

Importance of Reinforcement Activities in Primary Maths

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Some teachers believe that it is impossible to teach every concept in maths to each student in the class, in other words, every child in class does not understand every basic concept of maths. However, there is rarely an assessment of our teaching methods before and after the teaching or mathematical conversations with students, especially students with special needs.

As we all know, it is very important to develop foundational learning abilities in children at the primary level. Along with that, we have a responsibility to teach them all the subjects comprehensively. We should be able to develop the confidence in children that they can learn all the concepts meaningfully.

We were observing a maths teacher's class (*Nali-Kali*). The teacher had a great concern for and a good rapport with the children but after the class, she shared with us the challenges she faced. According to her 'only 80 percent of students in a class can learn any given mathematical concept'. She said that it was a challenge to make all the children learn what was being taught. She had many reasons in support of this observation. She also asked us how to teach the remaining 20 percent of the class. Her concern about those children was evident.

We listed some concepts in maths with her. The most important concept in that list seemed to be the ascending and descending order of numbers. Children get very confused by this concept and some struggle to understand it at all. So, we listed out the abilities a child should have before this concept is taught to them. It was clear that a child should know numbers before understanding ascending and descending order, so we need to teach them numbers first. We decided that to make the activity attractive for them, we could let them write on the classroom floor in a relaxed way. Since it was a *Nali-Kali* classroom (classes I-III) we executed this project in phases so that the students of all three classes benefitted from it.

Phase 1

The instruction we gave was: 'Write the visualised

quantity of numbers in ascending and descending order'.

1. We wrote a problem on the blackboard and also, on the floor. We placed some stones nearby. We made the children sit in a circle so that everyone was visible to everyone else.

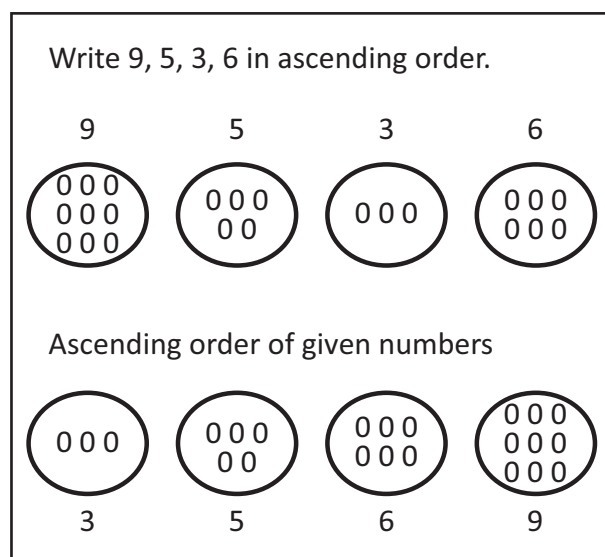


Figure 1. Using the 'quantity visualisation' approach to understand ascending order.

We arranged the stones as shown in Figure 1. Then we asked which is the smallest number in the arrangement. The students answered that it was 3, and then we went on to arrange them in increasing order: 3, 5, 6 and 9. The children were answering by looking at the number of stones (more or less) in the circle. This also helped them understand how a number is bigger than another. After arranging the numbers as the children said, we reinforced this understanding by telling them that this series is called ascending order – arranging numbers from small to big.

2. Then, we gave some problems to all the children and instructed them to solve them in their notebooks. We told them to count using dots instead of stones.
3. After observing that all the children in the class were able to do this, we told them to make their own problems and solve them.

4. Then we asked them to arrange the numbers in ascending order without the help of dots. But all the children could not complete this.

What we found was that even though the children were given tangible objects at first, followed by images and then directed towards intangible numbers, all the children were not able to write the ascending order using intangible numbers.

We realised that this activity could be difficult to do with two-digit numbers. For example, when it comes to numbers like 25,30 and 42, it is difficult to put so many stones or dots. So, we changed the project accordingly and executed a different activity in the next phase.

Phase 2

1. A problem was written on the floor, for example: 8,2,3,5. The task was: the numbers should be written in ascending order.

The children were told to write from 1 to 9 on another part of the floor. We told them to take as many stones as the number, for example, 4 stones for the number 4. They had to place the stones in the number sequence 1 to 9.

Now, we asked them to remove the stones that are placed on the 1 to 9 numbers sequentially one by one and write those numbers. When all the stones were removed one by one the numbers were arranged as: 2,3,5,8. So, we introduced the

Write 8, 2, 3, 5 in ascending order.

