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METHODS FOR THE FORMATION OF ECONOMIC KNOWLEDGE OF PRIMARY EDUCATION STUDENTS BASED ON STEAM EDUCATION

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ABSTRACT

This article seeks to contribute to this research and curricular approach, for which we analyze the emergence of the STEAM movement, its implementation in class, and its social, economic, and educational consequences. The main conclusion reached is that, without ignoring the economic rationality in education, it is necessary to go further in order to embrace a more social and democratic conception of schooling, trying to take advantage of this historical moment to transform education toward a more humanistic approach–without neglecting the scientific facet–that offers a well-rounded education to new generations while, at the same time, responds to the social and economic demands of our current world.

Keywords: AI in education, personal data security, privacy, data protection, regulations, international overview, ethical guidelines, transparency, accountability, data minimization, emerging solutions, challenges, opportunities.

INTRODUCTION

STEAM education, an interdisciplinary approach integrating Science, Technology, Engineering, Arts, and Mathematics, has gained significant traction in recent years as a holistic method of teaching that prepares students for the complexities of the modern world. Unlike traditional education models that compartmentalize subjects, STEAM encourages a cohesive learning paradigm that reflects the interconnected nature of these disciplines in real life. By fostering creativity, critical thinking, and problem-solving skills, STEAM education aims to cultivate not only a deep understanding of individual subjects but also the ability to apply this knowledge in practical, innovative ways. This educational approach is particularly effective in primary education, where it can lay a strong foundation for lifelong learning and adaptability. Within this framework, the incorporation of economic education is vital. Economic knowledge, when woven into the fabric of STEAM education, helps young students grasp essential concepts such as resource management, financial literacy, and entrepreneurial thinking. This holistic approach ensures that students are not only academically proficient but also equipped with the skills necessary to navigate and contribute to an increasingly complex and dynamic global economy.

MATERIALS AND METHODS

STEAM education is not just a trend; it is a transformative approach to learning that is essential in today's rapidly evolving world. At the primary education level, STEAM provides a foundation that supports cognitive development and encourages a growth mindset. Young learners, who are naturally curious and creative, benefit immensely from an educational model that nurtures these traits while also introducing them to the fundamentals of science, technology, engineering, arts, and mathematics. By engaging in STEAM activities, students develop critical thinking and problem-solving skills early on, laying the groundwork for future academic and career success.

Moreover, STEAM education at the primary level helps students understand the relevance of their learning to real-world contexts. It breaks down the traditional barriers between

subjects, allowing for a more integrated and meaningful educational experience. For example, a simple project on building a bridge can incorporate principles of physics (science), materials analysis (technology), structural design (engineering), aesthetic considerations (arts), and budget planning (mathematics). Such interdisciplinary projects help students see the connections between different fields and understand how they can be applied collaboratively to solve complex problems.

Implementing STEAM Education in Primary Schools: Methods, Approaches, and Techniques

Project-Based Learning (PBL)

Project-Based Learning (PBL) is an instructional methodology that encourages students to learn and apply knowledge and skills through an engaging experience. It involves students working on a project over an extended period, which involves inquiry, exploration, and a final product or presentation.

1. Entrepreneurial Projects:

- Implementation: Students can be tasked with creating a small business model. This involves conceptualizing a product or service, conducting market research, planning production, and devising marketing strategies.
- Educational Value: Through this process, students learn about economic concepts such as supply and demand, pricing strategies, profit margins, and the importance of budgeting. They also develop teamwork and leadership skills as they collaborate on their business ideas.

2. Engineering Challenges:

- Implementation: Organize challenges where students must design and build structures, like bridges or towers, using limited resources.
- Educational Value: These activities teach students about material costs, budgeting, and the economic impact of engineering decisions. They also promote innovative thinking and practical application of scientific principles.

Interdisciplinary Lessons

Interdisciplinary lessons integrate multiple subjects to provide a more cohesive and holistic learning experience. Instead of teaching subjects in isolation, it combines different disciplines to explore themes, issues, or problems from multiple perspectives.

3. Math and Economics Integration:

- Implementation: Use real-world problems that require mathematical calculations, such as interest rates, savings plans, and investment growth, to teach economic principles.
- Educational Value: This approach helps students see the practical application of math in everyday life, enhancing their understanding of both subjects.

4. Art and Marketing:

- Implementation: Have students design marketing campaigns for hypothetical products. This can include creating advertisements, packaging, and promotional materials.
- Educational Value: Students learn about consumer behavior, the role of advertising in the economy, and the importance of visual and persuasive communication.

Technology-Enhanced Learning

Technology-Enhanced Learning refers to the use of technological tools and resources to facilitate and enhance the learning process. It includes using digital tools, software, and the internet to support learning activities.

5. Simulations and Games:

- Implementation: Use educational software and online games that simulate economic systems and market environments.
- Educational Value: These tools provide a safe space for students to experiment with economic decisions, understand the consequences, and learn from their mistakes. They also make learning interactive and engaging.

