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CIDMath 6

HỘI THẢO QUỐC TẾ VỀ DIDACTIC TOÁN LẦN THỨ 6

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Teaching the concept of integral in interdisciplinary relationship with physics.....	27
Phiên 3 / Session 3	28
Phát triển kỹ năng toán học cơ bản làm nền tảng của nguồn nhân lực trẻ cho nền kinh tế tri thức thịnh vượng ở Việt Nam.....	28
Developing basic mathematical skills for the foundation of young human resource in a prosperous knowledge economy in Vietnam.....	28
Một phân tích tri thức luận về cấu trúc nhóm	28
Une analyse épistémologique de la structure du groupe	29
Loại toán học nào cho giáo dục chuyên nghiệp ? Sự cần thiết của một khảo sát khoa học luận để vượt qua dư luận	29
Quelles mathématiques pour l'enseignement professionnel ? Nécessité d'une enquête épistémologique pour dépasser l'opinion.....	29
Chủ đề 2 / Thème 2.....	31
Các nghiên cứu về giáo dục bậc tiểu học	31
Les recherches sur l'éducation au primaire	31
Phiên 1 / Session 1	31
TIỂU BAN 2A / GT2A	31
Vận dụng lý thuyết tình huống trong dạy học nội dung diện tích ở tiểu học	31
Applying theory of didactical situations in teaching area content for primary students	31
Năng lực nhận thức toán học của học sinh lớp 4 thành phố Huế: từ thực tiễn đến yêu cầu đổi mới	32
Mathematics Cognitive competence of grade 4 pupils in Hue city-Vietnam: from Reality to innovative Requirements	32
Một số bàn luận về dạy học môn toán và vấn đề kết nối toán học với thực tiễn trong dạy học.....	32
Some discussions on mathematics teaching and the connecting mathematics to the real world on mathematics teaching	33
TIỂU BAN 2B / GT2B.....	33
Didactic Toán và phương pháp giải toán có lời văn nhằm phát triển năng lực Toán học của học sinh Tiểu học	33
Didactic Maths and methods of solving word mathematical problems to develop primary students' mathematical competence	33
Kỹ năng đặt câu hỏi cho học sinh tiểu học	34
Questioning skills for elementary school students.	34
Phiên 2 / Session 2	34
TIỂU BAN 2A / GT2A	34
Phân tích và đề xuất điều chỉnh, bổ sung hệ thống bài tập toán ở tiểu học theo hướng chuyển hóa sự phạm.....	34
The analysis and proposed adjustments for the system of math problems in primary education in the direction of didactic transposition	34
Khái niệm thể tích trong dạy học toán ở tiểu học: một nghiên cứu về sự lựa chọn của thể chế và ảnh hưởng của nó	35
Volume notion in primary mathematic teaching : a study of institutional choices and theirs effects	35
Mô hình và sự xuất hiện của mô hình trong sách giáo khoa toán tiểu học ở Việt Nam	35
Model and emergence of model in math textbooks primary school in Vietnam	35
Ngôn ngữ tự nhiên trong sách giáo khoa Toán tiểu học Việt Nam	36
Natural language in primary Mathematics textbooks in Vietnam	36
TIỂU BAN 2B / GT2B.....	36

Hướng dẫn đánh giá học sinh Tiểu học môn toán, TT số 22/2016/TT-BGDĐT.

Kỹ năng đặt câu hỏi cho học sinh tiểu học

Pham Sy Nam, Pham Thi Thanh Tu, Sai Gon University

Kỹ năng đặt câu hỏi là một trong những kỹ năng rất quan trọng trong quá trình dạy học. Bởi, đây là điều kiện tiên quyết để giúp HS phát triển tư duy, nhận ra bản chất vấn đề và giải quyết được bài toán, thông qua đó, hình thành cho HS kỹ năng giải quyết được vấn đề. Sự thành công hay thất bại của một tiết dạy phụ thuộc vào hệ thống câu hỏi mà giáo viên sử dụng. Hệ thống câu hỏi hợp lý sẽ giúp học sinh trải nghiệm, tìm tòi, khám phá tri thức. Tuy nhiên thực tiễn cho thấy sinh viên tiểu học còn có hạn chế trong việc đặt câu hỏi. Bài viết phân tích một số khó khăn và hạn chế trong việc đặt câu hỏi của sinh viên tiểu học và đề xuất các kỹ năng cần thiết trong việc đặt câu hỏi.

