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Integrated approach to teach mathematics: A new trend in education

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Abstract
Mathematics is the mainstay in today's systematic life. Without numerical and mathematical evidence one cannot decide many issues in our day to day life. In modern era, maths becomes the basis of all subjects and all technological development and thus becomes the subject of national interest. Maths should be visualized, thoughtful, and understandable to prepare children to think logically, analysis and then finding results. We should make mathematics more meaningful and interesting so that every child feels comfortable with mathematics. The teacher needs to study each student carefully to notice under which conditions maximum achievement is possible. In this paper I have studies about the integrated approach to make math's a magic and more interesting, valuable for future life.

Learning mathematics extends beyond learning concepts, procedures and their applications .learning mathematics is basically a constructive process which means that student learn, discover, and create mathematical knowledge and skill. The berlin-white integrated science and mathematics model will be used for future learning process. Variety of teaching methods and evaluation should be for lifelong learning. In this paper it is focus that appropriate examples must be used at proper timing. Education has an important long-term goal to make our children better citizens. We should make our teaching more flexible, effective and impressive. We cannot shed our responsibilities just by giving them only the bookish knowledge without any connectedness with real world. We should improve or teaching by integrating concept of mathematics with its practicability.

An integrated approach works only when content is well planned, assignments are of variability makes maths as more practical and more useful. We should focus on self and independent learning among the students. It is necessary to make sure that they have skill how to manipulate formulae, examples and give them practice for fluency and also to be given opportunity to use their skill in solving problems.

Keywords: integrated approach, evaluation, correlation

Introduction

Mathematics is the mainstay in today's systematic life. Without numerical and mathematical evidence one cannot decide many issues in our day to day life. In modern era, Maths becomes the basis of all subjects and all technological development and thus becomes the subject of national interest. The Kothari commission report (1964-66)rightly points out that study of mathematics plays a prominent part in modern education .it says, "one of the outstanding characteristics of scientific culture is qualification."

Math's is used in our everyday life but in our present day school curriculum it is an isolate, indifferent and dry subject which is no more than memorizing formulae, calculations and find the answer .Getting the right answer is the main motto of school curriculum. There is no scope for self-directive learning and context based understanding .Math's should be visualized, thoughtful, understandable to prepare a children to think logically, analysis and then finding results. We should make mathematics more meaningful and interesting so that every child feels comfortable with mathematics. Many students are scared with mathematics and go far away to this subject. We can look at this problem from various angles like content, child mental level, .pedagogy, teaching-learning process, evaluation but only collectively we can find a solution for this problem.

The teacher needs to study each student carefully to notice under which conditions maximum achievement is possible. Students differ from each student in many ways and the need of each must be met. There must be connections between the math's and the other subjects and also different topics in math's curriculum .mathematics makes sense and is easier to remember and apply when students can connect new knowledge to existing knowledge in meaningful ways.

1. The mathematics classroom requires the following characteristics:
2. Emphasize on process as well as results.
3. Encourage and support various levels of oral and written mathematical communication.
4. Encourage and empower leadership and authority shared with student.
5. Encourage reflective mathematical practices with thinking logically.
6. Engage students in mathematical discussions.
7. Helps students to learn math through problem solving approach.
8. Encourage students to connect math's problem with daily uses problems.

Important features of integrated approach

An integrated approach to teaching and learning mathematics

offers a approach that is different from the traditional approach of chalk – talk – homework – exam. In integrated approach we give more stress on following points:

1. Conceptual understanding rather than only computations.
2. Exploring patterns and relationships rather than just memorizing formulas.
3. Verify of pedagogical strategies rather than just chalk and talk.
4. Effective and meaning learning rather than just learning for test/exam.
5. Exploring patterns and relationships rather than just memorizing formulas.
6. Making sense of mathematics using real life applications rather than just explaining abstract concepts.
7. Listening (hearing, Interpreting) to student's thinking rather than only telling (speaking, Explaining).
8. Helping students to develop and appreciation of the power of mathematics rather than a negative view of maths.

For interactive and value based teaching, new material is introduced either in classroom discussion or via teacher made worksheets. Teacher gives problems and question for discussions. After completion of work, there are whole class discussions and teacher serves as facilitator.

How we can think about school mathematics Curriculam

1. The study of certain structures like arithmetic, algebra, geometry, menstruation etc.
2. A set of techniques for solving problems using a verity of method like inductive, deductive, analytic, synthetic .
3. The study of certain procedures for carrying out practical calculations like percentages, area, volume etc.
4. The study of different shapes, ratio, equations, sets problems.
5. Study of measures of central tendencies, variability and correlation etc.

Learning mathematics extends beyond learning concepts, procedures and their applications .learning mathematics is basically a constructive process which means that student learn, discover, and create mathematical knowledge and skill. Authentic forms play a crucial role in mathematics teaching and learning. Therefore we need an integrated approach to mathematics teaching. The berlin-white integrated science and mathematics model include five aspects:

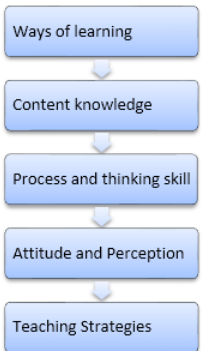

Fig 1

We need integration in terms of

1. Course of content among primary middle, secondary and degree levels.
2. Various branches of mathematics like arithmetic, algebra, geometry in to single units.
3. Conceptual knowledge of mathematics with procedural knowledge of mathematics.
4. Integration with the need of society.
5. Concepts of mathematics must be correlated.
6. Correlate with real world.
7. Use a variety of teaching methods like inductive, deductive, analytic and synthetic methods.
8. Use a variety of evaluation techniques like formative, summative, objective test, subjective test.

Mathematics in its applied form must be taught selecting appropriate examples at proper timing. There are four phases

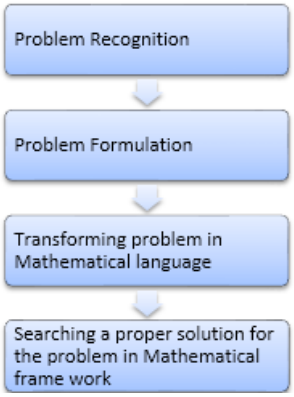

Fig 2

There is need to identified carefully the objectives for student's attainment. Always correlate a particular concept at a particular stage with other subjects. For example the concept of percentage (%) May be integrated with the following:

1. Percentage of marks
2. Percentage of water in human body.
3. Percentage of oxygen in air.
4. Percentage of sugar in milk.
5. Percentage of female among particular sample.

We need to integrate conceptual knowledge of mathematics with its basic fundamentals. The process of developing logical concept with real world is called concept mathematization. Also it is well known that visual memories are strong than others. So it is necessary to connect with visual aids for better results.

Conclusion

Education has an important long-term goal to make our children better citizens. We should make our teaching more flexible, effective and impressive. We cannot shed our responsibilities just by giving them only the bookish knowledge without any connectedness with real world. We should improve or teaching by integrating concept of mathematics with its practicability.

An integrated approach works only when content is well planned, assignments are of variability makes maths as more practical and more useful. We should focus on self and independent learning among the students. We must keep in mind they learning is the process where knowledge is created through the transformations of experiences being continuously created and recreated. It is necessary to make sure that they have skill how to manipulate formulae, examples and give them practice for fluency and also to be given opportunity to use their skill in solving problems. If pupil are given time and opportunities to estimate, calculate, interpret, discus with each other and with the teacher then they will really gain a full understanding of numerical and mathematical problems.

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