

# **SOLUTIONS TO RAISING STUDENTS' INTEREST IN TEACHING AND LEARNING MATHEMATICS 10 (THE 2018 GENERAL EDUCATION PROGRAM)**

**Hang Duy Thanh**

*Faculty of Pedagogy and Social Sciences & Humanities, Kien Giang University, Vietnam*

*Email: [hdthanh@vnkgu.edu.vn](mailto:hdthanh@vnkgu.edu.vn)*

## **Article history**

*Received: 24/01/2023; Received in revised: 10/3/2023; Accepted: 13/3/2023*

## **Abstract**

*For the 2018 General Education Program in, creating interest in teaching and learning Mathematics has important in fostering students' attitudes and feelings. The article presents 3 solutions in this regard to learning Geometry 10. Experiments show that, creating academic interest helps to improve teaching and learning Mathematics, and students are more active in learning and enhancing their capacity.*

**Keywords:** *Geometry 10, interest, interest in learning, teaching and learning Mathematics.*

---

DOI: <https://doi.org/10.52714/dthu.13.3.2024.1249>

Cite: Hang, D. T. (2024). Solutions to raising students' interest in teaching and learning Mathematics 10 (The 2018 General Education Program). *Dong Thap University Journal of Science*, 13(3), 68-73. <https://doi.org/10.52714/dthu.13.3.2024.1249>.  
Copyright © 2024 The author(s). This work is licensed under a CC BY-NC 4.0 License.

**BIỆN PHÁP TẠO HỨNG THÚ HỌC TẬP  
CHO HỌC SINH TRONG DẠY HỌC TOÁN 10  
(CHƯƠNG TRÌNH GIÁO DỤC PHỔ THÔNG 2018)**

**Hàng Duy Thanh**

*Khoa Sư phạm và Xã hội Nhân văn, Trường Đại học Kiên Giang, Việt Nam*

*Email: hdthanh@vnkgu.edu.vn*

**Lịch sử bài báo**

*Ngày nhận: 24/01/2023; Ngày nhận chỉnh sửa: 10/3/2023; Ngày duyệt đăng: 13/3/2023*

**Tóm tắt**

*Chương trình giáo dục phổ thông 2018, tạo hứng thú học tập trong dạy học môn toán có vai trò quan trọng trong bồi dưỡng thái độ và tình cảm cho học sinh. Bài viết này trình bày 3 biện pháp tạo hứng thú học tập trong dạy học Hình học 10. Qua thực nghiệm cho thấy việc tạo hứng thú học tập giúp nâng cao hiệu quả dạy học môn Toán và học sinh tích cực hơn trong học tập, góp phần phát triển phẩm chất và năng lực của học sinh.*

**Từ khóa:** *Dạy học môn Toán, Hình học 10, hứng thú, hứng thú học tập.*

## 1. Introduction

The 2018 General Education Program Mathematics posits that: “Mathematics in high school contributes to the formation and development of students' qualities and personalities; developing key knowledge, skills and creating opportunities for students to experience and apply mathematics in real life; connection between mathematical ideas, between Mathematics and practice, between Mathematics and other subjects...”

Nguyen (2014) researched and proposed measures to create excitement in teaching History. The research focused on proposing measures but did not experiment to test the feasibility. Pham (2011) researched and proposed some measures to create excitement in teaching chemistry in high schools. In this study, the measures were used to create excitement for students but did not give specific examples to apply. Although there are many studies on creating excitement in teaching subjects, they mainly focus on the old curriculum. There are few studies on the General Education Program since 2018.

When teaching in class, teachers must create excitement for students in learning and organize learning activities that attract and stimulate their need to learn about the content of the lesson. The teachers have to organize intellectual activities and guide students to participate in these activities actively and creatively.

Effects of creating excitement in teaching: Makes learning activities more attractive, maintains alertness, helps students feel happy and less tired; helps improve the efficiency of this activity; makes an important contribution to the development of students' skills, techniques and intelligence; helps improve learning activities (Pham, 2011).

Therefore, creating interest in learning plays a very important role in teaching Mathematics. The article focuses on presenting measures to create learning interest for students in teaching Geometry 10.