Từ khóa: Kỹ năng, câu hỏi, giải quyết vấn đề

Questioning skills for elementary school students.

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Skill to ask questions is one of the important skills in the teaching process. Because, this is a prerequisite to help students develop thinking, recognize nature of the problem and solve the problem, through it, forming the skills to solve problems. The success or failure of a lesson depends on the system of questions that teachers use. System good questions will help students to experience, explore and discover knowledge. However, students have many difficulties and limitations to ask questions. The article points to difficulties experienced by students in asking questions and proposes some necessary skills to ask questions.

Keywords: problem solving, real-life problem, factors and skills

Phiên 2 / Session 2

Gồm hai tiểu ban 2A và 2B diễn ra song song / Deux sous groupe de travail GT2A et GT2B en parallèles.

TIỂU BAN 2A / GT2A

Phân tích và đề xuất điều chỉnh, bổ sung hệ thống bài tập toán ở tiểu học theo hướng chuyển hóa sư phạm

Vũ Quốc Chung, ĐH Sư phạm Hà Nội

Nguyễn Hữu Tuyên, Cao đẳng Sư phạm Bắc Ninh

Bài báo trình bày quan điểm và tiêu chí phân tích hệ thống bài tập toán ở tiểu học hiện nay. Từ đó tác giả đề xuất cách tiếp cận và gợi ý một số kỹ thuật điều chỉnh, bổ sung hệ thống bài tập phù hợp với quy trình chuyển hóa sư phạm.

The analysis and proposed adjustments for the system of math problems in primary education in the direction of didactic transposition

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Nguyen Huu Tuyen, College of Education Bac Ninh

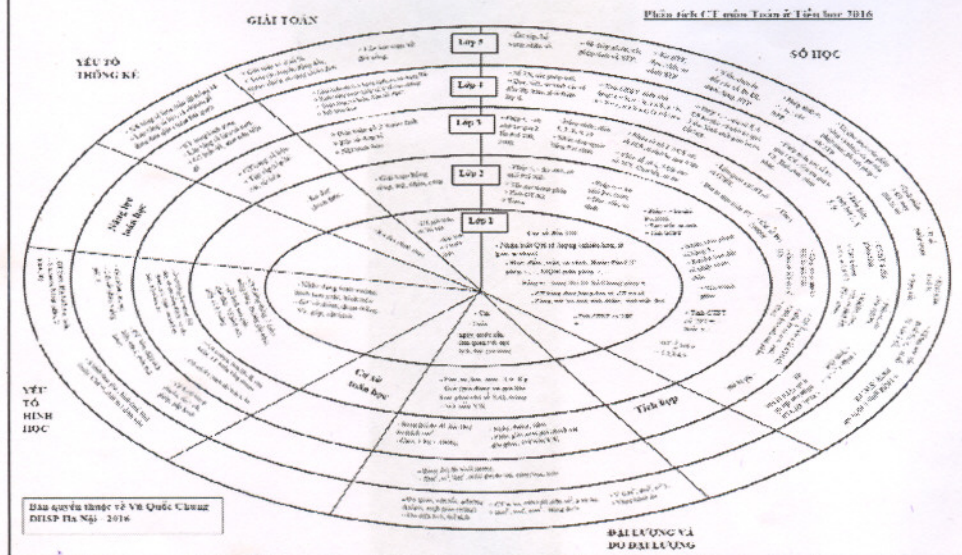
The article presents a perspective and analysis criteria for a system for math problems in current primary education. Following that basis, the author proposes an approach and a number of adjustments for the math problems in accordance with the process of didactic transposition.

