duong Thi Hoang Yen (2004), PhD thesis of Nguyen Thi Dung (2007). These dissertations focus largely on the emotional intelligence of homeroom teachers in classroom management activities. Master thesis of Phan Trong Nam (2004) and Nguyen Thi Tuan Anh (2008) focus on the emotional intelligence of students in pedagogical universities and colleges. In 2010, Duong Thi Hoang Yen defended her PhD dissertation on emotional intelligence of primary school teachers at the Vietnam Academy of Social Sciences. The topic of emotional intelligence of Thai Nguyen high school students was studied by Nguyen Thi Yen (2013) [4].

Through the literature review of international and Vietnamese authors, there is little to no research on the development of emotional intelligence in teaching subjects in general education in general and Mathematics in particular. Especially there has been no published research on the development of emotional intelligence in teaching mathematics through experiential learning activities at primary school. In the following research, we will present the findings of applying the theory of emotional intelligence in the study of Mathematics through the experiences of primary school children in Vietnam (including the survey of the situation and proposed recommendations for organizing teaching activities).

2. Content

By synthesizing and analyzing in-depth researches on emotional intelligence, along with exploring the reality of Mathematics teaching through experiential activities in several localities in Vietnam, the authors present the results of the research as follows:

2.1. Relationship between IQ, EQ and AQ

The Intelligent Quotient, or IQ, is a concept mentioned on the book *Hereditary Genius* which is published by an British scientist Francis Galton in the late 19th century and especially in 1917 when the United States entered World War I [5]. For a long time, people have focused only on the researches and application of the Intelligent Quotient (IQ), and have not paid adequate attention to other specific types of intelligence, such as: the Emotional Intelligence (EQ,) Adversity Quotient (AQ),... All these forms of wisdom create the human wisdom. It's hardly to imagine what would happen to every person without emotions! According to a number of studies [3] conducted by EQ researchers, only 25% of successful people have a higher (relative) IQ than average. That means IQ does not explain the outstanding success of the rest of 75%. "Honesty is the best policy", a Vietnamese proverb, is in a sense also related to the comparative role of IQ and EQ. Psychologist Paul G. Stoltz (USA) released Adversity Quotient on the website of Amazon.com in May 1999. The work immediately echoed to psychologists and even the well-known entrepreneurs. The AQ measures the determination and creative intelligence. It is also an indicator of the four different levels: 1. Changing the

situation, 2. Reversing the situation, 3. Overcoming adversity, 4. Finding the solution. Applied psychologists applauded the rise of the AQ. They argued that this was an important turning point in the history of psychological development in the late 20th century. It demonstrates that the quantification of higher psychological qualities is something that can be done, as has been done with the Intelligence Quotient (IQ) and Emotion Quotient (EQ) [5].

We can visualize the relationship of triads: IQ, EQ and AQ as follows: the IQ always accompanies with the EQ, even in case of creating emotions before thoughts. Emotional intelligence always supports IQ development so that each individual becomes successful. However, to become successful, people often face challenges; at that time the AQ appears to help people overcome and become successful. It can be said that EQ is the nucleus of connecting, converting IQ, EQ and AQ for each person to mobilize the intellectual capacity to reach their own limits [6,7].

The article focuses on analyzing the structure and characteristics of emotional intelligence in relation to primary Mathematics teaching through experiential activities.

According to Daniel Goleman [3], emotional intelligence is understood as the art of controlling emotions and the right direction of emotions. Thus, emotional intelligence consists of two basic components:

- The art of controlling emotions;
- The right direction of emotions.

According to a research by Antonio Damasio (University of Iowa - USA), emotions are very important to the mind. Emotions frequently guide our choices, which work in line with the mind, permitting or forbidding the activity of the mind. In contrast, the brain plays a role of managing our emotions, unless the emotions escape from our control and become mastered.

