

## Connecting the Dots

**Rishi Raj Balwaria**

Assistant Professor, School of Liberal Studies and Education, Navrachana University, Vadodara India

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### Abstract

The education commission (1964-66) has highlighted that “the ultimate aim of education is all round development of personality of student.” Students coming to classroom are not blank slates. They might have less or more exposure to the content knowledge. As teacher we have to aware them, train them and socialize them. The role of the teacher is also to prepare the students to become good adaptive learners as per The National Curriculum Framework (2005). NCF, 2005 also emphasis that, ‘We need to give our children some taste of understanding following which they would be able to learn and create their own versions of knowledge as they get to meet the world of bits, images and transactions of life.’ This can be done effectively if as a teacher we know about the students’ previous knowledge and know about strategies to boost their prior knowledge. This paper is an attempt to put forward information on prior knowledge and strategies to enhance students learning.

**KEYWORDS**-Prior knowledge, Brainstorming, Body Language

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### Introduction

Also, in the words of National Curriculum Framework, 2005: —Education is concerned with preparing citizens for a meaningful and productive life, and evaluation should be a way of credible feedback on the extent to which we have been successful in imparting such an education. Seen from this prospective view, current process of evaluation, which measure and assess a limited range of mental faculties, are highly inadequate and do not provide a complete picture of an individual’s abilities or progress towards fulfilling the aims of education (NCF, 2005). As it was rightly said that education is concerned with preparing citizens for a meaningful and productive life but sometimes the classroom situations create an unhealthy environment which hinders the teaching learning process. There might me many reasons but one among the other reason is students poor or inadequate prior knowledge.

### What if students don’t have prior knowledge?

As a teacher we always try to start with set induction. On a person note, I always inquire about their prior knowledge on the topic. For example, I read a stanza form ‘Madhushala’ written by Harivansh Rai Bachhan, a well known poet of 20<sup>th</sup> Century and a question like this can be posed to them, ‘Do you identify the period of any poem or prose while reading the text or do you recognize the author who has written this text?’ Thou they have read the text and heard about it on television or on electronic media. They are not able to answer it properly. Then where the problem lies? Is it related to memory because they have poor or inadequate memory or they are not involved in the activity, therefore, not in the situation to recognize it? Another response to the same would be they might not be interested in the content or the environment is not so conducive to promote learning. What so ever may be the reason

finally students is not able to recall or related it with the knowledge they gained from their past school/college experiences.

### **Is it really so hard to understand?**

In their academic journey they have been already devoted much time in the school education and at higher education. Teachers may have explained the chunk of information without related to prior knowledge or knowledge may not developed in the spiral way that is new knowledge is not constructed on the previous knowledge. When we are involved in task gradually we start understanding the content and its related component and many a times we are in the position to see inter relationship between content points and vise a versa. In this situation it's true to say that their prior knowledge hinders in developing a proper association that ultimately forces the knowledge to come closer. As mentioned earlier it depend on the connection we make in two or more topic to understand and organize it at cognition level.

As we all know that to enhance students understanding of the course content and the interrelated concept by connecting it to their prior knowledge and experiences it may be related from previous courses, or from everyday life or sometimes it might be totally new topic to them. But we always try to develop background and related it to the present content so that students are surrounded by enabling environment. But at this point we are also not clear where the problem is. Their present knowledge is not enough or not able to create appropriate connection between the previous and present knowledge. And as a result they may not able to comprehend the content. Thus, the new learning cannot be presented in isolation it must be proper marinated with the previous knowledge of the students otherwise instead of helping students it hinders their learning. And this will provides a concrete foundation for the new content.

### **Understanding students' body language**

By looking at students face, we can recognize what is happening in their mind. As an individual student they gains knowledge from formal in formal and non formal education. This knowledge is consists of an fusion of facts, concepts, perceptions, beliefs, values, and attitudes, some of which are accurate, complete, and appropriate for the context, some of which are inaccurate, insufficient for the enhancement of learning, or simply inappropriate for the context. So they have lot of information but very staggered and unorganized. And they enter in the classroom with all sort of knowledge during interaction hours they filter and interpret incoming information from teacher perspective and students' perspective and by their own reflections. This process takes longer times to understand the content. And we can easily identify unpleasant body language from the students' side. And so students' new learning build on a foundation of dynamic and accurate prior knowledge, forging links between previously acquired and new knowledge that help them to construct simple to complex knowledge structures. However, students may not make connections to relevant prior knowledge spontaneously but with regular efforts we can integration of new knowledge.