Steps:

1. Write the numbers 1-9 on the floor.
2. Take four stones and place them on the numbers 8, 2, 3, 5 on the number sequence 1-9.
3. Beginning from number 1, start removing the stones and write the number it in the answer space. Example, remove the first stone from number 2, and write number 2 in your answer. Then, remove the second stone and do the same.

Now, you will have the numbers arranged in ascending order – 2, 3, 5, 8.

1

2 ○

3 ○

4

5 ○

6

7

8 ○

9

Figure 2. Steps for writing numbers in ascending order.



Figure 3. A student noting the answer in the notebook.

concept of ascending order in this way. We taught two to three problems in the same way. All the children seemed to understand this. Then, we gave chalk to all the children and asked them to solve the problems in the same way on the floor. All the children were solving the problems.

Since it was a *Nali-Kali* class, we grouped the children according to their classes. In the first group, we encouraged the children of class I to solve similar problems, that is, involving single-digit numbers. We went on to do the same with the children of classes II and III and found that they had grasped the concept of ascending order and were able to solve the problems easily.

Then we told the children to write the problems in their notebooks, using dots in the place of stones. All the children were able to solve the new ascending-order problems. This is how we went through this reinforcement activity in phases.

It was a moment of happiness for the teacher when a student of class III asked if they could arrange two-digit numbers in ascending order. After some reflection, the teacher said that with the right planning, the right order with appropriate activities children could very easily learn not only mathematics but any other subject.

Before going on to the concept of descending order, we made sure that the children of classes II and III had understood how to write two-digit numbers in ascending order. For example: 45,21,36,18. We asked the children to write numbers from 1 to 9 again and to place stones as before sequentially; then, remove the stones from these numbers mentioned and write the numbers (write 18 against 1, 21 against 2, 36 against 3 and 45 against 4. So, they had 18, 21, 36 and 45 and these were in ascending order).

<p>Write 45, 21, 36, 18 in ascending order.</p> <p>Steps:</p> <ol style="list-style-type: none"> 1. Write the numbers 1-9 on the floor. 2. Take four stones and considering the tens place keep them on the numbers 4, 2, 3, 6 on the number sequence 1-9. 3. Beginning from number 1, start removing the stones and write the number in the answer space. Example, remove the stone from 1 and write 18, then remove the stones from number 2 and write 21. Continue like this. <p>Now you will have the numbers arranged in ascending order – 18, 21, 36, 45</p>	<p>1 ○</p> <p>2 ○</p> <p>3 ○</p> <p>4 ○</p> <p>5</p> <p>6</p> <p>7</p> <p>8</p> <p>9</p>
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Figure 4. Steps for writing two-digit numbers in ascending order.



Figure 5. A teacher helping students in the activity.

If two numbers have the same digits in the tens place, for example: 21, 56, 32, 51, follow the phases described above. Take the two numbers which have the same digits in the ten's places. Write down the number which has the smaller digit in its one's place first.

When the children were taken through these phases, they started to understand the concept better.

After confirming that all the children were able to arrange the numbers in ascending order, we taught them to arrange single digits in descending order. Then the children learned ascending and descending orders of one-digit, two-digit and three-digit numbers easily. These activities were taught to children in phases as mentioned.

Write 45, 56, 32, 51 in ascending order.

Steps:

1. Write the numbers 1-9 on the floor.
2. Take four stones and considering the tens place keep them on the numbers 4, 5, 3, 5 on the number sequence 1-9. There will be 2 stones on number 5.
3. Beginning from number 1, start removing the stones and write the number in your answer. Example, remove the first stone from number 3, and write number 3 in your answer. Then, remove the second stone and do the same.
4. Now, there are 2 stones on the number 5. Look at the unit place and write the smaller number first (51, then, 56)

Now, you will have the numbers arranged in ascending order – 32, 45, 51, 56.

1

2

3 ○

4 ○

5 ○○

6

7

8

9

Figure 6. Steps for writing two numbers with the same digit in the ten's place in ascending order.



Figure 7. Students working out the problem with the help of stones.

We have instances of children from other schools learning the concept of ascending and descending order very easily when taught in this way. Also, since we work with a lot of teachers, we are able to share this method with all of them. Teachers have used this method and shared their experiences with us.

As you may have observed, in all the above stages, when a child understands the concept in each stage, more and more reinforcing activities are given to the child. Thus, if a child has to understand

any concept and apply it in real life, reinforcement activities play a very important role.

Our learnings

1. Children are able to understand concepts well with the help of reinforcement activities.
2. To introduce a new concept, it is very important to plan activities according to the age of the children in the class.
3. When the children are allowed to write on the floor, they love to solve the problems in their own way and learn the concepts.



Figure 8. Students engrossed in the activity.



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