**The analysis and proposed adjustments
for the system of math problems in
primary education in the direction of
didactic transposition**

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1. Comments on the Math problem system in primary school

Based on the diagram below, the comments on the structure and content of the Math curriculum in primary school are presented as follows:



The structure and content of the Math curriculum in primary school have the following limitations:

- The curriculum does not clarify the students' need in developing mathematical skills, which is the basis for curriculum development, especially core mathematical skills: calculation, logical thinking and mathematical problem solving..
- The specific content of strands is detached from one another, and not integrated at appropriate levels to create the synergy of skills for primary school students.
- There is a lack of practical content; therefore the math problem is not engaging and motivational for students. That also limits the orientation and "prospective preparation" of future development plans for students.
- In particular, the curriculum has not designed the mathematics experiential learning activities, **especially the practical experience of mathematics in the classroom** – an extremely effective mathematical model that is consistent with the cognitive characteristics of primary school students.

2. Recommendations

- The meaning and appearance of calculations should be reflected in a system of examples and problems with authentic content. This helps students relate math to their lives. In fact, many students face some difficulties in practicing mental calculation; for example, the technique of estimating quotient in division with multiple-digit dividend.
- Mathematics statistical elements which are closely connected to children's real life need to be added appropriately in the primary math curriculum. This content is not only relevant to the cognitive traits of students but also has the opportunity to assist students in developing the ability to apply mathematics in real life.
- The strand of mathematical problem solving can be designed in accordance with each knowledge strands or integrated into a number of strands, not necessarily structured into a particular standalone strand.

2. Recommendations

- It is possible to integrate teaching mathematics with some appropriate content of other subjects or integrate in the content of the math curriculum. This issue should be considered specifically over the course of the overall curriculum design and detailed curriculum for general education; for example, it is possible to develop curriculum into teaching topics to form mathematical skills for primary school students.
- According to Polya, G., combined with the experience of mathematics education in many countries and the practice of teaching for more than 50 years in mathematics gifted classes in Vietnam, the students must be independent and self-reliant in problem solving (teachers only address the problem, and provide hints, encourage when necessary). This is the best way to develop the mathematical skills of students in particular. The self-learning method is accomplished through experiential learning in the classroom, on a lesson-to-lesson basis. Evidently, by this way, every student has the opportunity to develop self-reliance and teamwork skills as well as the creativity.

3. Adjustments for the system of math problems

- The exercises will **encourage and support** students to self-review, consolidate, systematize, and **apply** the knowledge and skills of mathematics to develop a number of **general and distinct skills** that have the advantages of Mathematics (**calculation, logical thinking, and problem solving, etc**) in the process of education towards the holistic development of the student.
- The system of math problems includes: questions, exercises and **math experiential activities** that students will perform on the basis of the content of the knowledge, skills they have learned in a lesson (or lessons of the same **theme**) by 04 levels. The content of questions, exercises and activities is expressed in a concise, easily understandable, and relatable way to the student.
- The task of learning in the exercises is designed to show students the practical meaning of learning Math at school, making Math relatable to **real life** of students. Through the application of mathematics in the classroom and everyday life, the abilities and qualities of each student are developed in an **integrated** way within the subject matter of Mathematics as well as with other subjects into themes. (to be corresponding with textbook - theoretical part). In particular, students will become more eager in learning mathematics, as they can grasp the practicality and beauty of Mathematics.

3. Adjustments for the system of math problems

- **Parents** also have many specific conditions and opportunities (designed in the exercises) to engage in activities with students; as a result, each parent will be become closer to their children, better understand them and **provide timely support** as needed.
- **Students** may consider these as self-review exercises or self-assessments in mathematics skills. These include quizzes and exercises in four levels. **Teachers** can refer to them to develop classroom instructional materials. **Educational administrators** can refer to them for the management of professional activities of the school. In particular, **parents** can engage directly with students in real-life situations with the context of mathematics designed in the exercise. **Pedagogical students** can use materials for their own professional development training.

