Integrating Maths Worksheets with Other Subjects

Janak Ram

As a parent or teacher, there is always something new to learn while working with children. One of these is how the understanding of children's play, art and other subjects in the curriculum, along with maths can be integrated with their understanding of the things around them and their overall learning. Through classroom observations and discussions with subject teachers of environment science, Hindi, and English, I was able to build an understanding of the elements that should be in consonance when preparing a worksheet. Worksheets should be prepared in such a manner that a natural relation can be drawn between maths and other subjects, such as environmental science, languages, arts and sports. Children should not feel burdened by worksheets. They should be able to read, understand, and solve a maths worksheet with as much ease and interest as they would any other subject.

Preparing worksheet content

Worksheets should be prepared in such a manner that they allow children to engage in learning at home and in the classroom as much as possible. They should enable children to understand the subject as a whole. Children have individual differences in their pace of learning and worksheets should give them the freedom to learn at their own pace. Greater emphasis has to be placed on 'how children understand' so that children may link their experiences to their learning and learn independently.

My decision about the content of the worksheets was guided by the recognition of the relationship between maths and other subjects - maths and language (L1, L2), maths with EVS and English, maths and art, and maths with sports, music and library.

Besides this, there were discussions about children and their environment with other teachers. This was done with the view that it may help the other teachers too to prepare worksheets for their specific subjects.

Interrelation between maths and Hindi

Besides keeping the language simple, it is important to include specific terminology related to maths in the worksheets. Worksheets should feature relevant pictures and words to help children understand the subject easily. For instance, there could a description of an incident that took place in their surroundings that children may read and enjoy. Keeping all this, and the relationship of Hindi and maths in mind, I prepared a worksheet that could be used for both classes IV and V. I took help from Rajasthan state's workbook for the same. (Figure 1)

Interrelation of maths with EVS and English

Children often spontaneously engage with their surroundings during class. Relating classroom discussion with what they have discussed during previous lessons is a treat for them. To do this, I often speak with other subject teachers to know which concept from which subject area is being taught in a particular class. Fellow teachers also share their classroom activities and challenges. I worked on preparing the following worksheet for class III keeping in mind three subjects – maths, EVS and English. To solve this worksheet, children will have to rely on their understanding of the environment and English. Children's understanding is aided by moving from the concrete to the abstract in maths. In this worksheet, children can think in the abstract as well. (Figure 2)

Interrelation between maths and English

Currently, our school is transitioning towards English as a medium for instruction. So, children at our school need more exposure to the terminology of maths in English, be it through listening, speaking or writing. Keeping this in mind, a worksheet based on the relationship between maths and English was prepared. Short English sentences were used in making 'word-based' questions. (Figure 3)

1- धमतरी में चार दिनों के लिए एक किताबों का मेला लगा | उसमें बिकी किताबों के आंकड़ें नीचे दिए गए हैं | उनको देख कर पूछे गए सवालों के जवाब दीजिए-

दिन	1	2	3	4
किताबों की बिक्री	4518	3217	5419	7511

(क) मेले में कुल कितनी किताबें बेचीं गयीं ?_____

(ख) दूसरे और चौथे दिन में से किताबों की बिक्री किस दिन अधिक हुयी और कितनी ?

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(ग) मेले में एक किताब की 20 प्रतियाँ 6000 रूपये में बेचीं गयीं | उस किताब का मूल्य कितना होगा ?

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(घ) आप किताबों के मेले से कौन-कौन से किताबें खरीदोगे ? नाम लिखो |

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Figure 1. Interrelation between maths and Hindi

Interrelation between maths and art

Aesthetics plays a crucial role in the understanding of mathematical concepts. One may wonder how. Each number or geometrical figure, in its composition and presence, conveys its own aesthetic sense. Let us take 'zero' as an example. Adding zero to any number can increase its value. Through this, children may be given the idea that everything present in the world is important and thus, it is necessary to respect each entity.

Incorporating colours in the teaching of maths also makes children happy, so I included this aspect too. While preparing a worksheet based on this, care was taken to see that children not only get the chance to colour but also to draw. This also helps in developing fine motor skills and hand-eye coordination in children whose pace of learning is slower. (Figure 4)

Word-Problems and Multiplication Class—Name: ———— Date: ————
Azim Premji School Dhamtari Chhattisgarh

Worksheet-02

How many legs do?

A. 9 lions have .....

B. 6 spiders have .....

C. 5 snakes have .....

D. 8 girls have .....

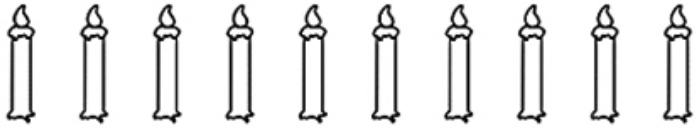
Figure 2. Interrelation of maths with EVS and English

Word-Problems and Multiplication Class—Name: ———— Date: ————
Azim Premji School Dhamtari Chhattisgarh

