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Various Ways of Being Interested in The Exact Sciences When Organizing the Educational Process in Hospice Education

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Abstract: This article discusses effective methods of fostering students' interest in exact sciences in the context of hospice education and the development of students' logical thinking abilities. It also emphasizes the importance of psychologically preparing students for lessons in hospice schools and utilizing non-traditional teaching methods to spark interest in the sciences, thereby nurturing a desire for life and learning, broadening their worldview, and encouraging independent thinking.

Keywords: Hospice education, logical thinking, modern education.

Introduction: Hospice education is a branch of pedagogy concerned with organizing education for children who are unable to attend regular schools due to long-term treatment or chronic illness. Life often presents individuals with various trials, and illnesses can test not only the children but also their young, inexperienced parents who may need guidance. In such cases, skilled educators and psychologists are essential to support children and ensure they don't fall behind their peers in learning.

The necessity of organizing engaging and effective lessons becomes evident. Interest in exact sciences develops differently in each child, making it crucial to tailor teaching methods to students' interests. For children receiving long-term treatment in hospitals or outpatient settings, maintaining interest in subjects like mathematics requires a specific approach. Play-based learning reduces stress and enhances engagement, allowing children to absorb new knowledge unconsciously. Mathematics is one of the most captivating subjects, especially when it involves problems that require unique solutions rather than direct calculations, as well as in the elegant properties of numbers and geometric shapes, or the beauty of concise and unexpected proofs of known theorems.

In hospice schools, where the goal is to provide structured knowledge in mathematics, textbooks often focus on repetitive exercises, making lessons dull. However, mathematics topics build upon each other and deepen progressively. This means that students undergoing long-term treatment need to retain material not just from the previous one or two lessons, but from topics taught since elementary school.

Let’s compare this with physics, a subject closely related to mathematics. A student who struggles with “Molecular Physics” can still grasp the “Electricity” unit without necessarily remembering earlier content. But a student who hasn’t mastered basic fractions taught in elementary school won’t be able to understand later mathematics topics.

So the question arises: how can we help students retain what they’ve learned in each lesson? The commonly used method in schools is constant repetition. Another effective method is to spark the students' interest in mathematics. When a student becomes passionate about math, it opens the path to becoming a strong mathematician or, even in another field, benefits from the structure, challenge, and elegance of mathematical thinking.

To do this, students must be introduced to what makes mathematics appealing. Often, "interesting math" is mistaken for trivial riddles.

For example: “Ten sparrows were sitting on a branch. A hunter shot three. How many sparrows are left?”

While this encourages wit and patience, it has no mathematical relevance. The answer “seven sparrows remain” is closer to mathematics.

During a school event, while everyone agreed “none are left,” one student argued, “There might be seven

left."

Classmates laughed, but the student explained: "The tree was huge. Three sparrows were on one side, and the other seven on the opposite side. The hunter's gun made no noise."

Such puzzles expand students' thinking and encourage logical reasoning.

In today's modernized world, providing adequate knowledge in subjects like mathematics to hospice students is a key issue. Every mathematical conclusion in lessons is based on numerous concepts and laws, requiring strict logical thinking. As students gradually learn these methods and laws, their logical thinking develops, and they gain a culture of mathematical reasoning.

Education for hospitalized children must be organized with special conditions and needs in mind. Based on the main educational goals, the following approaches should be used to foster interest in exact sciences within hospice education:

1. Relating Lessons to Real-Life Problems

- Explaining the application of math, computer science, and physics in medicine, pharmacy, and biomedical fields.

Examples:

- Use of statistical analysis in medical research
- Risk modeling in epidemiology and diagnostics
- Dosage calculations in pharmacology

2. Visualization and Use of Technology

- Using software like GeoGebra and Desmos to explain concepts
- Simulations and interactive graphics to illustrate processes

3. Medical-Themed Problems and Modeling

- Analyzing heart rate, blood circulation, or X-ray images
- Modeling infection spread in a hospital

4. Gamification and Play-Based Elements

- Quizzes, puzzles, and interactive tasks
- Solving problems using "escape room" techniques
- Teaching through role-playing scenarios

5. Group Work and Discussions

- Team-based tasks where each student has a role
- Collaborative problem-solving and discussion

Mathematics education for hospitalized children should be adapted, engaging, and motivating. Through interactive methods, technology, and real-world examples, students can learn math in a comfortable environment. From the early days of learning, students start forming their own conclusions, which are then validated through mathematical laws.

