Joyful Learning of Mathematics

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WHEN WE ARE DOING A THING WITH LIKENESS IT IS AN ENJOYMENT.

BUT, WHEN WE ARE DOING THE SAME THING WITH DISLIKE IT IS A PUNISHMENT.
Joyful learning is thrilling as it will be often natural and spontaneous.

Mathematical knowledge is culturally inherent and a part of life. It is a part of the traditional community knowledge, which passes through interactions from generation to generation.
The Paper Attempt:

• To analyse the present system of mathematics education at primary schools
• To identify the attitude of students toward mathematics
• To suggest different strategies for making learning of mathematics joyful
• Acquisition of mathematical competence taking place naturally.
• Children learn mathematics naturally through day to day experience.
Natural Learning Process

Acquiring

- Simple
- Long Lasting

Complicated Mathematical Competence

Applying in the work field

Example: Thachusasthra for the construction of complex buildings
The Ground Realities

- Mathematics is not interesting and attractive to majority of children
- Problem with faulty methodology and pedagogy
- Failure to create meaningful and realistic situation in the classrooms
- Learners see it as an artificial and meaningless subject
## Attitude of Students toward Mathematics

<table>
<thead>
<tr>
<th>Factors</th>
<th>Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Students feels or experienced dislike or hatred towards mathematics</td>
<td>64.89 %</td>
</tr>
<tr>
<td>Dislike towards mathematics began at Primary Stage</td>
<td>88.67 %</td>
</tr>
<tr>
<td>Dislike towards mathematics began at Secondary Stage</td>
<td>11.33 %</td>
</tr>
<tr>
<td>Reason for dislike towards mathematics (Multiple Responses allowed)</td>
<td></td>
</tr>
<tr>
<td>Teacher</td>
<td>59.88 %</td>
</tr>
<tr>
<td>Methodology</td>
<td>48.34 %</td>
</tr>
<tr>
<td>Other factors</td>
<td>28.45 %</td>
</tr>
<tr>
<td>Students wish to do higher education in Mathematics</td>
<td>8.48 %</td>
</tr>
<tr>
<td>Students like to select a career related to Mathematics</td>
<td>2.58 %</td>
</tr>
</tbody>
</table>

*Source: Personal Investigation*
Goal of mathematics learning

Narrow aim
“Useful capabilities”
- numeracy—numbers
- number operations
- measurements,
- decimals and percentages

Wider aim
“Develop child resources”
- Logical conclusion
- Handle abstraction
- Thinking and reasoning mathematically
Vision for School Mathematics

• Learn to enjoy mathematics rather than fear
• Mathematics is more than formulas and mechanical procedures.
• Think, communication and work through mathematics.
• To use abstractions to perceive relationships, to see structures, to reason out things, to argue the truth or falsity of statements.
Strategies for Joyful Learning of Mathematics

- Learning occurs through play rather than through didactic communication.
- Encouraging children to use language to freely express one's thoughts and emotions.
Mathematical Games, Puzzles and Stories

- To develop a positive attitude, to make connection with mathematics and everyday thinking
- Identifying, expressing and explaining patterns, on estimation
- To enrich students' spatial reasoning and visualisation skills.
Recreation through Mathematics

• Make the mathematics classroom a place for recreation and fun – children like fun
Relating Numbers and Quantities

As numbers are the abstracts, they have to be presented to the learners concretely by representing them using different possible realities in the real world.
Develop Realistic and Life Related Problem solving

• Every one face problems….
• If the child find solutions to their problems in the mathematics class they will really love it.

(Eg: Measurement of land, crops, conversion of different measurement etc.)
Meaningful and Life Oriented Mathematics

• A shift from rote method to learning by doing
• Mathematics learning must be contextual, meaningful and life oriented
Linking Body with Mathematics

Students like Biology as it is closely related to their body. Human beings assimilate abstract concepts by relating it with his or her own body.

Eg: Concept of time multiplication table of nine
Linking Nature with Mathematics

Shapes and Patterns in Nature

Children like nature and want to explore it
Providing Differentiated Instruction

- Problem with Subtraction
- Start from left to right. (effect of reading)
- Mechanical operation without knowing the place values.
Example of C-R-A using Base ten blocks with subtraction with borrowing

<table>
<thead>
<tr>
<th>Concrete</th>
<th>Representations</th>
<th>Abstract</th>
</tr>
</thead>
<tbody>
<tr>
<td>43 - 26</td>
<td>43 - 26</td>
<td>43 - 26</td>
</tr>
<tr>
<td>4 longs + 3 shorts, 2 longs + 6 shorts</td>
<td>4 longs + 3 shorts, 2 longs + 6 shorts</td>
<td>40 + 3 - (20 + 6)</td>
</tr>
<tr>
<td>3 longs + 1 long and 3 shorts, 2 longs + 6 shorts</td>
<td>3 long tallies + 1 long tally and 3 short tallies, 2 long tallies + 6 short tallies</td>
<td>30 + 10 + 3 - (20 + 6)</td>
</tr>
<tr>
<td>3 longs + 13 shorts, 2 longs + 6 shorts</td>
<td>3 long tallies + 13 short tallies, 2 long tallies + 6 short tallies</td>
<td>30 + 13 - (20 + 6)</td>
</tr>
<tr>
<td>1 long + 7 shorts, 17</td>
<td>1 long tally + 7 short tallies, 17</td>
<td>10 + 7 17</td>
</tr>
</tbody>
</table>
simple method for abstraction

- 863 – 635 can be solved meaningfully as follows.

```
863  
- 635
---
 200
- 30
---
  2
- 2
---
228
```
Mathematics Parks

• Bring Abstract concepts in to Concrete
• Mathematics became a source of fun
• Informal learning of mathematics
Bringing Music in Classroom

- Orchestrated immersion
- Mathematical Concepts, Theories and formulas can be converted in the form of rhythmic line...

(Traditional Knowledge preservation technique)

- Incorporating and utilizing Right brain
- Nurturing Musical Intelligence
Reasoning & logical thinking through Mathematics

• Logic is a way of life
• Learners can enjoy the mental happiness
• Using logical thinking and reasoning power in dealing with their day to day experiences and issues.
Application of Mathematical Tasks

1. Textbook exercises
2. Problems
3. Closed problems
4. Challenge sums
5. Non-routine problems
6. Open-ended problems
7. Applied real-world problems
8. Mathematical investigations
9. Short open-ended problems
Why teachers hesitate to make learning of mathematics a joyful experience?
Discussion
Thank you