Lynn D. Selemon's neuropsychological research (p45) shows that primary students have higher IQ than average, but their low academic results are due to students' confusion in frontal lobe such as: anxiety, hyperactivity. Despite the intellectual potential, these children have many problems such as poor academic results, lack of emotional control [3, 8].

In fact, without emotional intelligence, intellectual intelligence can not function intelligently. Mutual complementarity and dialogue are appropriately established among the agents that make emotional intelligence and intellectual intelligence become perfect.

Thus, this negates the notion of antagonism between emotional intelligence and intellectual intelligence, according to Erasmus, it is necessary to find a good balance between the two sides of the intelligence, in other words we must reconcile the mind and heart, to learn how to effectively use emotional intelligence in life and learning.

In Sternberg and Salovey's researches made clear the leading role of emotional intelligence. Together with John Mayer and Gardner, the authors divide emotional intelligence into five main areas [3,9]:

- 1) Understanding the emotions: Awareness of oneself - Being able to recognize the emotions - is the basis of emotional intelligence;
- 2) Embracing emotions: Making the emotions of oneself adapt to the circumstances depends on the self-consciousness;

3) Self-motivation: The ability to guide the emotions to focus attention, self-restraint.

Self-motivation means putting oneself in a state of psychological flexibility, which allows doing special things.

4) Identify the other people’s emotions: Empathy in relationships with other people.

5) Mastery of human relationships: It is the art of controlling our emotions with other people, which allows people to succeed in their work basing on harmonious relationship.

The above five areas of emotional intelligence are expressed through the following common emotional states:

Anger, sadness, fear, pleasure, love, surprise, disgust, shame [3]. From these 8 types of emotions, the authors selected some characteristics related to the process of teaching Mathematics in primary schools and the structure of the survey in primary teachers and students [6,10,11] (see tables in section 4).

The relationship and interaction between the emotional intelligence and the learning process of Mathematics through the experiential activities of primary students is analyzed, explained and illustrated in the survey results mentioned on Section 2 below.

2.2. Developing EQ in Teaching Mathematics through Experiential Activities

General experiential activities and teaching Mathematics through experiential activities are shown in Figure 1 [12]:

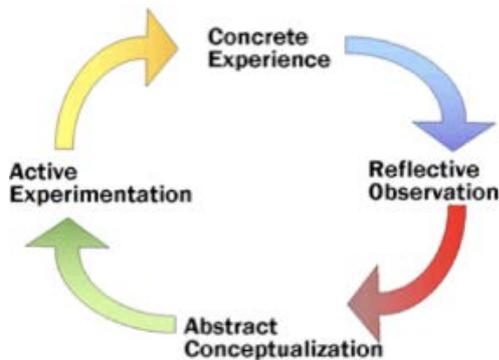


Figure 1. Kolb’s Cycle of Experiential Learning

Primary students’ experiential learning of Mathematics goes through four steps as shown in the diagram above, which is both an opportunity and a challenge to develop the emotional intelligence of primary students. It is an opportunity because at each step, there are specific contextual developments for students to experience different emotional states, thereby improving and developing the five major areas of emotional intelligence. At the same time, this is also a challenge because Mathematics has abstract characteristics, strict logic and system while the limited characteristics of thoughts, memory, concentration, etc. of primary students occur in the experiential context of each specific situation. One thing to emphasize here is that from a specific experiential situation, each student **personally and directly** [13] experiences for observation and discovery; gradually, it is **possible** to summarize individual events into new knowledge and skill. Then, it **may** appear that the idea of applying the results obtained

through experience into practice. The authors will analyze the events at each step of the student's experience to find opportunities to help students develop emotional intelligence in learning Mathematics.

Step 1: Experience the specific situation.