## 2. Methods

We use mixed theoretical research methods to review articles on creating interest in learning and propose measures to create academic interest. Then we conduct a pedagogical experiment to evaluate the feasibility and survey students' opinions after the experiment.

## 3. Results

### 3.1. Concepts

Nguyen (2015, p. 95): “Create motivation is to make students aware of the meaning of activities and the object of activity. Create motivation to turn pedagogical goals into individual student goals, not just formal introductions and problem solving, must be present throughout the teaching and learning process. Therefore, we can distinguish between opening motives, intermediate motives, and ending motives”.

Nguyen (2008, p. 25): “Interest is a form of expression of people's emotions and cognitive needs to be enthusiastically aware of the purpose of activities, to learn more deeply, and to more fully reflect the object in real life”.

Pham (2011, p. 109): “Interest is an individual's attitude towards a certain object or process that brings pleasure, excitement and strong stimulation to personal positivity, requiring them to be able to fully mobilize their energy integrity to perform”.

Le (2000, p. 33): “Cognitive interest is a part of general interest, understood as a quality of personality that ensures the maintenance of human activities to satisfy needs, which is the basic driving force of existence and development”.

Thai (2008, p. 466): “Cognitive interest is an attitude, an individual's choice of the object of perception, in which the individual does not stop at the external characteristics of things and phenomena, but focuses on the internal properties of the phenomena you want to perceive”.

*Thus, interest in learning math is an expression of students' emotions, perceptions, and actions toward math learning content and activities that they feel are important and useful to themselves and their living.*

Requirements of the 2018 General Education Program Mathematics are: Through the Math program, students need to form and develop the virtues of perseverance, discipline, honesty, interest and confidence in learning Math; form and develop the abilities of autonomy and self-learning, communication and cooperation, problem solving and creativity.

### 3.2. Measures to create student interest in learning math grade 10

a. Measure 1: Effectively apply active teaching methods and techniques.

Teaching methods can be divided into three levels: macro level (teaching perspective), intermediate level (specific teaching methods) and micro level (teaching techniques). Some methods and techniques can create excitement in teaching such as: 4S technique, KWLH technique, timeline design, problem-solving teaching method...

In teaching Mathematics, teachers create excitement for students by flexibly applying teaching methods, techniques, and forms of teaching organization that suit their interests. That is the way to organize teaching in the form of games, organize group learning activities, organize project teaching, organize teaching outside the classroom space...

Example 1: Teaching the formula for calculating the median line of a triangle using the problem-solving teaching method.

Step 1: Identify the problem

The teacher creates situations that suggest problems based on generalizations.

Students have finished studying the Cosin theorem in triangles. The teacher asks students to solve the following problem:

For  $\Delta ABC$  with  $a = 6, b = 7, c = 10$ . Calculate  $\cos A, \cos B, \cos C$ ?

Students solve problems.

Generalize the problems: For  $\Delta ABC$  with  $AB = c, AC = b, BC = a$ . Calculate  $\cos A, \cos B, \cos C$ ?

Step 2: Make a plan to solve the problems:

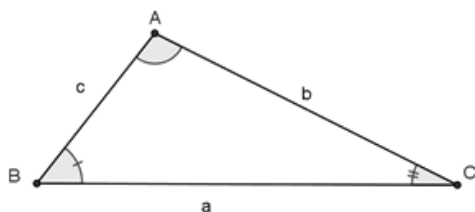
Group 1, 4: Find  $\cos A$ .

Group 2, 5: Find  $\cos B$ .

Group 3, 6: find  $\cos C$ .

Which formula to choose for the problem is a regular triangle?

Step 3: Implement the plan.



Cho tam giác ABC có  $AB = c, AC = b, BC = a$ . Tính  $\cos A = ?$   
 $\cos B = ?$   
 $\cos C = ?$

Apply the Cosin theorem:

$$a^2 = b^2 + c^2 - 2bc \cos A$$

$$\Rightarrow \cos A = \frac{b^2 + c^2 - a^2}{2bc}$$

Similar

$$\cos B = \frac{a^2 + c^2 - b^2}{2ac}; \quad \cos C = \frac{a^2 + b^2 - c^2}{2ab}$$

Step 4: Check and evaluate.

Students can find the formula for calculating angles when they know the lengths of the three sides of the triangle.

Example 2: Teaching the concept of two vectors in the same direction with the table-spreading technique.

