# BUILDING A PROCESS OF PRACTISING THE SKILL TO TEACH MATHEMATICAL MODELLING FOR STUDENTS OF PRIMARY EDUCATION

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**Abstract:** Mathematical modelling is one of the five core components of primary school students' mathematical competence identified in the Vietnamese General Education Curriculum in Mathematics. This requires that in training at the university level, students of Primary Education need to be practised the skill to teach mathematical modelling for primary school students. It is necessary to find a process to practice that skill. In this paper, we first learn about modelling and rationale for teaching mathematical modelling in primary schools, search and analyze types of mathematics exercises in primary mathematics curriculum and textbooks that can be exploited to organize teaching mathematical modeling for primary school students. We thereby propose a 3-step process of practising the skill to teach mathematical modelling for students of Primary Education, including: Organize for students to analyze primary mathematics curriculum, look for opportunities to develop mathematical modelling competencies for primary students; Equip the mathematical modeling process in teaching mathematics in primary schools for students; Organize for students to design mathematical modeling activities according to the process stages in step 2. With such a process, students will understand the mathematical modelling process, design mathematical modelling activities and install them into the process of teaching mathematics in primary schools.

**Keywords**: Mathematical modelling; primary students; primary mathematics curriculum; teach mathematical modelling; students of Primary Education.

## 1. Introduction

According to the Resolution No. 29-NQ/TW of Vietnamese Communist Party on radical and comprehensive innovation of education and training to meet the requirements of industrialization and modernization in the context of socialist-oriented market economy and international integration., the goal of innovation is "... contributing to transforming the education of transmitting knowledge to a comprehensive development education in terms of both the quality and the ability of learners. Practice and connection with real life have been enhancing". Therefore, each subject in the school has a certain role in shaping and developing the qualities, common abilities and specific abilities, in which mathematics contributes and shapes for students mathematical competencies including the following core components: thinking and mathematical reasoning, mathematical modelling, mathematical problem solving, mathematical communication, using mathematical tools and facilities. Among these abilities, mathematical modelling is the ability mentioned by many countries around the

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world two decades ago such as the US, Germany, France, England, China, Russia and Singapore... such as F. Bahmaei (2011), L. English (2007), H. Gould, Ch. Diane, R. Murray, A. Sanfratello (2012), B. Kaur, J. Dindyal (2010), F. H. Kheong, Ch. Ramakrishnan, M. Choo (2007), P. Lancaster (2010), R. Lesh, P. Galbraith, Ch. Haines, A. Hurford (2010), and in Vietnam there have had some research works by the authors Phan Anh (2012), Nguyen Danh Nam (2015), Nguyen Thi Nga (2011), Tran Vui (2014)... Since then, it has been recognized that mathematical modelling is an important ability of school students in general and primary school students in particular, it helps students understand the meaning of learning mathematics, explore situations arising from practice with mathematical tools and languages such as drawings, tables, diagrams, formulas, etc., thereby the ability to model in teaching mathematics helps students identify the meaning, role and application in real life, contributing to promoting social development. Therefore, it is necessary for students of Primary Education to be practised the skill to teach mathematical modelling in primary schools. As a consequence, this also helps them enhance their mathematical modelling ability.

## 2. Research content

### *2.1. Mathematical modelling*

According to Hoang Phe (2011), modelling is to create models to facilitate the study of a certain object. The term *mathematisation* is the use of mathematical language to convert life problems into mathematical representation. That is, building a mathematical model to find the answer to the situation, this process is called mathematical modelling. The mathematical model at first is the product of the activity then becomes a thinking tool, the modelling process requires skills and manipulations of mathematical thinking such as analysis, synthesis, comparison, generalization, abstraction.

We can also understand the mathematical model built by translating problems from the real life through means of written language to symbolic language, symbols; there is a simple way to understand the model is to remove the non-essential nature of the problem and be presented in the form of mathematical language. The construction of the relations of mathematical objects in accordance with the context or the real life situation is considered to build the mathematical model. The obtained mathematical results only have considerably realistic significance if the model reflects the specific situation properly.

Mathematical modelling is the ability to transform a real life problem into a mathematical problem by establishing and solving mathematical models, expressing and evaluating solutions in real life context (Nguyen Thi Nga, 2011).