### **What Research says?**

To construct new knowledge prior knowledge plays a vital role. It also depends on teacher's capability to connect it with students' previous knowledge. As rightly recommended by Vygotsky (1978) and National Research Council (2000), 'Students connect what they learn to what they already know, interpreting incoming

information, and even sensory perception, through the lens of their existing knowledge, beliefs, and assumptions.’ In the research conducted by Bransford & Johnson (1972) and Resnick (1983) emphasis that, ‘there is widespread agreement among researchers that students must connect new knowledge to previous knowledge in order to learn new knowledge.

In the classroom when prior knowledge is connected with present knowledge or content knowledge by the teacher then students can develop better connection within the content and this will lead to more relevant and appropriate knowledge and finally they retain more. Research conducted by Kole and Healy (2007) showed that college students who were presented with unfamiliar facts about well - known individuals demonstrated twice the capacity to learn and retain those facts as students who were presented with the same number of facts about unfamiliar individuals. This study illustrates how prior knowledge of a topic can help students integrate new information.

We might have observed that even small instructional interventions in the classroom by the teachers can activate students’ relevant prior knowledge leads to positive effect. In Bransford & Johnson (1972) and Dooling & Lachman (1971 ) studies suggested that with minor prompts and simple reminders, instructors can activate relevant prior knowledge so that students draw on it more effectively. On similar lines a study conducted by Gick and Holyoak (1980) on college students were presented with two problems that required them to apply the concept of convergence found out that even when the students knew the solution to the first problem, the vast majority did not think to apply an analogous solution to the second problem. And only when the instructor suggested to students that they think about the second problem in relation to the first, 80 percent of the student participants were able to solve it. It indicates that the way teachers ask questions also affect students learning. Research also suggests that asking students questions specifically designed to trigger recall can help them use prior knowledge to aid the integration and retention of new information (Woloshyn, Paivio, & Pressley, 1994). This suggests that we should ask to recall their prior knowledge related it with the present knowledge. This will generate relevant knowledge from previous contents or their own experiences and facilitate their prior knowledge to integration with new material to have improved learning and retention.

Students learn more readily when they can connect what they are learning to what they already know as recommended by Vygotsky (1978) and National Research Council (2000). It should always not possible that students recall prior knowledge on the spot. However, teachers should not assume that students will immediately or naturally draw on relevant prior knowledge. Instead, they should deliberately activate students’ prior knowledge to help them forge robust links to new knowledge.

There are different types of knowledge recorded as declarative knowledge (it can be understood as the knowledge of facts and concepts that can be stated or declared) and procedural knowledge (knowledge about the how to know and how to apply) as topologies of knowledge. In the teaching learning process, students may know the concept very well but while applying that concept they may face difficulties. This usually happens because declarative knowledge and procedural knowledge are different and required different set of skills to practice it separately. It was also observed in the studies conducted by Berry & Broadbent (1988) ; Reber & Kotovsky

(1997) and Sun, Merrill, & Peterson (2001) that students can often perform well without knowing the procedure knowledge. This can be understood as they do better without having clear understanding of the task. For example students might know about the various statistical tests to be used in the any research study. But they might not be able to select them to select appropriate statistical test for the research data to execute it properly and how to use it for interpreting the results. Result of mentioned researches supported that prior knowledge plays a vital role in the teaching learning process.

### **Suggestion to foster prior knowledge**

There is several ways to foster prior knowledge. Some of the ways you may be practicing in your classroom discourse. We need to connect these dots or their prior knowledge with the present knowledge to gain new knowledge. This can be done by using the following suggestions.

1. **Be prepared and try to achieve the day specific objectives.** We all must be agreed that knowing what is and knowing how or knowing when is different, as teachers we should be clear about the objective of the content to be taught. So be prepared and try to achieve the day specific objectives in your classroom discourse.
2. **Irrelevance or inaccurate prior knowledge hinders new learning.** As mentioned above in any task if prior knowledge is irrelevance or inaccurate it will not support new learning. As teachers we should try to make build knowledge on the bases of their prior knowledge sense of what they are learning by fitting it into what they already know or believe.
3. **Use brainstorming technique to reveal prior knowledge.** We can conduct a brainstorming session in set induction to expose students' prior knowledge. This will help them to unlock there associations, assumptions and beliefs.
4. **Have a discussion with colleagues.** Before you commence the classes collect information from colleagues regarding students' prior knowledge in their specific subject and their personal interest areas. There is no thumb rule to say that what we taught to the students they leant it. So, collect information about students, know their difficult areas then handle their queries.
5. **Tell them to prepare a concept map.** You can assign a task to prepare a concept map on the topic. This may help students to know their understanding about the topic. As a teacher we also get individual students content knowledge. This will help teacher to prepare content and activities accordingly.
6. **Prepare and conduct diagnostic test.** You can take formative assessment by asking questions, conducting essays, at the beginning of the course. Get them involved in the activity. By this you can get the essence of your classroom and accordingly you can plan your class lessons.
7. **Give rubric in advance for their assessment purpose.** This can help students to access their own prior knowledge and avoid unnecessary distraction.
8. **Ask students to make question bank.** Usually students always have doubt about what teacher will ask in the examination. You can also help them to construct question bank.
9. **Best use of proxy period.** You can use proxy periods to drill their knowledge. This can help students to strengthen their knowledge and use the same in multiple ways.

