

EXPERIENTIAL LEARNING TO ENHANCE MATHEMATICAL SKILL

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Abstract

In order to meet the demands of the curriculum and the needs of 21st century mathematics learners, it becomes necessary for mathematics teachers to have innovation in classrooms and innovative teaching and learning resources with them. Though most mathematics teachers are equipped with good content knowledge, innovation is needed in their pedagogical planning and in their methodology of teaching. Resources in terms of the best curriculum texts, reference books, etc. are available for teachers, but there is a need for the development of innovative teaching and learning practises and strategies to enhance and enrich the teaching and learning happening in mathematics classrooms. This paper highlights the importance of one such innovative teaching and learning method called experiential learning for the present century's mathematics teachers and the importance of employing innovative practises in mathematics classrooms.

INTRODUCTION

Teacher education institutes are making all the efforts necessary to help student teachers acquire the skills they need during their course of training. But after the pre-service program, when they enter the profession, they find the methods of teaching, curricula, and various other requirements in schools different from those advocated and implemented in teacher education institutes. There is a need for a systematic mechanism for the academic support of teachers in terms of good resources and also for their professional development. Lack of innovative pedagogical and methodological planning results in poor teaching and learning happening in mathematics classrooms.

EXPERIENTIAL LEARNING

Experiential learning is a teaching and learning strategy where learners learn by doing practically and appreciating the real-world relevance of the subject, which helps them retain the concepts for a longer period. Such learning by nature enables the development of a variety of capabilities, such as planning, teamwork, coping with stressful situations, responsibility, and leadership.

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Experiential learning can be defined as learning that

- combines direct experience with focused reflection.
- builds on past knowledge and experiences.
- Requires active involvement in meaning construction.
- encourages collaboration and the exchange of ideas and perspectives.

CHARACTERISTICS OF EXPERIENTIAL LEARNING

Students are more likely to persevere in an active learning role if exposed to an authentic experience. An experiential learning framework can be successful if each student is directly involved in the experience by carrying out tasks. Ultimately, each student must respond rationally to any feedback they receive by transforming their analytical skills experience into higher-order thinking strategies.

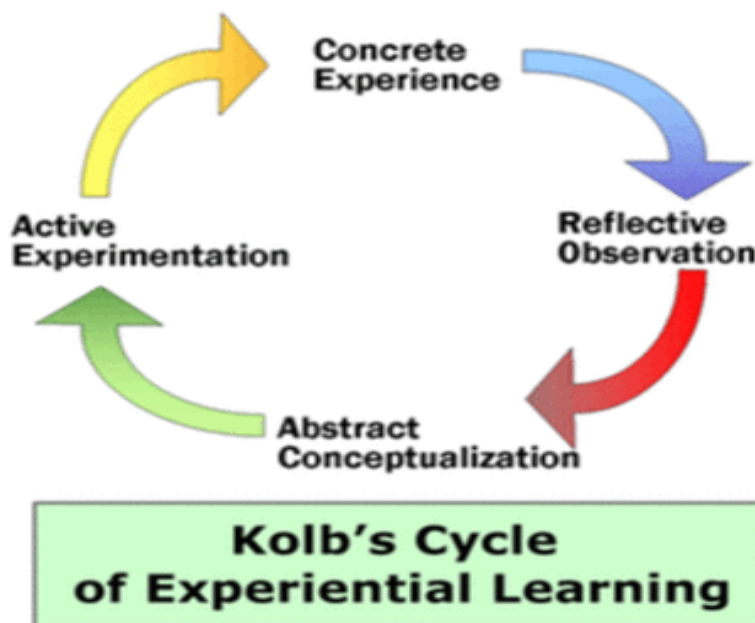
According to Kolb and Kolb, experiential learning is characterised by a unique dynamic between educators, students, and the content they are studying. Hence, teachers and students can gain first-hand knowledge of the subject. It is transmitted to them, but they are also responsible for creating it themselves. From there, all subjects can directly participate in the subject's experience when using this method, which is similar to previous methods in that they can do so. Depending on the experience's design and implementation, a wide range of viewpoints on the subject will be expressed.

BENEFITS OF EXPERIENTIAL LEARNING

The quality and effectiveness of learning can be improved through experiential learning. Furthermore, Venkatraman et al. (2019) show that experiential learning positively impacts students' mathematical creativity. The study by Chesimet et al. (2016) found that the experiential learning method is more effective than traditional teaching and learning methods in enhancing students' mathematical creativity. As a result, students who engage in experiential learning can better express their creativity in mathematics and develop their critical thinking skills. To help students improve their problem-solving skills, researchers suggest incorporating hands-on activities into the classroom. A study by Mwei (2017) and Manfreda and Hodnik (2021) found that providing students with the opportunity to resolve real-life problems impacted their mathematical problem-solving abilities. It has been found that experiential activities in mathematics help improve students' knowledge and understanding of math and that active learning activities reduce the burden on the curriculum.

How Experiential Learning Works

- The basic model of the experiential learning cycle is "Do, Reflect, Decide." Kolb's Experiential Learning Theory (David Kolb, 1984) defines experiential learning as "the process whereby knowledge is created through the transformation of experience." "Knowledge results from the combination of grasping and transforming experience."



EXPERIENTIAL LEARNING IN MATHEMATICS

Mathematics requires experiential learning where students are involved in their own understanding of mathematical concepts and practices. Through this type of learning, students are able to identify problems, use constructive reasoning to make viable arguments, and apply mathematics to real-life problems. Experiential learning activities for math are an effective way to help students overcome their math anxiety, understand the real-life usefulness of what they're learning, and most importantly, have fun while learning math.

ACTIVITIES FOR STUDENTS

Math Memory: In a traditional memory game, you are supposed to remember the placement of cards so that you can find matches. The idea is to collect the most matched pairs. In this modified memory game, instead of matching two of the exact same cards, have the students match a math problem with a solution. This enhances not only memory skills but also arithmetic skills.

Symmetrical Designs: Have the students draw one half of an object or a design. Then have them exchange papers with another student, who will complete the drawing by making the symmetrical other half.

Dice Probability: Students can learn about probability concepts by rolling dice. To make this activity more fun and challenging, consider adding more dice and having the students determine how the number of dice will affect certain outcomes.

Integer Card Game: Students will work in pairs using a deck of flashcards, each with integers written on them. The integers will range from -20 to 20. Divide the deck in half. Each student will get one half. Have the students pick two cards from their pile and add the integers on their two cards. Whoever has the higher total gets to keep all four cards. Keep going until all the cards have been used. Whoever has the most cards at the end of the game wins. You can modify the game by using subtraction instead of addition.

Exponent Card Game: This game is nearly identical to the integer card game above. However, instead of using flashcards, you will use a traditional deck of cards. This time, when each student picks their two cards, the first card will be the base, and the second card will be the exponent. Whoever has the higher product gets to keep all four cards. As with the integer card game, keep going until all the cards have been used. Whoever has the most cards at the end of the game wins.

CONCLUSION

Experiential activities in math assisted students in developing mathematical skills. Also, it helps develop personal qualities and competencies. From here, they gained the ability to adapt to various living, learning, and working environments; adapt to the changes that modern society brings; and organise their lives, work, and management.

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