### *2.2. Current primary mathematics curriculum*

It can be seen that teaching modelling has not been mentioned much in the curriculum and textbooks in Vietnam. Textbooks only include exercises that apply knowledge to solve some real life problems. In the exercises, the mathematical models provided in the hypothesis and the real life problems modeled are just an excuse to work mathematically in a well-defined model (P. Lancaster, 2010). We also find that in

traditional teaching and learning in mathematics, students often practice thinking on numbers, formulas, equations... in order to accomplish mathematical tasks but cannot see the nature of knowledge in relation to real life objects. That is, the subject's mathematical thinking in the cognitive process is not a result that reflects one or more aspects of the observed object in real life. Therefore, the ability to model mathematics helps teachers make mathematics teaching lively by applying mathematical thinking manipulations to solve problems in a real life context that contains observable objects from which to explain phenomenal things or solve a problem in real life. Furthermore, connecting easily with different issues and situations helps prepare students to use mathematics to solve problems in other subjects.

It is possible to point out some other problems in the current textbooks that have not yet formed the mathematical modelling competency to meet the renewal of the new General Education Curriculum such as: *Exercise 3* (Mathematics 1, page 130), *Exercise 1* (Mathematics 2, page 104), *Exercise 3* (Mathematics 5, Page 99)...: problem solving corresponds only to the second stage of the mathematical modeling process; *Exercise 1* (Mathematics 2, page 25), *Exercise 3* (Mathematics 5, page 118), *Exercise 2* (Mathematics 4, page 29), *Exercise 3* (Mathematics 4, page 35), *Exercise 2* (Mathematics 4, page 37)... only correspond to second and third stages; *Exercise 4* (Mathematics 5, page 47), *Exercise 3* (Mathematics 5, page 100), *Exercise 2* (Mathematics 5, page 106)...

### *2.3. Propose a process of practising the skill to teach mathematical modelling for students of Primary Education*

Currently many students can solve problems with complex techniques but are very confused when facing a real problem that needs to apply mathematics to solve. So the problem is that teaching mathematics should care about the examples that come from real life to help students see the relationship between mathematics and life as well as gaining the ability to solve real life problems with mathematical tools. At the primary level, the mathematical modelling ability is demonstrated by the selection of calculations, arithmetic formulas, diagrams, tables, drawings to represent, express (speak or write) the situation that appears in simple real life problems (Ministry of Education and Training, 2018). Therefore, in this paper, we propose a process of practising the skill to teach mathematical modelling at the primary level to meet the new General Education Curriculum for students of Primary Education including 3 steps as follows:

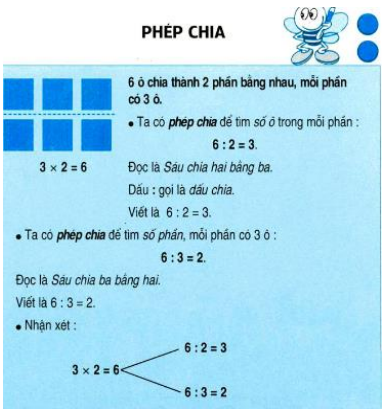
Step 1: Organize for students to analyze primary mathematics curriculum, look for opportunities to develop mathematical modelling competencies for primary students.

In order to look for opportunities to develop mathematical modelling competencies for primary students, students of Primary Education must analyze the mathematics curriculum at the primary level showing the relationship between real life and problems in textbooks under the lenses of mathematics. After analyzing the mathematics curriculum at primary level, students found that there are many problems with real life factors in elementary schools, but these problems only perform some steps but not enough steps to shape modelling ability for elementary students need to be expanded and developed by teachers. For example, the exercise of filling the appropriate number in the blank: $3 + \square = 5$ (Mathematics 1, page 49), this exercise has used the

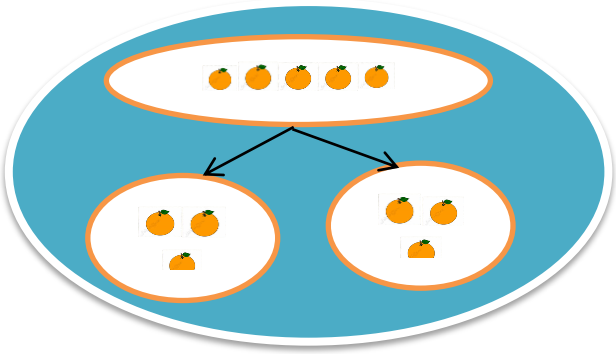
mathematical modelling, however with that exercise we can derive from the real life situation: "Lan folded 3 flowers. How many flowers does Lan have to fold more to get 5 flowers?".

