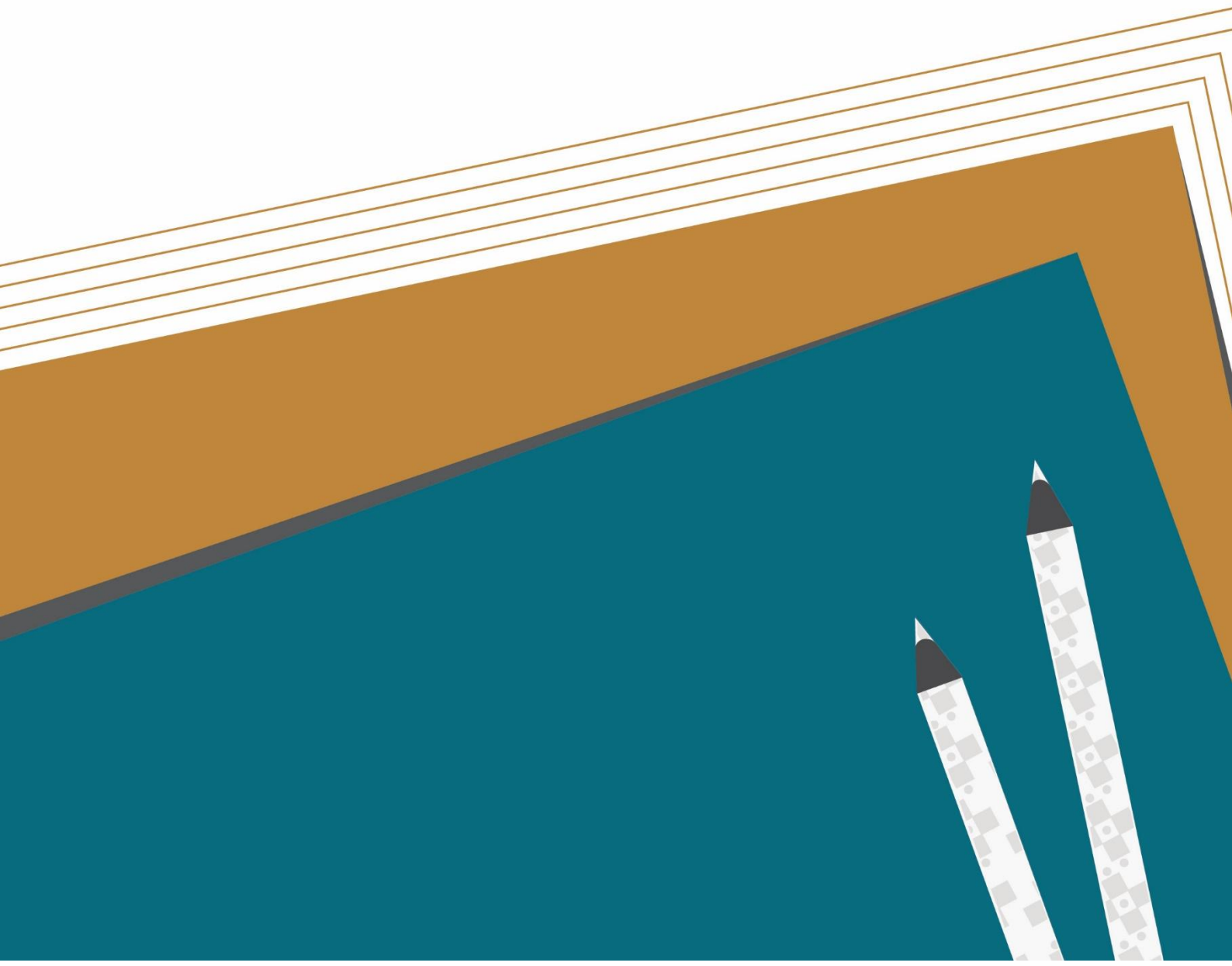


# Learners and Learning



# Learners and Learning<sup>i</sup>

## Introduction

Dear Readers! What comes to your mind when you think of the word 'Learning'? Is it memorizing some words? Is it to know how to drive a car? Is it to play the sitar? Or is it something much beyond that? Learning is difficult to define since it involves our mind which is a complex component of the human body. It includes thinking, becoming aware, using all the senses, remembering, planning and a lot of other cognitive skills. Learning is deeply embedded in us, emerging from our innate desire to take in new information by actively exploring unfamiliar territory. Learning is also embedded in the world via life experiences, social interactions, and community membership. Learning happens at multiple levels.