At this stage, students need to know what the requirements of experiential learning are. Students may also receive orientation and advice from their teachers or friends. Students also have prior knowledge, skills and experience relevant to the experiential situations. However, with the context of many new factors, it may be alien to primary school students. It is easy to influence the appearance of different emotions (both positive and negative) for students involved in the initial 3 areas of emotional intelligence. Here emotions may be created: surprise, confusion, anxiety. To help students recognize and master their own emotions, teachers need to design appropriate experiential situations. Also, teachers attend to select Mathematics’ contents integrated in a "natural" way to help students have the attention and excitement to discover. This is the key to help students overcome these negative emotional states. The expected result of the experiential activities at this stage is the creation and maintenance of attention, the desire to find concrete results through experience.

Example 1: In teaching the area of triangle (Mathematics 5) [14], the authors of the textbook presented contents in the direction of combining triangles to become rectangle. From the calculation and formulas of the area of the rectangle, students calculate the area of triangle. Textbooks and teacher’s books do not design lectures according to the type of experiential activities. The authors will redesign the lesson through experiential learning activities. The whole lesson is divided into 4 steps of the experiential diagram as follows:

Step 1: Teacher organizes students to explore the formula of the area of triangle through experiential activities:

- *Activities’ Orientation:* Students combine two equal triangles to form a rectangle. From the formula of the area of rectangle, students calculate the area of triangle.

Students are provided with adequate supplies and facilities for learning (pen, ruler, ether, paper scissors, two equal cardboard, glue,...).



Figure 2. The illustration of the requirements

The above situations can create emotions in the students: excitement, flashbacks, confusion, excitement, fun, excitement.

At this stage, to help student pay attention to get the target results and have positive emotions, what should teacher emphasize? What are the mainstream activities? Which tools? How does it work? (oneself, directly).

Step 2: Observation and reflection.

If step 1 creates positive emotions for students, they will actively conduct observation and reflection activities that reflect the results obtained through experience.

Teachers should develop the content and techniques of observation and discovery as well as the requirements in

this step to provide early and adequate counseling to students. It can be said that the results of this stage are the materials which help step 3 create the mathematical knowledge gained by students through experiential activities. At this stage, there are many difficulties occur unexpectedly: all events may not be observed and discovered; disconnected detected events for further observation; can not see the relationship between observed events, etc. It is easy to appear negative emotions such as depression, embarrassment, fatigue, lack of confidence, etc. Teachers should anticipate scenarios that may occur at this stage to properly align the student's experiential activities beyond the unhappy mental state. The positive emotions at this stage contribute to the development of the components 2, 3, 4 of emotional intelligence.

Example 2: The continuous activity of the lesson: the area of triangles

Step 2: Each student experiences cross-cutting activity

- Students observe triangles; compare them with rectangles to determine the direction of the cut. (The teacher may suggest: observe the dimensions of the rectangle and the bottom elements, the height of the triangle)

- Depending on the situation, students can find out how to cut the grafts by themselves (only triangles are cut into the remaining triangles or triangles cut into a high line.)

- After students cut two rectangular triangles, the teacher suggests students to observe and detect the relationship between the elements of the rectangle and the triangle, comparing the area of the shape with the area of the triangle

- Ask the students to repeat or write a formula to calculate the rectangular area so that they can describe the direction of the triangle area.

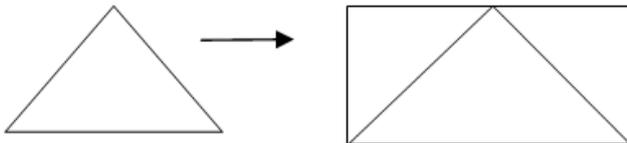


Figure 3. The illustration for the cutting activity

Using the words of the question, advice, suggestions and positive attitude in the 4 activities above is also a way to support students create positive emotions during the process. Find the formula to calculate the area of triangles.

Step 3: Generalizing the acquired knowledge

Learning Mathematics through experience at this stage requires students to take new developments in quality of thoughts (IQ) and emotional intelligence (EQ). Students must discover the relationship between events, connect them and view integrated products in the general form, creating new mathematical knowledge that the students did not have before. At the same time, new emotions appear in two basic forms:

- Support positive and together with IQ create the final product.