Or when teaching the division lesson (Mathematics 2, page 107), the textbook only introduces: "6 cells are divided into 2 equal parts, each with 3 cells".

From the current curriculum we can construct the concept of division (Mathematics 2, page 107) from situations in real life to shape the ability of mathematical modelling for students, that is "equally divided" and "divided into equal parts" in real life. Students can understand and use the word "divided" according to the language of real life, for example, "Mother has 6 guava fruits, mother divided equally for 2 sisters. How many guava fruits can each person have?" Or "Mother has 6 oranges, she divides them into each plate of 3 fruits, can she get some oranges?".




Since then, teachers offer models associated with real life:



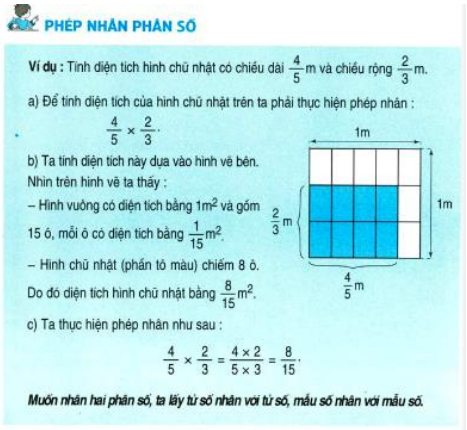
Based on the model to introduce the division 6 : 2 = 3, the teacher helps the students better understand the meaning of the division by having the students repeat the situation: "There are 6 oranges divided equally for two friends, each of the friends get 3 oranges." and reread the 6 : 2 = 3 calculation. After introducing the division into equal parts, then instruct students to learn about the relationship between multiplication and division. At this time, students can easily perform exercises from a multiplication to write two corresponding division calculations. Teachers take some objects, for example: "There are 6 oranges divided by children with 3 oranges per each. How many children have been divided oranges?". The students have understood the meaning of division (equally divided into equal parts) and have feedback on the results of the division.

Or it is possible to point out *Addition within 3* (Mathematics 1, page 44) that teachers can also use mathematical modelling for students by having students start from simple real life situations, for example, "Lan has 2 butterflies, Hong has 1 butterfly. How many butterflies do they have?".

To solve this problem, students perform a "pooling" of two groups of objects and count all the objects in the group. For example, combine 2 butterflies with 1 butterfly, get 3 butterflies. The teacher generalized into the addition 2 + 1 = 3. Then, to reinforce, let the students observe on the drawing: each group is separated by a dash, then encircle the whole group with a closed curve. After students understand the original concept of mathematics, it is necessary to help students understand the meaning of the calculations and know when to use the calculations. Teachers can describe situations related to the calculations that have the content close to real life of primary school students, then help them solve the situations. Through this process, they understand the meaning and effect of learning calculations. Students know to use mathematical models (numbers, calculations) in the simple real life problems.

In addition, we found that some lessons in the mathematics curriculum in primary schools have not yet formed the modelling ability to meet the new General Education Curriculum such as the lesson *Multiplication of fractions by fractions* (Mathematics 4, pages 132) gives the problem: "Calculate the rectangular area with a length of $\frac{4}{5}$ *m* and a width of $\frac{2}{3}$ *m*".

The textbook gave a pure mathematical situation rather than a real life situation associated with forming the multiplication of fractions by fractions. In the textbook, the model is visualized and based on the visual model to find the result of multiplication. Through observing the model of area, students find the area of a rectangle as $\frac{8}{15}$ $m^2$ and thereby there is the result of the calculation as $\frac{4}{5} \times \frac{2}{3} = \frac{8}{15}$ and the statement of rule. Solving this problem according to the instructions allows the formation of the rule of two-fraction multiplication.