We are learning throughout the day either intentionally or unintentionally. When we meet people, we learn about human behavior; when we observe nature, we learn about different flora fauna; when we read travel books, we learn about places around the world and so on. Even when we all are exposed to the same world, we can notice that not all children learn the same things or at the same pace or the same way. Why is that so? What are the factors that impact learning in children?

Learners come from different backgrounds with a variety of life experiences and attributes which may be very different from their peers. As an outcome of the Right to Education (RTE) Act, 2009, composition of our classrooms has also changed. More and more children with varying levels of abilities are studying together and learning from each other. Learners' diversity is one of the main features that characterize our classrooms today. We need to develop practices so that all students have opportunities to learn, be challenged and experience success. The developing world faces challenges due to economic reasons where infrastructure for children with disability, teaching learning materials for diverse children are difficult. There are many layers and variations of exclusion that we witness in our school education system. Exclusion is rooted in different social identities which can vary from cultural background, socio-economic status, learning abilities to geographical diversity or experiential diversity such as immigration, adoption etc.

National Curriculum Framework for School Education (2023), in its chapter on inclusivity, stated that: Existing inequalities create several roadblocks in the process of achieving inclusive and equitable education across all Stages. Studies show that a large percentage of students who either drop out of school or discontinue their education after school belong to Socio-Economically Disadvantaged Groups (SEDGs). (p. 180)

In the context of school, it is critical to ensure educational equity and inclusivity for effective learning to happen. 'One-size-fits-all' approach is one of the many faults that contemporary schools happen to follow. Children are exposed to the same textbooks, expected to answer the same questions, and are judged by the same standards as if they all are the same. Ironically, after the results we try to find the differences in children (Mukunda, 2019). As teachers we must use different modes of teaching and learning and avoid getting trapped in one single teaching style. The purpose should be to stop diversity from becoming inequality. To achieve this, it is of utmost importance that we understand the ways different children learn.

Readers, in the following paragraphs we will try to understand several factors that contribute to learning in children. You will find five principles in this handout that focus on cognitive factors affecting learning that are primarily internal, but also interact with environmental factors in important ways. Teachers must consider these principles to design more effective curricula and instruction.

## Principles that impact learning in children

### **Relating new information to prior knowledge**

New knowledge is constructed on the basis of what is already understood and believed.

### **Using strategies**

Employing effective and flexible strategies that help them to understand, reason, memorize and solve problems lead to deep learning.

### **Aiming towards understanding rather than memorization**

Learning is better when material is organized around general principles and explanations, rather than when it is based on the memorization of isolated facts and procedures.

### **Engaging in metacognition**

Learners must know how to plan and monitor their learning, how to set their own learning goals and how to correct errors.

### **Providing goal-directed practice with targeted feedback**

Learning is a complex cognitive activity that cannot be rushed. It requires considerable time and periods of practice to start building expertise in an area.

## Relating new information to prior knowledge

The idea that people's ability to learn something new follows from what they already know is not new, but more recent research findings have shown that the ability to relate new information to prior knowledge is critical for learning. However, it is not impossible for someone to understand, remember or learn something that is completely unfamiliar, but familiarity forms the basis for further learning. Some prior knowledge is necessary to understand the task at hand. But having the prerequisite prior knowledge is still not sufficient to ensure adequate results. People must activate their prior knowledge to be able to use it for understanding and for learning. Research shows that students do not consistently see the relationships between new material that they read and what they already know. Research also shows that learning is enhanced when teachers' pay close attention to the prior knowledge of the learner and use this knowledge as the starting point for instruction.

