



Roles Played by Students' Prior Knowledge in Classroom Discussions

Sreeja M. *, Aaloka Kanhere

Homi Bhabha Centre for Science Education, TIFR, Mumbai, India.

sreeja@hbcse.tifr.res.in*, aaloka@hbcse.tifr.res.in

Classrooms are spaces which demand communication. In every classroom, exchange and construction of knowledge takes place. In most classrooms a bulk of communication is done by the facilitator but students also participate in the classroom communication. There are a lot of factors on which the participation of students in the classroom depends on; like their personalities, language of classroom interaction, the facilitators' beliefs, and students' prior knowledge. In this paper, we will be looking at instances where students' prior knowledge helped them participate in the classroom interaction.

Keywords: Classroom Discourse, Prior Knowledge, Classroom Interactions

Introduction

A lot has been said about how knowledge is constructed in a classroom in a participatory way. In a lot of classrooms, the facilitator might be looked upon as an authority who determines the classroom discourse but a lot of times students' participation can change this discourse. Students raise queries, or respond to inquiries (Abdullah, et al., 2012). The participation of students depends on many factors such as the facilitator's beliefs, language of instruction, cultural background and environment. Another important factor which can affect students' active communication in the classroom interaction is their prior knowledge. Prior knowledge is the knowledge or information that is already known to students. This knowledge or information can come from many activities done by them, their other experiences and observations (Ahied et al., 2020). Students make connections between what they are learning and what they already know by using their preexisting knowledge, ideas, and understanding to interpret new information (Ambrose, et al., 2010). Prior knowledge can stimulate interest, guide attention, help interpret new information, aid memory encoding, enable logical inference, and guide problem-solving (Ormrod, 2019). The prior knowledge that the students bring to the classroom can be accurate but not relevant for the current topic or can be inaccurate or can be incomplete (Diaz, 2017)), this inaccurate knowledge can form misconceptions (David, 2017) and sometimes also hinder future development (Ambrose, et al., 2010).

Research Questions

The study aims to address the following research questions:

- How does students' prior knowledge encourage their participation in the classroom?
- Does the choice of topics affect students' classroom participation? How is this related to their prior knowledge?

Methodology

The focus of study was to understand how students' prior knowledge influences their participation in the classroom interaction. Here by prior knowledge, we mean knowledge that students gain from their experiences and observations outside the classroom or bringing from their everyday contexts. Two different sessions covering secondary level topics with the same set of 26 students were observed. Each session was 150 minutes long. Observation notes written down during the sessions were used as data to get an idea of the overall session. Even though the session was fully video recorded, only some parts of the videos from both the sessions were used as data for this study. The selection of video clips was based on the observation notes. The purpose of watching videos was to identify the conversation between students and facilitators where prior knowledge was used. After multiple times of watching the videos, the conversations were transcribed and analysis was majorly done based on that transcript. But, video clips provided additional information about gestures, body languages and the nature of interaction among individuals.

Findings

In one of the conversations analysed, one would see students discuss whether pickles can get spoiled or not. Students were trying to give statements to support their view regarding whether pickles were spoiled or not spoiled. Even though the ingredients of a pickle and their connection to a pickle getting spoiled or not had not been discussed, one student commented on the ingredients of pickle and their preservative nature. The student also commented about 'preservation' and 'preservatives' two terms which were not mentioned in the class till then, in order to add strength to the reasoning and concluded that the pickle was not spoiled. 'Finding the conditions of spoilage' was not a part of the session but the student listed the conditions in which pickles can undergo '*spoilage*'. The student's prior knowledge about pickles and their preservative nature might have helped the student guess the objective of the session and further helped the student in making a conclusive statement about pickle getting spoiled or not. In another session on Soil, while a discussion about laterite soil was going on, the students were asked to think about other types of soils which exhibit similar properties as the laterite soil. One of the students cited cement as an example because it becomes hard when it dries up. But some students objected to it and said it was not purely soil but a mixture of soil and other components. Here one can see two kinds of prior knowledge helping in the classroom discussions. And both of them together helped in building a conversation and helped in learning. Another student could build a connection to the conversation going on in the classroom to the houses she has seen during the visits to her native village (Goa). Excitement of being able to see something she had seen earlier to the classroom was evident from her gestures. This instance can be seen as an example of students' feeling confident while she builds a connection between classroom topics to her own experiences. This finding is consistent with the findings from other studies (Geoffrey, 2021), that precise prior knowledge instills confidence in learners during the teaching and learning process. Students who have 'sufficient' prior knowledge are able to make connections between the new knowledge and their existing experiences, which allows them to actively engage in the teaching and learning process. It can increase their self-esteem and confidence. (Stenlund, 2010)

Conclusion

Classroom interaction is a conversation between the facilitator and the students and also among the students themselves. Activities involving commonly seen resources like food or soil enable the students to share their prior knowledge in the classroom hence enhancing the quality of classroom interactions the students have. Topics like food and soil can give facilitators and students opportunities to build new knowledge along with enhancing or correcting their prior knowledge. The facilitator should search for topics and opportunities which will enable students to use or correct their prior knowledge, and use their experiences in the classroom. In our analysis, we observed instances where a student's prior knowledge helped the facilitator move the classroom discourse towards the objective of the session. We also saw an example of how inaccurate prior knowledge led to an interaction between students. Lastly, we also found examples where prior knowledge helped an individual student feel confident and relevant in the classroom. Research points out all these as effects of students' prior knowledge on classroom interactions. We conclude that these instances show us that every piece of prior knowledge that students get to the classroom can be valuable, and can be considered as a foundation for building further knowledge or correcting earlier knowledge.

References

1. Abdullah, M. Y., Bakar, N. R. A., & Mahbob, M. H. (2012). Student's Participation in Classroom: What Motivates them to Speak up? *Procedia-Social and Behavioral Sciences*, 51, 516-522.
2. Ahied, M., Fikriyah, A., Rosidi, I., & Muharrami, L. K. (2020). Activating students' prior knowledge of basic science concepts on animal and human system organ. *Biosfer: Jurnal Pendidikan Biologi*, 13(2), 280-291.
3. Ambrose, S. A., Bridges, M. W., DiPietro, M., Lovett, M. C., & Norman, M. K. (2010). *How learning works: Seven research-based principles for smart teaching*. Jossey-Bass.
4. David, M. (2017). *Principles of learning that works*. Los Baños: College of Public Affairs and Development, University of the Philippines Los Baños.
5. Diaz, K.V. (2017). *Prior knowledge: Its role in learning*. University of the Philippines Los Baños: Los Baños, Philippines.
6. Geoffrey, M. (2021). Children's prior knowledge is very important in teaching and learning in this era of constructivism. 10.13140/RG.2.2.28470.22083
7. Ormrod, J. E. (2019). *Human learning* (8th ed.). Pearson.
8. Stenlund, T. (2010). Assessment of prior learning in higher education: A review from a validity perspective. *Assessment & Evaluation in Higher Education*, 35(7), 783–797.

Acknowledgments

The authors would like to thank the participating students and facilitators for their support and cooperation. The authors also acknowledge the Vigyan Pratibha team for their support, help and suggestions in writing this analysis. We acknowledge the support of the Govt. of India, Department of Atomic Energy, under the Vigyan Pratibha Project No. RTI - 4008.