PHÉP NHÂN PHÂN SỐ

**Ví dụ :** Tính diện tích hình chữ nhật có chiều dài $\frac{4}{5}$ m và chiều rộng $\frac{2}{3}$ m.

a) Để tính diện tích của hình chữ nhật trên ta phải thực hiện phép nhân : $\frac{4}{5} \times \frac{2}{3}$.

b) Ta tính diện tích này dựa vào hình vẽ bên.

Nhìn trên hình vẽ ta thấy :

– Hình vuông có diện tích bằng $1m^2$ và gồm 15 ô, mỗi ô có diện tích bằng $\frac{1}{15}m^2$.

– Hình chữ nhật (phần tô màu) chiếm 8 ô.

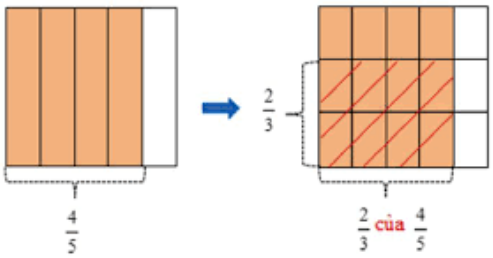
Do đó diện tích hình chữ nhật bằng $\frac{8}{15}m^2$.

1m, 1m, $\frac{2}{3}$m, $\frac{4}{5}$m

c) Ta thực hiện phép nhân như sau : $\frac{4}{5} \times \frac{2}{3} = \frac{4 \times 2}{5 \times 3} = \frac{8}{15}$.

*Muốn nhân hai phân số, ta lấy tử số nhân với tử số, mẫu số nhân với mẫu số.*

We propose the idea for the situation: "Nam draws a rectangle and colors $\frac{4}{5}$ of it, then he draws stripes over $\frac{2}{3}$ of the colored parts. How many parts of the figure does Nam stripe?". Thereby forming the problem: Find $\frac{2}{3} \times \frac{4}{5}$ To find the result of multiplying the two fractions, students draw the rectangle of Nam, color $\frac{4}{5}$ of the figure, draw stripes over $\frac{2}{3}$ of the colored parts. The teacher asks students: "How many equal parts in the rectangle?", "In the equal parts, how many parts have been drawn stripes over?", "Write a fraction that corresponds to the section that you have drawn stripes over. The result that the teacher expects is:




Through this visual model, students understand the meaning of multiplying two fractions: $\frac{2}{3} \times \frac{4}{5}$ denotes $\frac{2}{3}$ of $\frac{4}{5}$ from which they find the result $\frac{8}{15}$ and state a rule through thinking processes to detect problems. Thereby forming the mathematical modelling ability and some other abilities for students.

According to Do Duc Thai (2019), the current curriculum is still basically a content-based curriculum, focusing on answering the question: "What do we want students to know?". Therefore, teaching mainly runs on the amount of knowledge, paying little attention to how to teach according to the needs and interests of learners, partly disregarding the practice of applying knowledge into real life. In the new competency-based curriculum, focusing on answering the question: "What and how will students do?". For example, when teaching the lesson *The area of a rectangle* (Mathematics 3, page 152), teachers give students the exercise requirements, as follows:

The red flag with a yellow star at the top of Lung Cu flag pole, Ha Giang, where is northernmost point of Vietnam, has an area of $54m^2$, representing 54 ethnic groups living together in Vietnam. In your opinion, how many meters are the length and the width of the rectangle flag?

To answer the above question from a real life situation of finding the length and the width of the flag, students discuss bringing about the mathematical model: find the length and width of the rectangle when knowing its area.

When solving on mathematical models, students will find different widths and lengths: 6 and 9; 1 and 54; 2 and 27; 3 and 18. Students can draw a simulation of different rectangular flags corresponding to the size found. Students will agree to choose a flag with a length of 9*m* and a width of 6*m*. Thus, through understanding and analyzing the problem without a solution, students find ways to bring the problem of mathematical model know how to solve, through which students have an opportunity to develop the mathematical modelling competency.

Step 2: Equip the mathematical modeling process in teaching mathematics in primary schools for students.