4. The structure of math problem system

-G. Polya: *The only way to learn mathematics is to do mathematics*

1. The concept of didactic transposition in the design of the mathematical problems system in primary school

- Transformation of cognition in mathematics teaching in primary school (Know, understand, use and apply in new situations)
- Adaptive Exercise System in Teaching Mathematics in Primary Schools:

2. Designing the math problems system in the direction of didactic transposition

- + MCQs exercises in 04 levels with focus on **developing the ability to calculate, especially mental calculation.**
- + **Math word problems** in 04 levels that aim to **develop logical reasoning ability**
- + **Experiential exercises** in mathematics to **develop problem-solving ability** (open-ended problems that help students *apply* the learned content into the *real life situations* through *experience*).

5. Examples

1. MCQs

Choose the right answer:

Exp 1. A series number is provided: 2289; 2269; 2249;;;
The 6th number in the series is:

- A. 2229 B. 2219 C. 2239 D. 2189

Exp 2. The number comes after the smallest four-digit number is:

- A. 1000 B. 998 C. 999 D. 1001

Exp 3. $1995 : x = 5$. The value of x is:

- A. 399 B. 305 C. 309 D. 349

Exp 4. To have a total of 200 000 đ we need:

- A. 1 note of 100 000 đ, 1 note of 50 000 đ, 2 notes of 20 000 đ
B. 3 notes of 50 000 đ, 2 notes of 20 000 đ, 1 note of 10 000 đ
C. 1 note of 100 000 đ, 2 notes of 10 000 đ, 2 notes of 20 000 đ
D. 2 notes of 50 000 đ, 3 notes of 10 000 đ, 2 notes of 20 000 đ

Exp 5: July 21st is Tuesday. August 5th of the same year is...

- A. Tuesday
- B. Thursday
- C. Friday
- D. Wednesday

Exp 6: People put glass panels into the window. Each window needs 9 panels. How many windows can be installed with 2017 glass panels with how many spared glass panels?

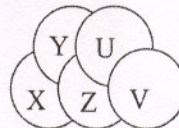
- A. 224 windows and 1 glass panel
- B. 225 windows and 3 glass panels
- C. 200 windows and 7 glass panels
- D. 221 windows and 8 glass panels

2. Math word problems

Exp 1: Ha's mother bought her a book priced at 25000 ₺ and a pen which is cheaper than the book 7000 ₺. Mom gave the salesclerk a note of 100000 ₺. How much money does the salesclerk have to pay back her mother?

Exp 2: The path from home to school is 1517m long. The path from the supermarket to the stadium is 2180m long. Calculate the distance from home to the stadium, provided that these two are connected by a 200m bridge from the supermarket to school.

Exp 3: The given diagram shows five differently coloured disks. The orange disk is above the green disk but below all the others. The purple disk is above the blue disk but below the red disk. What is the colour of the disk labeled Z?



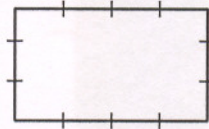
3. Experiential activities

Exp 1. Cut a rectangular cardboard piece of 12cm in length and 7cm in width and paste it into the space below.

A, Calculate the area of the rectangular.

B, How many smaller rectangles can be cut from the cardboard piece with the dimensions of 4cm in length and 3cm in width (*use ruler to draw the cut lines on the cardboard*)?

Exp 2. A rectangle of 4cm in length and 3cm in width as shown in the figure below.



A, Use ruler to make a grid with squares with 1 cm edge.

B, How many squares have 1cm sides in the picture you drew?

C, How many squares are there in the figure?

D, Color the square with 1cm sides in the lower right corner of the figure then indicate how many squares in the figure do not contain the colored square.

Exp 3: Use a ruler to measure of the length of five objects at home and enter the results in an ascending order into the table below:

No	Name of object	Length
1		
2		
3		
4		
5		