Emotions that lead to success, to the end of a basic stage, can be considered as the sum of all three steps (1, 2 and 3).

At this stage there may appear negative emotions as strong human qualities: sadness, anger, disappointment, disgust, regret. In addition, positive emotions can appear

intertwined: joy of mastering, mathematical beauty pleasure, joy of victory, confidence, etc. At this point, the teacher needs to keep a close watch on each and every student to support and motivate them in a timely manner to minimize the impact of negative emotions, to transform them into positive emotions. This is an effective way to develop emotional intelligence for primary students.

Example 3: Following experiment activities in Example 2

- The teacher suggested students draw their own calculations and formulate the triangular area from the direction of calculus found in step 2.

- Students speak their own way of calculating and writing trigonometric formulas once they know the height and the corresponding bottom edge measurements.

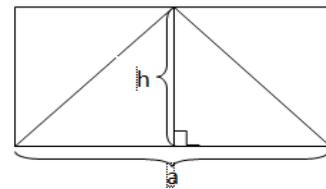


Figure 4. The illustration for the activity of connecting elements to draw the formula of area calculation

The students then connected the findings of these steps to generalizing into the new mathematical knowledge: the trigonometric formulas.

At this stage students often appear in two emotional states:

- confused when expressing the way of calculating the area or the choice of words expressing the formula of triangular area

- Fun, proud, happy, etc. when speaking of how to calculate and write how to calculate the area of the triangle

In this case, the teachers should promptly praise the students who succeed in the experiential activity and give priority to encouraging the students who have little difficulty in reaching the final result. By doing so, teachers help students develop their own emotional intelligence in different situations.

Step 4: Experience and application

This is the last step of a cycle of learning math through experience; the sustainability of the mental capacities that are formed in steps (1, 2 and 3) will be shown here. New mathematical knowledge, skills and experiences that have emerged through experiential learning need to be further tested and applied to new situations in the learning and life of elementary students. The results of the application process will change the attitude of math learning and mathematical manipulation in the lives of each student. It is also the process of transforming the emotions of the students in the new context. The components of emotional intelligence in students that are repeated through the steps of the mathematical experience process will be strengthened and gradually stabilized at this step. Emotional intelligence can initially be formed in a mathematical learning cycle through experience and will repeat in subsequent cycles demonstrating the sustainable development of this intellectual capacity [15,16].

Example 4: Initially experiment and apply the experiment results to calculate the triangular area formula.

- Students use the formula to calculate the area of the triangle in different degrees: similar situation, new situation.
- The teacher may suggest ideas for the students: calculate the area of the triangle in different ways from the rectangular area calculation.

During this stage of the experiment, students may develop more pleasant moods, less pressure, as in step 3. The teacher emphasizes the orientation: reinforcing through the use of simple words to complex. All students have the opportunity to participate in experiential activities at this stage. It may be that the negative emotions occur less frequently, but the sustainability of mathematical competence as well as emotional intelligence requires active, active participation from each student.

Through four examples of each step of the experiential activity in the triangular area study, one can see that each step is involved in the development of emotional intelligence of primary students. Each step has different roles and characteristics in the course of the student's experience to develop emotional intelligence. Teachers should be proactive in understanding the peculiarities of experiential learning in different situations to support student success [17,18,19].

The process of developing emotional intelligence for students in learning math through experience can be seen in Figure 5.