Based on the mathematical modelling process described by Saiser and Bloom (2011), there are 4 stages (R. Lesh, P. Galbraith, Ch. Haines, A. Hurford, 2010):

*Stage 1*: Observe the phenomenon, outline the situation and identify important factors (variables, parameters) that affect the problem;

*Stage* 2: Making hypotheses about the relationship between factors in the perspective of mathematics. From there, sketch the corresponding mathematical model;

*Stage 3*: Apply appropriate mathematical methods and tools to problem modelling and model analysis;

*Stage 4*: Announcing the results, comparing models with real life and conclusions. From this process we can see that modelling is a closed process, arising from real life situations and its results have been used to explain and improve real life problems.

From the mechanism of adjusting the process of modelling, we propose the following steps to organize mathematical modelling activities for primary students:

*Stage 1*. (*Building real life models from real life situations*): Students observe real life phenomena, identify problems in the situation; remove secondary relationships and focus on key facts from which to outline the model.

*Stage 2*. (*Building mathematical models from real life models*): Students determine mathematics corresponding to problems in situations; demonstrate formality problems close to mathematical concepts and hypothesizing; change the expressive language of the problem of mathematical notation; determine the rule, the relationship between what is given and what to look for.

*Stage 3*. (Solving problems according to the selected model): Students analyze mathematical models and use appropriate mathematical and thinking techniques to find the results of the problem.

*Stage 4*. (Explain mathematical results according to real life situations): Students compare mathematical results with real life situations, compare the appropriateness and limitations of mathematical results on real life situations, consider the relevance to the solution, criticize the model and its limitations, thereby understanding the solution to the problem, the meaning of the mathematical model in the real life situation.

Step 3: Organize for students to design mathematical modeling activities according to the process stages in step 2.

Some examples are designed and organized by students according to a process to train primary school students' modelling competencies:

**Example 1**. We can propose a situation for students to draw and calculate the length of the broken line (Mathematics 3, page 104) as follows: Classes 3, 4, 5 of Hung Binh Primary School organized camping, diagram of the camp as shown. The teacher in charge of the team wanted to go around all the camps so she would not go to either camp twice. Please help her out.

Using the process of mathematical modelling, we proceed as follows:

*Stage 1*. (*Building a real life model*): Students need to identify problems in real life situations "Find a way for her". Through observing, studying terminology, omitting secondary data (Hung Binh Primary School, camping, classes, ...) only retain the main facts (Camping diagram and conditions must not be repeated twice); know how to identify real life problems.

*Stage 2*. (*Building a mathematical model*): Students need to identify mathematics corresponding to problems in real life situations: Find ways to draw line segments so that the segments are not repeated their points (camps). In these activities, students use thinking manipulations to analyze, contrast, and create to think of models of similar problems solved. Students know the general shape of the path and use geometric operations to draw line segments.

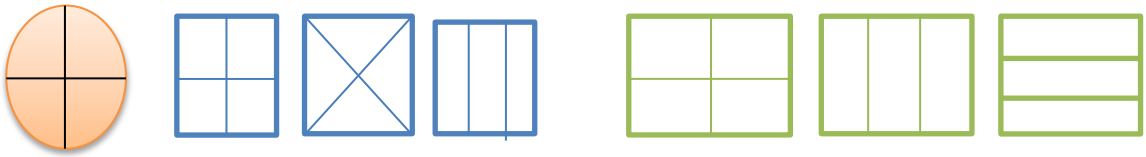
*Stage 3*. (*Solving mathematical problems according to the selected mathematical model*): Students present the path is exactly the broken line, each straight line goes through 4 points.

*Stage 4*. (*Explain mathematical results according to real life situations*): Through the mathematical model that students have found a way for the teacher in charge of the team, they understand the significance of the broken line applied into real life. Students understand the relevance and limitations of mathematical concepts in real life situations, examine the results, consider the appropriateness of the plan with the condition of the problem, critique the model and the limitations of it.

**Example 2**. Teaching concepts of *fractions* in the lesson *Fractions and natural number division* (Mathematics 4, page 108).

Through the real life situation: During the International Women's Day, the school held a pastry party, the whole 4B class participated. There is a situation: there are 3 cakes divided equally for 4 children. So how will they divide and how many cakes do they each have?