Worksheet-20

Coloring: Odd & Even

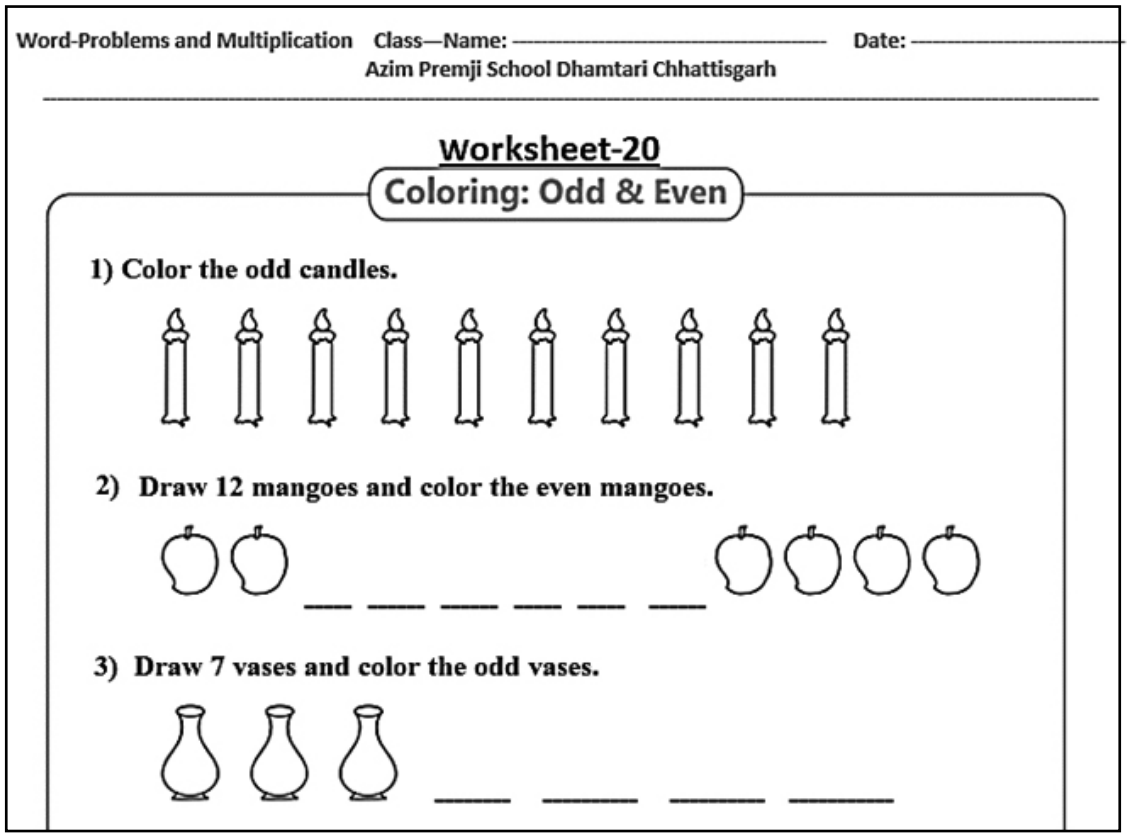
1) Color the odd candles.



2) Draw 12 mangoes and color the even mangoes.

3) Draw 7 vases and color the odd vases.

Figure 3. Interrelation between maths and English


Word-Problems and Multiplication Class—Name: ———— Date: ————
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Worksheet-20

Coloring: Odd & Even

1) Color the odd candles.

2) Draw 12 mangoes and color the even mangoes.

3) Draw 7 vases and color the odd vases.

Figure 4. Interrelation between maths and art

A relationship was also drawn with English. Children were given the opportunity to use words, such as *candle*, *vase*, and *mango* in making sentences. During all this, their understanding of mathematical concepts was also tested. The worksheet also featured various geometrical shapes which children enjoyed colouring. This worksheet also fulfils the purpose of assessment.

Interrelation of maths with sports, music and the library

Children love to make up their own stories and poems. Space was given in the worksheet for this. They were given the opportunity to frame numbers, multiplication tables and puzzles in the form of stories or poems. The number worksheet also gave them the opportunity to count the things around them, conduct a population survey of the village, make a purchase from the market and maintain an account of the money, and collect data on the number of books in the library. To ensure that children use the library resources, questions from various magazines subscribed by the library, such as *Champak, Chakmak, Cycle, Pluto, Balhans, Akkad-Bakkad, Tell Me Why*, and *Wisdom* were collated and presented to children through worksheets. This was done so that in finding solutions to these questions, children would get familiarised with the magazines. I also tried to include magazines published by newspapers, such as *Dainik Bhaskar* and *Hari Bhoomi*.

When children understood how to make a multiplication table, we also created a relationship with music as children composed songs on tables to memorise them. Worksheets on factors and multiples for class V drew a connection with sports using an activity given in the NCERT textbook. Space was given in the worksheets of classes III, IV and V for children to read, write, learn and understand numbers through the game of *Ludo*.

In conclusion, this whole exercise of working with worksheets helped me at various levels, including learning to use the computer keys and software in many ways and I was initiated into the process of building an understanding of the relationship of various subjects with maths. My understanding of how children learn according to their own potential and experiences and how worksheets facilitate their learning deepened. The suggestions given by the organisation on the worksheets have always inspired me to work more on these. I was able to

collect multiple learning resources for children and teachers in one place. Creating such worksheets for children with learning difficulties, which they can solve on their own, remains a challenge. Challenges such as this, constantly inspire me to learn and do better.

Janak Ram is a Maths teacher at the Azim Premji School, Dhamtari, Chhattisgarh. Post his B Sc, he completed a master's degree in Education and Sociology. He has also been a Fellow of the Azim Premji Foundation. As a teacher, he is interested in learning and understanding the processes of maths together with the children. He can be contacted at janak.ram@azimpremjifoundation.org