Teachers must ensure students acquire concepts, properties, methods, and algorithms while also recognizing the role of mathematics in personal and societal development. Integrating mathematics into socio-economic relations and daily life helps students apply knowledge practically. It is also vital to develop students' individual abilities, cultivate independent learning skills, promote integration of disciplines, and instill national and universal values, creativity, and conscious career orientation.

At "Mehrli Maktab," a new generation of educational-methodical complexes (teacher guides and digital textbooks) has been developed and implemented across all subjects. Innovative methods using modern pedagogical technologies have been created for teaching mathematics. Students must learn to independently identify mathematical patterns and express their understanding both verbally and in writing.

Effective Methods for Engaging Students in Mathematics:

A) Multiplying Numbers by 5

Instead of the standard method:

- Divide the number by 2, then multiply by 10.
- If even, add 0; if odd, remove the decimal point.

Examples:

- 34 × 5 → half of 34 = 17, then add 0 → 170
- 143 × 5 → 71.5 → remove decimal → 715
- 6789 × 5 → 3394.5 → 33945

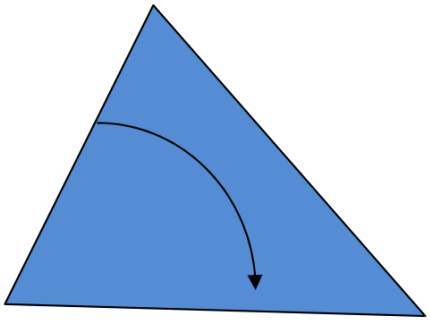
For division by 5:

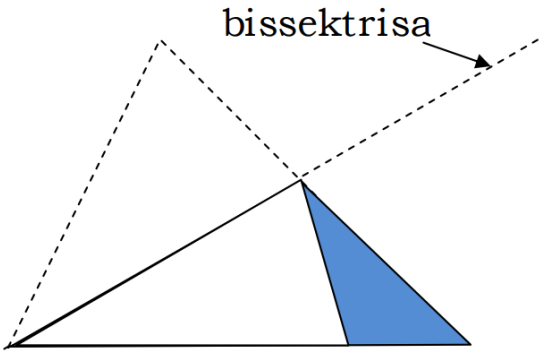
- Multiply by 2, then divide by 10.

Example: 6378 ÷ 5 → 6378 × 2 = 12756 → insert decimal = 1275.6

These non-traditional techniques spark curiosity and interest in students.

B) "Scissors and Paper" Geometry





This practical geometry involves using paper and scissors to explore concepts.

Example: Verifying that angle bisectors of a triangle intersect at a single point.

- Fold the triangle such that two sides align from a vertex.
- The fold line represents the angle bisector.
- Repeating this from each vertex shows that the bisectors meet at one point.

Such tasks develop logical thinking, allowing students to understand problems through causal relationships and analysis.

Fun problems deepen engagement as students see personal relevance. Lessons should be stress-free and enjoyable. Encouragement and praise make students more active. For ill children, constant positive reinforcement from teachers and parents builds self-confidence.

Hospice learners are all undergoing treatment, making it especially important to engage them with play-based math instruction. Since math is part of both primary and secondary curricula, increasing interest in grades 5–11 is relatively easier. In earlier grades, difficulties are natural, and using games helps teachers guide learning more effectively.

Teachers can also use methods like “Cinquain” (a 5-line reflective poem) and “Venn diagrams” to consolidate lessons. “Cinquain” (French for “five”) is especially helpful during the reinforcement stage.

CONCLUSION

To cultivate students’ scientific worldview, mathematical thinking, and culture, it's necessary to deeply teach each mathematical concept and its connections. Each conclusion in math demands rigor, thus fostering logical reasoning. Students learn a culture of expression—translating mathematical laws into language and vice versa.

In organizing mental and physical activity, didactic games play a key role. Their use develops memory, quick calculation skills, and helps students follow rules, fosters cooperation, and broadens their worldview.

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