## Conclusion

We try to understand the critical role of prior knowledge in fostering new learning. It was revealed from the mentioned studies that if students' prior knowledge has gaps and inefficiencies it may not adequately support new knowledge. To enhance teacher has to excavate what students know and what they believe and then construct new knowledge by adding relevant knowledge and eliminating inaccurate knowledge. We must take care of this neglect area to enhance students learning.

## References

Bansford, J.D, & Johnson, M.K. (1972). Contextual prerequisites for understanding : Some investigations of comprehension and recall. *Journal of verbal learning and verbal behaviour*. Academic Press, New York and London.

Gick, M. L., & Holyoak, K.J. Analogical problem solving. *Cognitive Psychology*, 1980, 12, 306-355.

National Council of Educational Research and Training. (2005). *National Curriculum Framework 2005*. New Delhi: NCERT.

National Research Council (2002), *How people Learn: Brain, Mind, Experience, and School*, J.D Bransford, A.L. Brown and R.R. Cocking (eds.), Committee on developments in the Science of Learning and Committee on Learning Research and Educational Practices, Washington DC: National Academy Press.

Report of the Education Commission - 1964-66, Government Of India, Ministry of Education, New -Delhi. (Kothari Commission)

Resnick, L. B. (1983). Mathematics and science learning: A new conception. *Science*, 220(4596), 477-478.

Vygotsky, L. S. (1978). Interaction between learning and development. In M. Cole, V. John-Steiner, S. Scribner, & E. Souberman (Eds.), *Mind in society: The development of higher psychological processes* (pp. 79–81). Cambridge, MA: Harvard University Press.

Woloshyn, Vera & Paivio, Allan & Pressley, Michael. (1994). Use of Elaborative Interrogation to Help Students Acquire Information Consistent With Prior Knowledge and Information Inconsistent With Prior Knowledge. *Journal of Educational Psychology*. 86. 79-89. 10.1037/0022-0663.86.1.79.

## Websites

Berry, D., & Broadbent, D. (1988). Interactive tasks and the implicit-explicit distinction. *British Journal of Psychology*, 79, 251–272. Available from: Retrieved from [https://onlinelibrary.wiley.com/doi/pdf/10.1207/s15516709cog2502\\_2](https://onlinelibrary.wiley.com/doi/pdf/10.1207/s15516709cog2502_2). Retrieved on Sep. 23 2018

Dooling, D. J & Lachman, R. (1971 ). Effects of comprehension on retention of prose. *Journal of Experimental Psychology*, 1971, 88, 216-222. Available from

<https://journals.sagepub.com/doi/pdf/10.1080/10862967609547192>. Retrieved on Oct. 11 2018.

Kole and Healy (2007), How Does Students' Prior Knowledge Affect Their Learning? Available from: [https://www.colorado.edu/ftcp/sites/default/files/attached-files/ftcp\\_memo\\_to\\_faculty\\_88\\_0.pdf](https://www.colorado.edu/ftcp/sites/default/files/attached-files/ftcp_memo_to_faculty_88_0.pdf) . on 17 Oct. 2018.

Reber, P. J., & Kotovsky, K. (1997). Implicit learning in problem solving: The role of working memory capacity. *Journal of Experimental Psychology: General*, 126, 178-203 (PDF) Implicit and Explicit Learning of Decision Making in Sports is Effected by Complexity of Situation. Available from: [https://www.researchgate.net/publication/232554560\\_Implicit\\_and\\_Explicit\\_Learning\\_of\\_Decision\\_Making\\_in\\_Sports\\_is\\_Effected\\_by\\_Complexity\\_of\\_Situation](https://www.researchgate.net/publication/232554560_Implicit_and_Explicit_Learning_of_Decision_Making_in_Sports_is_Effected_by_Complexity_of_Situation). Retrieved on Oct. 13 2018.

Sun, R., Merrill, E., & Peterson, T.(2001). From implicit skill to explicit knowledge: a bottom - up model of skill learning. *Cognitive Science*, 25, 203–244. Available from: <https://www.uni-trier.de/fileadmin/fb1/prof/PSY/PAE/Team/Schneider/RittleJohnsonSchneiderInPress.pdf>. Retrieved on Oct. 14 2018.