Teachers divide the class into groups of 4, give each group 01 circle (representing a pie with a circle shape), 01 colored paper, a plastic knife. Ask students from the colored paper to cut two pictures for the remaining two cakes; then fold, cut, divide 03 pictures for 04 friends; groups with the correct plan will receive 3 real cakes and share them among the group members. Predict students to experience dividing each picture of their group in one of the following ways:



By mathematical modelling process we proceed as follows:

*Stage 1*. (*Building a real life model*)

Students need to take action to identify problems in real life situations: "Find a way to divide 3 figures equally to 4 friends". Behaviors are expressed through observation, study of terms, omission of secondary data (Party, International Women's Day, class, group, friends, flavor of cakes, colors, materials, decorative motifs, ...) retain the main data (Paper model, 3 cakes, equally divided, 4 friends); know how to identify real life problems.

*Stage 2*. (*Building a mathematical model*)

Students need to carry out the task of determining mathematics corresponding to the problem in real life situations: Identify the shape of the remaining two cakes, draw figures on paper, cut the drawn figure, divide each into 4 equal parts. In these activities, students used thinking strategies to compare, analyze and imagine to relate to patterns of similar problems solved. Students know generalized shapes of cakes, use geometric activities: cut, fold, draw to create the remaining 2 images and divide the parts on 3 figures.

The activity of dividing 3 models into 4 parts can be done according to the actual "division" on each figure. Students make the problem into a problem: Cut 2 figures with the corresponding paper shape of 2 remaining cakes, find a way to divide the 3 figures equally into 4 parts.

*Stage 3.* (*Solving problems according to the selected mathematical model*)

Students need to perform the activity of cutting 2 paper shapes corresponding to the shapes of the remaining 2 cakes. After that, students need to implement the activity of dividing equally 3 figures to 4 friends (doubling, doubling again). This activity helps students learn how to convert natural language into mathematical language (each piece corresponds to the fraction $\frac{1}{4}$, three pieces of paper correspond to the fraction $\frac{3}{4}$). Students know how to apply equal knowledge of the unit, know how to use folding methods to express the meaning of division, know how to connect mathematical ideas with real life factors; estimate the magnitude of each figure and know how to use straight ruler tools...

*Stage 4.* (*Explain the mathematical result according to the real life situation*)

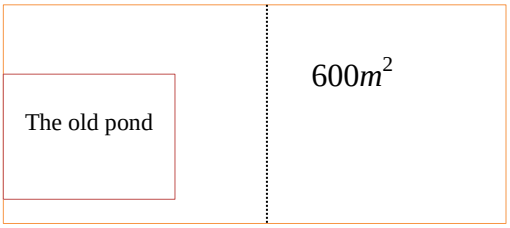
Students perform activities of receiving 3 real cakes and divide them equally for 4 friends to eat. Because they cannot fold the real cake, students can estimate with their eyes, using plastic knives to cut. That information reflects the mathematical model with the real thing when students knew the results from the model ($\frac{3}{4}$ of the pie), students understand the relevance and limitations of mathematical concepts on real life situations, reflecting mathematical arguments as well as interpreting and examining results, considering the appropriateness of the plan, criticizing the model and its limitations.

**Example 3**. For the problem: Uncle Phuong wants to expand a square pond to get a rectangular pond twice the width. After expanding the area of the pond increases by $600m^2$ and the new pond area is 4 times the old pond. How many stakes are used to make fences around the new pond? Knowing that one stake was 1 meter away from the another stake and at one corner of the pond, people let the way up and down 2$m$ wide.

*Stage 1.* (*Develop a real life model from the real life situation*)

Having students identify problems in the situation; remove secondary relationships (uncle Phuong, the pond) and focus on the main facts of the problem (after expanding the rectangle twice as long as the width; pond area increases $600m^2$ and the new pond area is 4 times the old pond).

Using intuition to relate to "patterns" to sketch real life models:




*Stage 2.* (*Building a mathematical model from the real life model*)

Students identify mathematics corresponding to the problems in the situation and reasoning, relationships and invariants, identify aspects that are similar to known issues from which to build mathematics models (to find numbers stakes to fence around the new pond, students have to find the perimeter of the new pond, but the problem indicates that the area of the pond is 4 times bigger than the old pond so the mathematical model used is a line segment diagram to find the area of the new pond).

