

Teaching-Learning Materials: Challenges of Using Them

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Teachers use various teaching-learning materials (TLMs) during teaching. For example they use the globe while explaining the earth; potatoes, knives and protractors are used while drawing latitude and longitude lines, teaching of counting is done with the help of pebbles, mobile phones are used to show a video of Tundra region etc. Here globes, potatoes, knives, protractor, mobile phones and pebbles are being used to clarify the topic. These materials are helpful in the process of teaching and learning. For example, when the children are told about the earth being round and a globe is shown to them in order to bring clarity to this concept, then the globe is helping the teacher in explaining that concept and the child is helped in understanding the same. So the materials used during classroom transactions in order to facilitate teaching-learning process are called teaching-learning materials or TLMs. It depends on the teacher and the topic. It also depends on the teacher whether s/he uses teaching-learning material in the class or not. If the teacher does not use teaching-learning material in the classroom at all then obviously s/he does not face any challenge.

In view of the importance of the teaching profession, the professional educational qualification (B.Ed. or D.Ed.) has been made mandatory to become a teacher. Students are required to complete several teaching exercises during the training, which is done in a nearby school. Practice teaching is a very important part of training since it is here that the students understand the use and importance of teaching-learning materials. But in most of the training colleges, the practice teaching just a ritual and formality. Which means that either practice teaching does not exist in the college or even if it does then it is done without any teaching-learning material and plan.

I had gone to Raipur on one of my scheduled school visits.. I met the students from a nearby training college there who had come to work as teachers to gain experience. I went to their class and found that no teaching-learning material was used, no teaching

plan was there and not even a single professor from their training college was present. This is the case with most of the training colleges. They do not take practice teaching seriously and even if they do, the students use TLMs only to get better marks/grades. This being the case, such TLMs are prepared by professionals who charge huge amount of money. Because of this the materials are so expensive that it is difficult to bring them to class.

Although training has been made mandatory to become a teacher but most of the teachers who are teaching in the state-run schools are appointed as contract teachers under *Sarva Shiksha Abhiyan* and there is no mandatory training required at the time of appointment. Many of them even completed their college education later. Their honorarium, at the time of the appointment, was one thousand rupees and people did not want to engage in this. But according to the rules of Right to Education Act 2005, no teacher could be appointed if s/he was untrained and so they were trained and the purpose of this training was not to learn but to fulfil the eligibility criteria in order to remain in the job. Secondly, this training was done through distance education. Obviously there is a qualitative difference in a regular training programme and a distance education training programme, especially when one is also working in a school. It was disadvantageous for such working teachers. They did receive the training and earned the eligibility but their ability remained unchanged.

Learning is a lifetime process. So the provision for in-service training was made to build the proficiency of the teachers continuously and on a regular basis. In-service training programmes continued under *Sarva Shiksha Abhiyan*, but today the situation is such that no teacher wants to attend them. Even today training is happening and along with the government sector a few non-governmental organisations have also entered the arena. Either the readymade TLMs are being given or they are being made in these training programmes or teachers are motivated to make

the materials themselves. The main problem of the teachers is how to use such materials which is not addressed in the training programmes and if there is slight difficulty in using them then the teachers stop using them. Also teachers do not use teaching-learning materials in order to preserve them for a long period of time. They fear that if they get spoilt or destroyed then how will they get them back again or if the authorities want to see them what will they show them. As a result of this all the teaching-learning materials of the school remain in the cupboards under lock and key.

Under *Sarva Shiksha Abhiyan*, the schools were opened within 01 kilometre of every habitation. The schools were started with twenty or more children but only one or two teachers were appointed. Now there are five classes but the number of teachers is two or three only. This situation demands that the teacher remains in the classroom continuously. Most of the time is spent in engaging and handling the children and hence teaching takes a back seat. How can one even think of using teaching-learning materials in a situation like this?