*Students engage in mathematical problem-solving problems from a very young age. When asked to share play materials, they divide, when told that they took too many toffees, they subtract. Tapping into that knowledge helps in addressing gaps in learning.*

*Karan, a mathematic teacher for 5th grade students posed a problem in his class.*

*"There are 2 cats- kaali and bholi. Both eat half a can of cat food every day. They only eat twice-morning and evening. Their owner is taking them on a vacation for a week. How many cat food cans do you think needs to be purchased?"*

*Their prior knowledge of addition, subtraction and division helped them to devise strategies such as drawing, manipulatives etc. to add fractions. When posed with a real-life problem, the entire class was motivated to ensure that the cats are properly fed.*

## Using strategies

Children develop strategies to help themselves solve problems from an early age. For example, when pre-school children are told to go to the supermarket to buy a list of food items, they often repeat the items on their way to remember them better. These children have discovered rehearsal as a strategy to improve their memory without anybody telling them to do so. When they go to school, children need help from teachers to develop appropriate strategies for solving mathematics problems, when understanding texts, doing science, learning from other students, etc. To effectively learn new concepts and build new knowledge, skills, values and dispositions, students need to recognise what they already know and what else do they need to know in any situation. When teachers make systematic attempts to teach learning strategies to students, we can expect better results.

Strategies are important because they help students understand and solve problems in ways that are appropriate for the situation at hand. By the time a student reaches adolescence, they have acquired their own preferences of how they would like to learn and at what pace. Thus, some students will respond favourably to one kind of instruction, whereas others will benefit more from a different approach. Strategies can improve learning and make it faster. Strategies may differ in their accuracy,

in their difficulty of execution, in their processing demands and in the range of problems to which they apply. The broader the range of strategies that children can use appropriately, the more successful they can be in problem solving, in reading, in text comprehension and in memorizing.

*Purnima teaches science in grade 9. She discussed the chapter The Fundamental Unit of Life and asked the children to present the main takeaways of the chapter in whichever way they preferred.*

*Purnima emphasized that it could range from a drawing, a concept map, story to any form of performing art too.*

*Some of the students prepared a concept map and some made a chart with diagrams of the important concepts of the chapter. A few students even developed a skit on what organisms are made up of. The students acted the role of nucleus, plasma membrane and cytoplasm and showed an imaginary interaction between these three features of cell. They extended the skit to also show how many cells come together to form an organism. Every child used different strategies to present which also provided the teacher with an overview of their learning preferences. Purnima appreciated each child and provided her feedback on their presentations.*

*Purnima then went on to ask every child to prepare a brief note on their learnings and submit it.*

## Engaging in Metacognition

Metacognition is commonly referred to as ‘thinking about one’s thinking. Many students develop metacognitive skills on their own but some need guidance. Fortunately, research also indicates that students’ metacognitive abilities can be developed through explicit instruction and through opportunities to observe teachers (Gollub et al., 2002). Metacognitive skills can be clubbed under two categories- one can be understanding the self, such as- knowledge about oneself as a learner, knowledge about learning strategies, and knowledge about why and when to use a given strategy and second category can be on self-regulation such as the ability to plan, monitor, regulate and evaluate one’s own learning process.

The term ‘self-regulation’ is used here to indicate students’ ability to monitor their own learning, to understand when they are making errors, and to know how to correct them. Self-regulation is not the same as being strategic. People can use strategies for learning mechanically without being fully aware of what they are doing. Self-regulation involves the development of specific strategies that help learners evaluate their learning, check their understanding and correct errors when appropriate. Self-regulation requires reflection in the sense of being aware of one’s own beliefs and strategies. Reflection can develop through discussion, debates, and essays, where children are encouraged to express their opinions and defend them. Another important aspect of reflection is being able to distinguish appearance from reality, common beliefs from scientific knowledge, etc.

*A teacher plans to explicitly teach children metacognition. She sets 3 types of questions under planning, monitoring and evaluation for students to reflect upon during classroom sessions.*

<i>Planning</i>	<i>Monitoring</i>	<i>Evaluation</i>
<p><i>What are the goals of the class session going to be?</i></p> <p><i>What do I already know about this topic?</i></p> <p><i>How could I best prepare for the class session?</i></p> <p><i>Where should I sit and what should I be doing (or not doing) to best support my learning during class?</i></p> <p><i>What questions do I already have about this topic that I want to find out more about?</i></p>	<p><i>What insights am I having as I experience this class session? What confusions?</i></p> <p><i>What questions are arising for me during the class session? Am I writing them down somewhere?</i></p> <p><i>Do I find this interesting? Why or why not? How could I make this material personally relevant?</i></p> <p><i>Can I distinguish important information from details? If not, how will I figure this out?</i></p>	<p><i>What was today's class session about?</i></p> <p><i>What did I hear today that is in conflict with my prior understanding?</i></p> <p><i>How did the ideas of today's class session relate to previous class sessions?</i></p> <p><i>What do I need to actively go and do now to get my questions answered and my confusions clarified?</i></p> <p><i>What did I find most interesting about class today?</i></p>
<p><i>Note: From Promoting Student Metacognition, by Kimberly D. Tanner, 2012, p. 115 (<a href="https://www.lifescied.org/doi/pdf/10.1187/cbe.12-03-0033">https://www.lifescied.org/doi/pdf/10.1187/cbe.12-03-0033</a>).</i></p>		