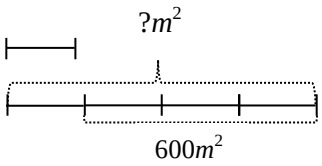
*Stage 3.* (*Solving the problem according to the selected mathematical model*)

Use appropriate mathematical tools (Use line segment diagram)

We have the following diagram:

Area of old ponds:

New pond area:



Through the line segment diagram, we will turn the problem *from strange to familiar* and propose a solution:

New pond area is: 600: (4-1) x 4 = 800 ($m^2$).

We divide the new pond into two squares of equal size as shown. Area of one square is: 800: 2 = 400 ($m^2$).

The edge of the square or the width of the new pond is: 20 *m*, because 20 x 20 = 400.

The length of the new pond is: 20 x 2 = 40 (*m*).

The perimeter of the new pond is: (40 + 20) x 2 = 120 (*m*).

The number of stakes needed to fence around the new pond is: (120 - 2) +1 = 119.

*Stage 4.* (*Explain the mathematics result according to the real life situations*)

Mathematical results with real life situations, determine the suitability and limitations of mathematical results on real life situations.

### 3. Conclusion

It can be observed that mathematical modelling is an environment for students to find and explore mathematical knowledge as well as interdisciplinary knowledge. Therefore, forming and developing the mathematical modelling competency in teaching mathematics in primary schools will help students understand the meaning of learning mathematics, and apply mathematics into real life. Mathematical modelling has helped mathematics teaching become vivid thanks to using manipulations of mathematical thinking to solve problems in a real life context containing observed objects. Since then, it is possible to explain the phenomena or solve problems in real life. With that approach in teaching topics with specific contents in primary mathematics curriculum will gradually forming competencies for students. Therefore, equipping students of Primary Education with the process of forming and developing mathematical competencies for students, in particular, the mathematical modelling competency is necessary, and that is a preparation for them to implement the General Education Curriculum 2018 in the near future.

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# TÓM TẮT

## XÂY DỰNG QUY TRÌNH RÈN LUYỆN KĨ NĂNG DẠY HỌC MÔ HÌNH HÓA TOÁN HỌC CHO SINH VIÊN NGÀNH GIÁO DỤC TIỂU HỌC

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Mô hình hoá toán học là một trong 5 thành tố cốt lõi của năng lực toán học của học sinh tiểu học được xác định trong Chương trình môn Toán 2018 của Việt Nam. Điều này đòi hỏi trong đào tạo ở bậc đại học, sinh viên ngành Giáo dục Tiểu học cần được rèn luyện kĩ năng dạy học mô hình hoá toán học cho học sinh tiểu học. Việc tìm kiếm một quy trình rèn luyện kĩ năng đó là cần thiết. Trong bài báo này, trước hết chúng tôi tìm hiểu về mô hình hóa toán học và cơ sở lí luận của dạy học mô hình hóa toán học ở tiểu học, tìm kiếm và phân tích các dạng bài tập toán trong chương trình và sách giáo khoa toán tiểu học có thể khai thác để tổ chức dạy học mô hình hóa toán học cho học sinh tiểu học. Từ đó, chúng tôi đề xuất quy trình 3-bước để rèn luyện kĩ năng dạy học mô hình hóa toán học cho sinh viên ngành Giáo dục Tiểu học, đó là: Tổ chức cho sinh viên phân tích chương trình môn toán tiểu học tìm kiếm các cơ hội phát triển năng lực mô hình hoá toán học cho học sinh; trang bị cho sinh viên quy trình mô hình hoá toán học trong dạy học toán ở tiểu học; tổ chức cho sinh viên thiết kế các hoạt động mô hình hoá toán học theo các giai đoạn của quá trình ở bước 2. Với quy trình như vậy, sinh viên sẽ nắm được quy trình mô hình hoá toán học, thiết kế được các hoạt động mô hình hoá toán học và biết cài đặt vào quá trình dạy học toán ở tiểu học.

**Từ khóa:** Mô hình hóa toán học; học sinh tiểu học; chương trình toán tiểu học, dạy học mô hình hóa toán học; sinh viên ngành Giáo dục Tiểu học.