During my school visit in Raipur (Chhattisgarh), I found that many teachers do use the teaching-learning material in the classroom despite all the challenges. For example, showing the video of Tundra region with the help of a mobile phone, counting with pebbles, showing the video for explaining the changing seasons on the LEDs, keeping gram seed in wet cotton wool to show germination of seed, using cards to explain different types of fractions, observing cells with the help of a microscope etc. One could see their determination in using these teaching-learning materials because all they wanted was to provide a better learning opportunity to the children in their school. So despite challenges in using teaching-learning materials, some teachers have found opportunities to use them so as to shift their teaching from rote learning to understanding. And this is happening not because of any fear or administrative action, but because of the strong willpower of the teachers.



This article was originally written in Hindi. It was translated to English by Nalini Ravel.

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Exploring Science through Commonly Available Materials

H R Madhusudan

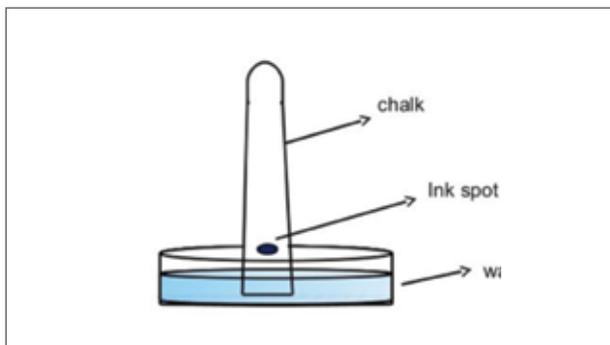


“If science is poorly taught and badly learnt, it is little more than burdening the mind with dead information and it could degenerate even into a new superstition”

D S Kothari Commission Report

The quote above was a favourite one of one of my teachers, Dr. T K Jayalakshmi, who taught us Educational Psychology and Methods of Teaching Mathematics at R V Teachers' College. Somehow, the impact of this quote on me persists even to this day. But what I have not been able to understand are the meanings of 'poorly taught' and 'badly learnt'! I suppose, as classroom teachers we have a sense of what they mean. A good teaching-learning practice involves conducting interesting activities that bring scientific phenomena into the classroom and enable children to SEE science in action. One does not need sophistication of a formal laboratory for this. Commonly available materials, a mindset to think 'out-of-the-box' and a curiosity to adapt those materials to demonstrate scientific concepts are all that are needed. We have mentioned a few examples of this approach.

Chalk: We know that chalk is a porous object. It is often used as an ink-blotter. The same property can be used to demonstrate **chromatography**, a fundamental principle of separation of mixtures –, an important method to separate components of a certain type of mixture.



Add a drop of black sketch pen ink along a thin groove made parallel to the base of the chalk. Stand the chalk in a plate containing a small amount of water. Make sure that the level of

water is below the groove. After a few minutes, different colours appear at different heights from the groove! Black ink is composed of a mixture of different pigments. The mixture in a solvent gives the perception of black! In fact, there is no single pigment that give out 'black colour' (Why?). This is a big, counterintuitive idea.

Let us continue with the chromatograph experiment. An experiment or a demonstration without questions or discussion of the observed result or phenomena is totally useless, misplaced and a great distractor to learning. So, here are a few sample questions related to this experiment: why do pigments separate out at all? And why at different heights? What is the force that 'carries' the pigments against gravity? Do black inks manufactured by different brands have same colours mixed in them? Are inks of different colours also formed by a mixture of pigment of different colours? Is a dustless chalk better than the ordinary chalk for this experiment?

Mahogany Pod: Mahogany is a common tree, especially in Bengaluru. While it is a popular choice in furniture-making, its pod can be a teachers' delight. What can be taught using it? Well, it can be a TLM for many a concept across various subjects and topics.



Mahogany pods are found packed in a shell. As summer approaches, the shell cover loses water content, dries up and develops cracks on its surface. And at some point the shell breaks open showering down the pods packed inside. The shower itself is a treat to watch. Each shell has more than thirty