### Aiming towards understanding rather than memorization

All teachers want their students to understand what they are learning and not to memorize facts in a superficial way. Research shows that when information is superficially memorized it is easily forgotten. Students fail to apply what they have learned at school to solve real-world problems. For example, they may learn about Newton's law at school but fail to see how they apply in real life situations. Why would someone want to go to school if what is learned there does not transfer to other situations and cannot be used outside the school? On the contrary, when something is understood, it is not forgotten easily, and it can be transferred to other situations. In order to understand what they are being taught, students must be given the opportunity to think about what they are doing, to talk about it with other students and with teachers, to clarify it and to understand how it applies in many situations.

*Kelsang teaches in grade 8. She divides the class into groups and distributes some old newspapers to each group. Each group is asked to identify news items which they did not agree with and detail out a summary of the selected news item and the reasons of their disagreement. Students come up with various questions and the groups discuss with each other on what their reasons are. Kelsang keeps guiding them throughout the process but refrains from providing her own opinions or views.*

*The objective of this activity is to develop scientific temper in students. Such activities nurture the questioning ability of children and also critical thinking skills which are necessary in contemporary world. Merely memorizing facts might not serve the real purpose of being a contributing member of the society.*

## Providing goal-directed practice with targeted feedback

Learning needs reinforcement to be moved to long term memory and be retrievable. Teachers must use practice, hands-on experiences multisensorial approaches, and include this in teaching-learning process to ensure mastery of concepts. It is a well-known fact that people must carry out a great deal of practice to acquire expertise in an area. Research shows that the reading and writing skills of high school students relate to the hours they have spent on reading and writing. Effective reading and writing require a lot of practice. Students from disadvantaged environments who have less opportunities to read or write and who miss school because of work or illness will not be expected to do as well at school compared to children who had more time to practice and acquire information. Along with practice providing constructive feedback is another crucial aspect of learning. When practice is coupled with feedback that explicitly communicates the performance of students provides them with information needed to meet the required criteria. It is necessary to provide targeted feedback at a time closer to the performance so that it is useful.

*Romen teaches Environmental Studies in grade 5. He discusses water conservation with his students. He takes the chapter to practice not only the given competencies of environmental studies but also other subjects such as mathematics and language.*

*Romen asks them to prepare a list of ways to save water in their houses. He further asks them to collate the same data from the elderly people in their neighbourhood and analyse how people have been saving water since ages. The students then prepare a pamphlet on conserving water with the knowledge they have gained through the chapter as well as the survey they did.*

*Romen provides feedback at every step to guide them. What kind of questions would help them get more information, how to approach people when asking questions, what is the difference between traditional ways of saving water as opposed to modern ways of saving water etc. Romen also poses certain open-ended questions for them to think and respond such as why is there a roar about saving water now? Why is there a need to save a natural resource anyway?*

## References

1. Mukunda, K. V. (2019). What did you ask at school today? A handbook of child learning book 2. HarperCollins Publishers.
2. Ostroff, W. L. (2012). Understanding How Young Children Learn: Bringing the Science of Child Development to the Classroom. <https://eric.ed.gov/?id=ED535600>
3. Vosniadou, S. (n.d.). How Children Learn [Booklet]. International Academy of Education. Retrieved June 9, 2023, from <http://www.iaaed.org/downloads/prac07e.pdf>

---

<sup>i</sup> This article is authored by Pranalee Sharma. She works as Assistant Professor in the School of Continuing Education at Azim Premji University. She can be reached at [pranalee.sharma@azimpremjifoundation.org](mailto:pranalee.sharma@azimpremjifoundation.org). This article can be cited as-  
*Learners and learning, Assessment resources, 2023, Azim Premji University*

## Learners and Learning