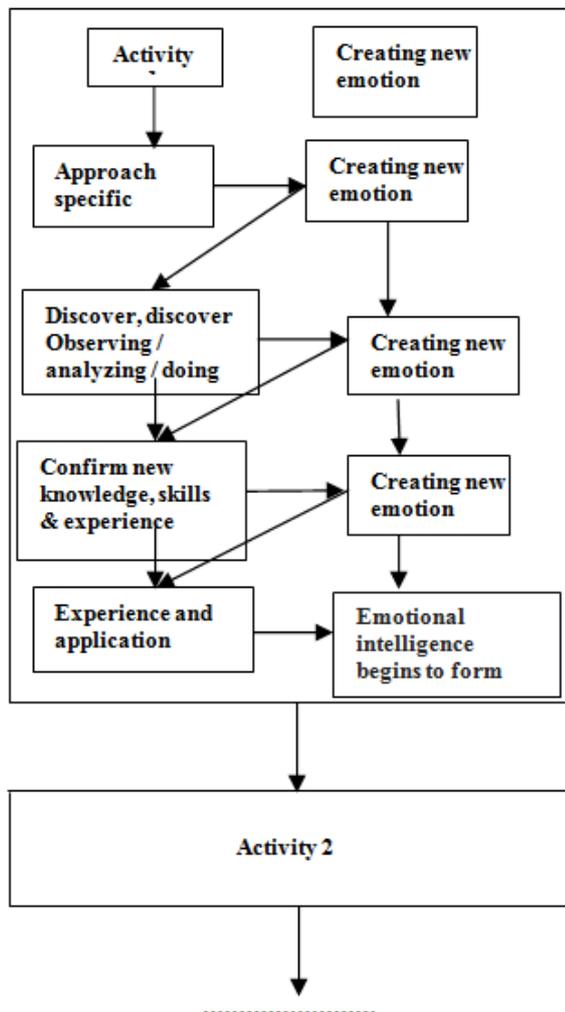


Figure 5. Developing emotional intelligence in teaching Mathematics through experiential activities

Observing Figure 5, we find that every step of the experiential activity in mathematics instruction creates new situations and contexts for primary students. As a result, new emotions will appear that affect the intellectual functioning of the students that take place along with the intermediate products of each step; As such, the emotional intelligence of students is gradually being formed and developed.

2.3. The Status and Opportunity Can Develop EI in Teaching Mathematics through EL

In this section we present the survey results of primary and primary school teachers in schools in Hanoi, Dong Thap (in the North and South of Vietnam). Survey Description:

1) Purpose of the survey

Find the correlation between mathematics through experiential activity and the emotional intelligence of students. Thus, it is possible to consider the effectiveness and ability of EQ development of Vietnamese elementary school students in mathematics through experience.

2) How to proceed

- Independent survey of teachers and students and between teachers and pupils in different elementary schools.

- Surveyed 151 students in grades 4 and 5 in two elementary schools in Hanoi (Dich Vong A - Cau Giay and Tay Ha Noi - Nam Tu Liem) and 82 students at Bui Thi Xuan Primary School in Cao Leader, Dong Thap.

- Survey of 49 teachers in these primary schools.

- Data processing and evaluation of survey results for teachers and students.

Survey results are presented in the following Table 1.

Table 1. Survey of students' opinions on emotional expressions of children in learning mathematics experiences at Dich Vong A Primary School - Cau Giay district - Hanoi and Tay Ha Noi primary school - Nam Tu Liem District - Hanoi