Activity objective: Students understand the conditions for two vectors to have the same direction.

Organize activities:

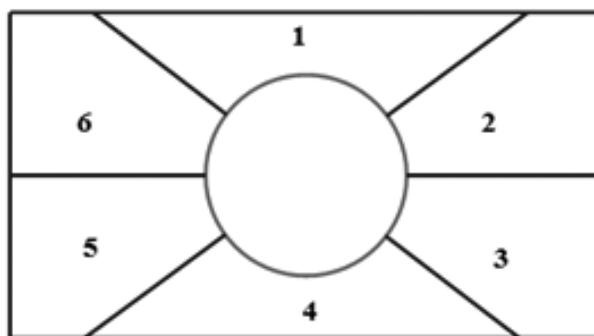


Figure 1. Classroom grouping diagram

- The teacher divides into groups, each group has 6 students and A0 paper size:

- Each member has a box and writes his or her name in that box. Also answer your question in the box.

- The teacher asks the question: Divide the following pairs of vectors into groups where each group has the same characteristics?

H1	H2	H3	H4
H5	H6	H7	

- Students work individually, and then the group will gather consensus opinions in the middle box and present them to the class.

- The purpose of the activity is to have students divide into groups of parallel vectors, overlapping vectors, and intersecting vectors.

- Students form knowledge: "Two vectors are said to have the same direction if the lines passing through their starting and ending points are parallel or coincident".

*b. Measure 2: Diversify question types and exercise formats*

- *Questions reordered:*

Students must rearrange the order of the lines to create a reasonable text. This form is used by teachers in cases where students are weak and cannot present a complete essay problem for the type of problem that has an algorithm.

*Example 3:* For  $A(2;-3)$ ,  $B(-7;1)$ ,  $C(4;5)$ . Find point D so that ABCD is a parallelogram. Write the numbers 1, 2, 3, 4, 5 in the mark or square [ ] on each appropriate line below to get the correct solution to the problem.

*Solve:*

[ ] ABCD ABCD is a parallelogram  $AD = BC$

[ ]  $D(x_D; y_D)$

[ ] So  $D(13;1)$

[ ]  $AD = (x_D - 2; y_D + 3)$ ;  $BC = (11;4)$

[ ]  $\Leftrightarrow \begin{cases} x_D - 2 = 11 \\ y_D + 3 = 14 \end{cases}$

$\Leftrightarrow \begin{cases} x_D = 13 \\ y_D = 1 \end{cases}$

- *Fill-in question format:*

Questions and exercises of this type contain blanks for students to fill in appropriate phrases in the blanks.

Cases where teachers use fill-in questions:

- Help weak students become familiar with a form of essay math at a low level of awareness, understanding, and application, or a form of math with algorithms.

- To emphasize important meaningful words in a sentence.

- Use in review classes to save time and review a lot of knowledge.

*Example 4:* Teaching and practicing quantitative relations in triangles.

Complete the formulas:

Cosin theorem	$a^2 = \dots\dots\dots$
Consequence	$\cos A = \dots\dots\dots$
Sin theorem	$\frac{a}{\dots} = \frac{\dots}{\sin B} = \frac{\dots}{\dots} = \dots$
Median line formula	$m_b^2 = \dots\dots\dots$
Triangle area	$S = \frac{1}{2} \dots\dots h_a$
	$S = \frac{1}{2} ab \dots = \frac{1}{2} \dots \sin B = \frac{1}{2} \dots$
	$S = p \dots\dots\dots$
	$S = \frac{ab}{\dots\dots\dots}$
	$S = \sqrt{p(p - \dots)(p - \dots)(p - \dots)}$
Half perimeter	$p = \dots\dots\dots$

*Measure 3: Exploit the ability to evoke motivation from real-life situations, organize games to stimulate students' interest in learning.*

*\* Implementation process:*

Step 1: Learn about mathematical content and real-life situations.

Step 2: Learn the math skills that develop in situations.

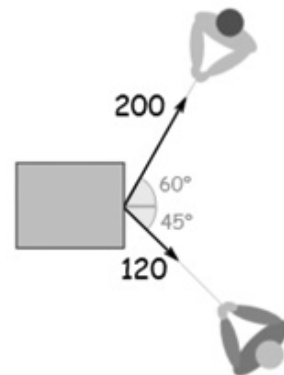
Step 3: Choose a situation.