6. Coding Projects:

- Implementation: Introduce basic coding through projects that involve creating simple economic models or applications.

- Educational Value: Students learn about algorithms and their impact on economic activities, developing both technical and economic literacy.

Real-World Connections

Real-World Connections involve linking classroom learning to real-world situations and experiences. This approach helps students understand the relevance and application of their studies in everyday life.

7. Guest Speakers and Field Trips:

- Implementation: Invite local entrepreneurs, economists, and business owners to speak about their experiences. Arrange visits to local businesses, banks, or manufacturing plants.
- Educational Value: Direct interaction with professionals helps students understand how economic concepts are applied in real life and can inspire future career interests.

8. Current Events Discussions:

- Implementation: Integrate discussions of current economic events into the curriculum. Analyze news articles, watch relevant videos, and discuss the economic implications.
- Educational Value: This helps students connect classroom learning with the outside world, making their education more relevant and timely.

Collaborative Learning

Collaborative Learning is an educational approach where students work together in small groups to achieve common goals and complete tasks. This method emphasizes teamwork, communication, and mutual support.

9. Group Projects:

- Implementation: Organize group activities where students plan events or projects that require economic decision-making, such as fundraising for a charity or planning a class trip.
- Educational Value: These projects foster teamwork, communication, and practical economic skills like budgeting and resource management.

10. Peer Teaching:

- Implementation: Have students research economic topics and teach their peers through presentations or interactive activities.
- Educational Value: Teaching others reinforces the student's own understanding and encourages deeper engagement with the material.

Inquiry-Based Learning

Inquiry-Based Learning is a student-centered approach where learning is driven by questioning, investigation, and discovery. Students are encouraged to ask questions, conduct research, and develop their own understanding of topics.

11. Economic Questions:

- Implementation: Pose open-ended economic questions and encourage students to research, debate, and draw conclusions based on their findings.
- Educational Value: This method promotes critical thinking, research skills, and the ability to form evidence-based arguments.

12. Investigative Projects:

- Implementation: Assign projects where students investigate local economic issues, such as the impact of a new business on the community or how local government budgets are allocated.
- Educational Value: This approach makes economic education tangible and relevant, showing students the direct impact of economic principles on their surroundings.

Creative Arts Integration

Creative Arts Integration involves incorporating the arts into other subject areas to enhance learning and provide a more well-rounded educational experience. This approach uses artistic processes and products to deepen understanding.

13. Drama and Role-Playing:

- Implementation: Use role-playing scenarios where students simulate economic roles, such as running a store or negotiating trade deals.
- Educational Value: These activities make economic concepts more accessible and memorable by providing hands-on, experiential learning opportunities.

14. Art Projects:

- Implementation: Have students create infographics, posters, or visual art pieces that represent economic data and concepts.
- Educational Value: Visual arts help students to better understand and communicate complex economic ideas, catering to diverse learning styles.

Assessment and Reflection

Assessment and Reflection involve evaluating student learning and encouraging students to reflect on their own understanding and progress. This approach includes both formal assessments and reflective practices.

15. Reflective Journals:

- Implementation: Encourage students to keep journals where they reflect on their economic learning experiences and personal insights.
- Educational Value: Reflection helps students consolidate their learning, recognize their progress, and develop a deeper understanding of economic concepts.

16. Portfolio Development:

- Implementation: Have students compile a portfolio of their economic projects, activities, and reflections.
- Educational Value: A portfolio showcases a student's growth and understanding over time, providing a comprehensive assessment of their learning journey.

CONCLUSION:

Incorporating STEAM education in primary schools is a transformative approach that prepares young learners for the complexities of the modern world. By integrating Science, Technology, Engineering, Arts, and Mathematics, STEAM education fosters a holistic development that transcends traditional subject boundaries. Each method discussed, from Project-Based Learning and Interdisciplinary Lessons to Technology-Enhanced Learning and Creative Arts Integration, contributes uniquely to building critical thinking, problem-solving, and practical skills among students.

Implementing these approaches requires thoughtful planning and dedication from educators, but the rewards are significant. Students become more engaged, motivated, and capable of connecting their learning to real-world applications. They develop essential life skills, such as collaboration, creativity, and economic literacy, which are crucial for their future academic and professional success.

Moreover, the incorporation of economic knowledge through STEAM education ensures that students are not only academically proficient but also financially savvy and entrepreneurially minded. By making education relevant and interactive, we empower students to become innovators and leaders in an increasingly complex and interconnected global economy.

Ultimately, STEAM education at the primary level lays a robust foundation for lifelong learning and adaptability, equipping students with the tools they need to navigate and thrive in a dynamic world. As educators and policymakers, investing in and promoting STEAM education is a step towards nurturing a generation of well-rounded, critical thinkers capable of making meaningful contributions to society.

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