Type of Emotions	Emotional expression			
	None	Sometimes	Always	No comments
Enjoy	6 (4%)	48 (31.8%)	97 (64.2%)	0
Angry	93 (61.6%)	42 (27.8%)	11 (7.3%)	5 (3.3%)
Dissatisfied	106(70.2%)	29 (19.2)	3 (2%)	13 (7.8%)
Sad	92 (55.2%)	45 (27%)	10 (6.6%)	4 (2.6%)
Lonely	117(77.5%)	22 (14.6%)	8 (5.3%)	4 (2.6%)
Disappointed	101(66.9%)	34 (22.5%)	10 (6.6%)	6 (4%)
Concerned	82(54.3%)	50 (33.1%)	13 (8.6%)	6 (4%)
Fear	97 (64.2%)	34 (22.5%)	17 (11.3%)	3 (2%)
Happy	9 (6%)	56 (37%)	80 (53%)	6 (4%)
Funny	7 (4.6%)	37 (24.5%)	102(67.6%)	5 (3.3%)
Consent	17 (11.3%)	56 (37%)	69 (45.7%)	9 (6%)
Proud	20 (13.3%)	61 (40.4%)	63 (41.7%)	7 (4.6%)
Cheery	17 (11.3%)	53 (35.1%)	74 (49%)	7 (4.6%)
Honor	57 (37.7%)	54 (35.8%)	31 (20.5%)	9 (6%)
Trust	33 (21.8%)	59 (39.1%)	47 (31.1%)	12 (8%)
Abnormal	123(81.5%)	12 (7.9%)	8 (5.3%)	8 (5.3%)
Hate	113(74.9%)	23 (15.2%)	8 (5.3%)	7 (4.6%)
Shy	94 (62.2%)	35 (23.2%)	14 (9.3%)	8 (5.3%)
Regret	86 (57%)	47 (31 %)	12 (8%)	6 (4%)
Confused	63 (41.7%)	63 (41.7%)	19 (12.6%)	6 (4%)

Table 2. Student opinion survey on emotional expressions of children in mathematics experiential learning at Bui Thi Xuan Primary School - Cao Lanh City, Dong Thap

Type of Emotions	Emotional expression		
	None	Sometimes	Always
Enjoy	7 (8.5%)	39 (47.5%)	36 (44%)
Angry	51(62%)	27 (33.1%)	4 (4.9%)
Dissatisfied	64 (78%)	15 (18%)	3 (3.6%)
Sad	49 (59.7%)	29 (35%)	4 (4.9%)
Lonely	65 (79.3%)	11 (13.4%)	6 (7.3%)
Disappointed	63 (76.8%)	17 (20.7%)	2 (2.5%)
Concerned	47 (57.3%)	29 (35.4%)	6 (7.3%)
Fear	49 (59.7%)	24 (29.3%)	9 (11%)
Happy	12 (14.7%)	49 (59.7%)	21 (25.6%)
Funny	3 (3.6%)	24 (29.3%)	55 (67.1%)
Consent	13 (15.9%)	35 (42.5%)	34 (41.6%)
Proud	12 (14.7%)	42 (51.2%)	28 (34.1%)
Cheery	10 (12.2%)	47 (57.3%)	25 (30.5%)
Honor	31 (37.8%)	33 (40.2%)	18 (22%)
Trust	25 (30.5%)	32 (39%)	25 (30.5%)
Abnormal	69 (84.2%)	10 (12.2%)	3 (3.6%)
Hate	70 (85.4%)	9 (11%)	3(3.6%)
Shy	58 (70.7%)	19 (23.2%)	5 (6.1%)
Regret	62 (75.6%)	18 (22%)	2 (2.4%)
Confused	36 (43.9%)	42 (51.2%)	4 (4.9%)

Table 4. Teacher Survey on Emotional Expression of Students in Mathematics Experience at Bui Thi Xuan Primary School - Ward 4 - Cao Lanh City - Dong Thap

Type of Emotions	Emotional expression		
	None	Sometimes	Always
Enjoy	0 (0%)	14 (56%)	11 (44%)
Angry	17 (68%)	8 (32%)	0 (0%)
Dissatisfied	22 (88%)	3 (12%)	0 (0%)
Sad	14 (56%)	11 (44%)	0 (0%)
Lonely	24 (96%)	1 (4%)	0 (0%)
Disappointed	18 (72%)	7 (28%)	0 (0%)
Concerned	8 (32%)	17 (68%)	0 (0%)
Fear	17 (68%)	8 (32%)	0 (0%)
Happy	2 (8%)	20 (80%)	3 (12%)
Funny	0 (0%)	16 (64%)	9 (36%)
Consent	1 (4%)	14 (56%)	10 (40%)
Proud	4 (16%)	11 (44%)	10 (40%)
Cheery	3 (12%)	13 (52%)	9 (36%)
Honor	11 (44%)	9 (36%)	5 (20%)
Trust	8 (32%)	10 (40%)	7 (28%)
Abnormal	21 (84%)	4 (16%)	0 (0%)
Hate	19 (76%)	6 (24%)	0 (0%)
Shy	18 (72%)	7 (28%)	0 (0%)
Regret	20 (80%)	5 (20%)	0 (0%)
Confused	5 (20%)	18 (72%)	2 (8%)