Step 4: Provide a motivating situation

*Example 5:* Teaching the sum and difference of two vectors.

Opening situation:

Two athletes pulling a box are subjected to two forces of magnitude 120N and 200N (as shown). In which direction will the container move? What force makes the container move?



**Figure 2. Two athletes pull a box together**

Students may answer correctly in the direction of movement of the container, however, they will not be able to explain on what basis of knowledge does the container move like that? And to answer the above question, we will go to the lesson "SUM AND DIFFERENCE OF TWO VECTORS".

#### 4. Results after the experiment

Conducting experiments on the lesson Quantitative relations in triangles in the 2022-2023 school year in class 10A6 (43 students) at Can Dang High School, Chau Thanh district, An Giang. Then distribute the survey form, the results are as follows:

**Table 1. Survey results after the experiment**

Question	Answer	Quantity	%
How much do you like learning Math?	Really like	8	18.6
	Like	22	51.2
	No idea	8	18.6
	Dislike	5	11.6
Your own mood during a Math class?	Interested	21	48.8
	Bored	0	0
	Stressed	8	18.6
	Comfortable	14	32.6
Mathematical knowledge helps a lot in everyday life, do you agree with that point of view?	Totally agree	5	11.6
	Agree	31	72.1
	No idea	5	11.6
	Disagree	2	4.7
	Strongly disagree	0	0

Post-experiment statistics shown in Table 1 show that 30/43 students (69.8%) liked and enjoyed learning Mathematics. 35/43 students (81.4%) are interested, excited and comfortable when learning Math; There are 36/43 students (83.7%) agree and completely agree that Math knowledge is useful for life. This shows that creating interest in teaching Mathematics has a positive impact on students, helping students to be more interested and active in learning.

Evaluation of the experimental lesson:

- Students are active (group activities, homework on the board, presentations).
- The class atmosphere is vibrant and exciting, all students are active.
- Students have the opportunity to find solutions from the teacher's suggestions.

- Students are more diligent in doing their homework.

- Students love learning Math more than voluntarily doing homework.

#### 5. Conclusion

Creating interest in learning in teaching plays an important role in improving the effectiveness of the Math teaching process. Experiments show that creating excitement for learning helps make lessons more exciting, all students participate in the lesson, and students learn better and are more self-aware. Currently, there are many measures to create interest in learning for students. Therefore, for each content, teachers need to choose appropriate measures to create excitement so that teaching results are highly effective.

#### References

- Ministry of Education and Training. (2018). *General Education Program in Mathematics*. Hanoi.
- Ha, H. K. (Editor-in-chief), Cung, T. A., Tran, V. T., Dang H. T. (Co-editor) et al. (2022). *Math 10*. Hanoi: Vietnam Education Publishing House.
- Le, N. L. (2000). *Try to find effective teaching methods*. Ho Chi Minh City: Education Publishing House.
- Le, P. N., & Tran, N. L. (2015). Some solutions creating student's interest in order to improve teaching effectiveness at primary education. *Scientific Journal of Tan Trao University*, 1, 46-56.
- Nguyen, B. K. (2015). *Math teaching methods*. Hanoi: Education Publishing House.
- Nguyen, D. L. (2008). *Research on interest in learning Physics of high school students in Thanh Hoa province* (Master's thesis in Education). Hue University.
- Nguyen, T. N. (2014). Solutions for raising students' interest in history in high schools. *HCMUE Journal of science*, 65, 59-67. DOI: [https://doi.org/10.54607/hcmue.js.0.65.849.840\(2014\)](https://doi.org/10.54607/hcmue.js.0.65.849.840(2014)).
- Pham, N. T. (2011). Suggesting some motivational measures in teaching and learning chemistry at secondary high schools. *HCMUE Journal of science*, 27, 109-114. DOI: [https://doi.org/10.54607/hcmue.js.0.27.1696.1685\(2011\)](https://doi.org/10.54607/hcmue.js.0.27.1696.1685(2011)).
- Thai, D. T. (2008). *Traditional and innovative teaching methods* (1<sup>st</sup> Edition). Hanoi: Education Publishing House.