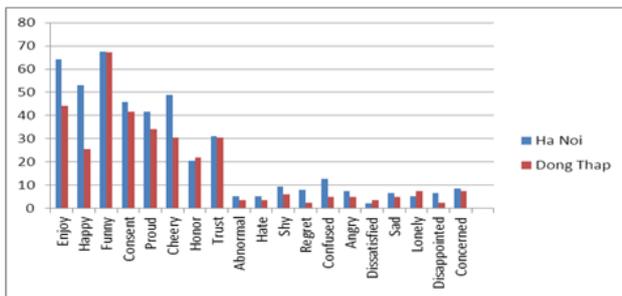


Figure 6. A comparison of the percentage of emotional expressions of elementary school students in Hanoi and Dong Thap in the Experimental Mathematics (self-assessment)

Table 3. Teacher Survey on Emotional Expressions of Students in Experimental Mathematics at Dich Vong A Primary School - Cau Giay District - Hanoi and Tay Ha Noi Primary School - Nam Tu Liem District - Hanoi

Type of Emotions	Emotional expression		
	None	Sometimes	Always
Enjoy	0 (0%)	5 (20.8%)	19 (79.2%)
Angry	16 (66.7%)	8 (33.3%)	0 (0%)
Dissatisfied	23 (95.8%)	1 (4.2%)	0 (0%)
Sad	18 (75%)	6 (25%)	0 (0%)
Lonely	19 (79.2%)	5 (20.8%)	0 (0%)
Disappointed	22 (91.7%)	2 (8.3%)	0 (0%)
Concerned	18 (75%)	6 (25%)	0 (0%)
Fear	19 (79.2%)	5 (20.8%)	0 (0%)
Happy	0 (0%)	11 (45.8%)	13 (53.2%)
Funny	0 (0%)	2 (8.3%)	22 (91.7%)
Consent	0 (0%)	12 (50%)	12 (50%)
Proud	1 (4.2%)	13 (54.1%)	10 (41.7%)
Cheery	1 (4.2%)	8 (33.3%)	15 (62.5%)
Honor	5 (20.8%)	11 (45.8%)	8 (33.3%)
Trust	4 (16.7%)	11 (45.8%)	9 (37.5%)
Abnormal	23 (95.8%)	1 (4.2%)	0 (0%)
Hate	20 (83.3%)	4 (16.7%)	0 (0%)
Shy	17 (70.8%)	7 (29.2 %)	0 (0%)
Regret	7 (29.2%)	17 (70.8%)	0 (0%)
Confused	9 (37.5%)	15 (62.5%)	0 (0%)

3) From the survey results above, we can comment as follows:

- Teachers rated positive emotions as having a higher percentage of negative emotions. The most pleasant ones were 91.7%, 79.2%, 79.5%, 53.2%, and 8% respectively. There is a difference in the percentage of some emotions between teachers in Hanoi and teachers in Dong Thap. However, on the whole, the teacher appreciates positive emotions. Thus, it can be seen that, in the teacher's view, experiential mathematics has contributed to the development of the emotional intelligence of elementary school children and the improvement of the quality of mathematical education.

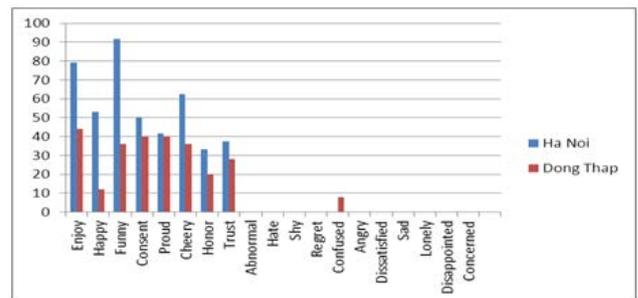


Figure 7. Comparison of the percentage of emotional expressions of elementary school students in Hanoi and Dong Thap in the Experimental Mathematics (teachers' assessment)

- The results of self-observation of students at Dich Vong A primary school (Hanoi) almost coincided with the observation of students in Bui Thi Xuan primary school (Dong Thap) about positive emotions: enjoy happy, happy Negative emotions, however, are different (not big) in percentage and type of emotion.

- Teacher and student comments on positive and negative emotions were almost coincidental (self-commented students were happy 67.6%, enjoyed 64.2%, happy 53 %, whereas confused emotions had the highest percentage of negative emotions at 12.6%. However, many of the

negative emotions that occur in schoolchildren have not been observed adequately and thoroughly (many negative emotions teachers say are: 0% but the real emotion is still in the student. appears, the lowest is 2%). This is a "hole" for teachers to create appropriate pedagogic support measures [20,21,22].

- From the teacher's assessment and student self-assessment, it is confirmed that learning math through experience is an effective learning method that is appropriate to the cognitive and developmental characteristics of elementary students. In particular, the emotional expression of students confirms that learning math through experience is a unique opportunity to develop emotional intelligence. Activity experience not only brings new knowledge and skills, but it is also important to train elementary students to form competencies and qualities in different situations of practice. Faced with learning situations in class or in practice, each student must observe, analyze, and behave appropriately in order to find solutions to the goals of the unit. In that situation, there are a wide variety of visible and invisible events, so students feel directly by thinking (IQ) while experiencing the elements from the mind, Emotional (EQ). Even the coordinated behavior between IQ and EQ is not enough to solve the problem, which requires students to show other emotional qualities from AQ. And this is the opportunity for each student to develop their own intellectual capacities [23,24]. Mathematics is a land that contains both challenges and opportunities, students themselves and directly discovers mathematics, thereby acquiring the values of mathematical culture [9,25,26,27,28].

The general education curriculum published on 28/07/2017 officially introduces the content of experiential activity into the education plan and also in the proposed math curriculum in January 2018. In the curriculum, the experimental activity is designed to be 105 lessons / year for all grades from grade 1 to grade 5, [29]. It is clear that the results of the survey above and the program of experiential activity in the new general education curriculum (scheduled for 2019) will be a great opportunity for teachers to organize mathematics education. Through experience contributes to the development of emotional intelligence.

3. Conclusion

Emotional Intelligence EQ is the core power that helps people understand themselves, be self-employed, and collaborate effectively with people. Developing emotional intelligence for elementary school students will play an important role and be the foundation for shaping and developing common capacities: self-reliance and self-learning; communication and cooperation; solve the creative problem. Emotional intelligence is the nucleus that connects set 3: IQ, EQ and AQ and is the solvent that makes up the human intellectual complex; EQ creates momentum for IQ to promote, integrates with AQ to break through. Math learning through experiential learning provides an opportunity for elementary school students to reach out to diverse, highly variable, complex, and mathematically complex, unstructured situations. Emotional

states are constantly emerging and changing - this is a striking feature of mathematics through experience in relation to emotional intelligence. Taking advantage of this, each teacher will find appropriate pedagogical solutions, contributing to the development of emotional intelligence for elementary school students, and at the same time developing other forms of intelligence; is the basis for building the next generation of Vietnamese citizens in the industrial revolution 4.0.

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