

TPS Based Collaborative Learning to Enhance Real-World Concept Mapping

Dr. Saurabh Sharma, Dr. Shubhra Jain, Dr. Yashwant Singh Patel, Dr. Arindam Bhattacharjee, Dr. Vinay Trivedi

Dept. of Electronics & Communication Engineering, Dept. of Mechanical Engineering, Dept. of Computer Science and Engineering

Thapar Institute of Engineering and Technology, Patiala

Introduction

Think-pair-share (TPS) is a cooperative learning strategy used to easily monitor student understanding of content or language objectives. It gives all students a chance to think and discuss [1], [3],

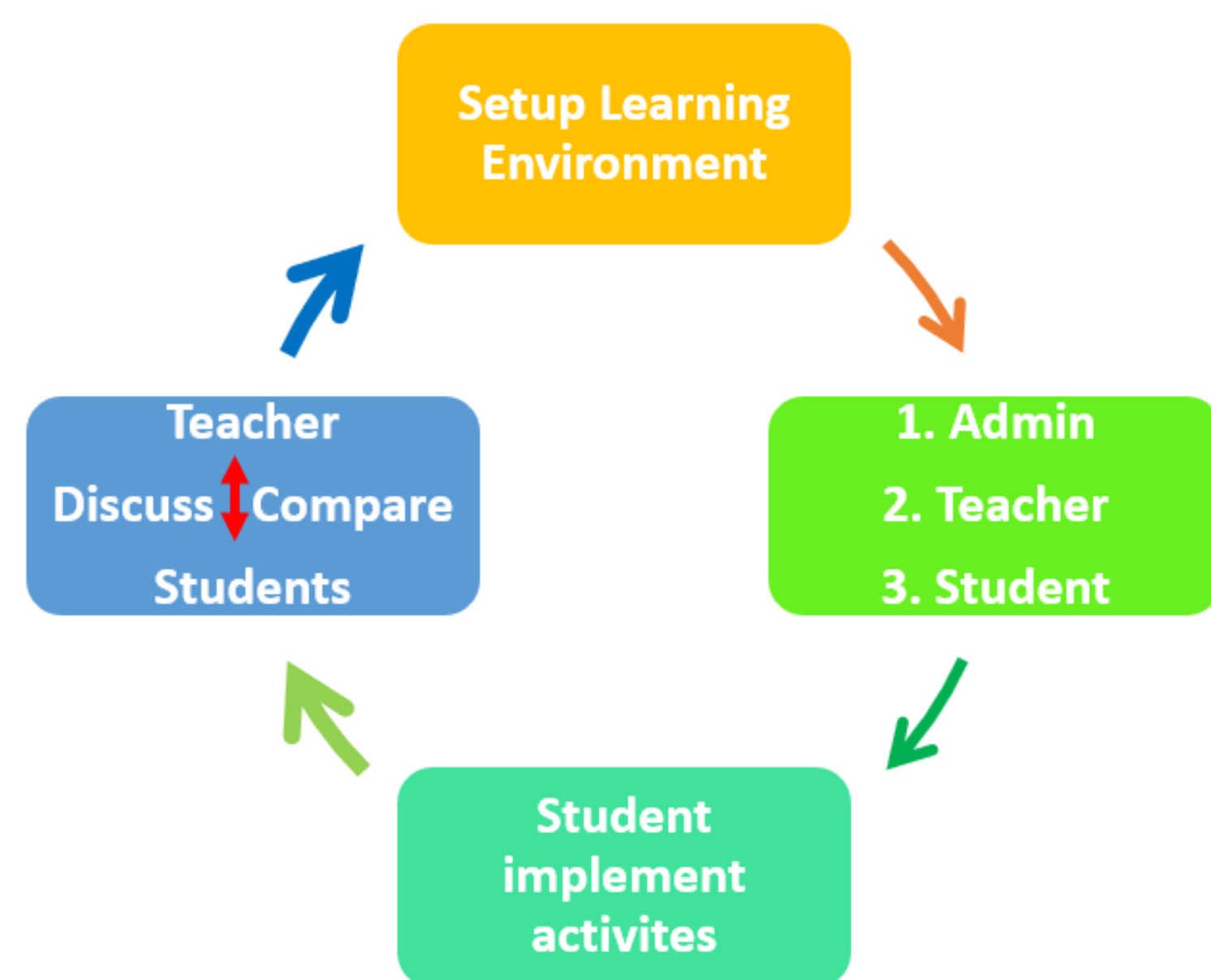


Fig 1: Think-Pair-Share

Collaborative Learning

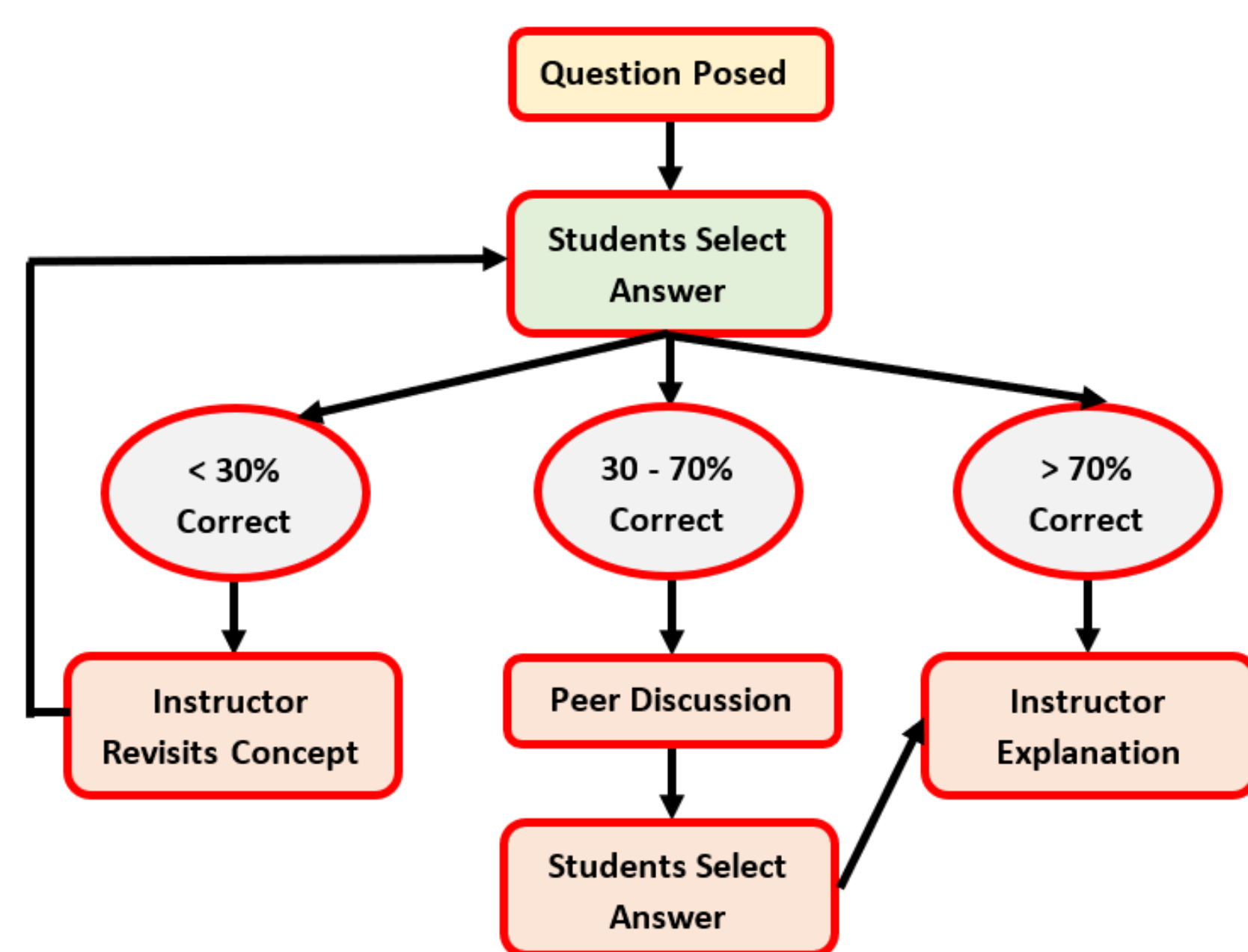


Fig 2: TPS Based Collaborative Learning

Reflection

We noticed a significant improvement in student learning and participation after adopting the intervention. Strengths of the Intervention [2], [4]:

- It is a good alternative to increase student participation in the classroom
- It is a traditional method of knowledge verification.
- The student answering, the discussion between peers enhances the development of other skills such as active listening, creativity, thinking criticism, self-esteem, acceptance and mutual help.
- The teacher, while sharing, can observe any flaws and correct them immediately. It is also possible for the teacher to give feedback on the student ideas.

Challenges

Challenges faced during the Intervention:

- Monitoring participation in lectures is difficult.
- Creating the assessment criteria was a difficult task.
- It was rather difficult to evaluate all of the students' solutions that were provided. Because each submitted solution consists of different steps, time is an important consideration.

Activities

- Describe TPS to class, explain utility, form groups (2/3)
- Pose questions: (i) may be open-ended questions, (ii) related to higher order thinking skills, (iii) students form question related to 2 or more CLOs of same subject or different subjects
- Students first think, note the points & then discuss their response/thought process with group
- Groups share their discussion with the entire class & discussion continues
- Can use TPS as assessment (peer as well), note points while think, pair & share time
- Split a big problem into parts, assign to groups and let students work out the full solution [5]

Results and Discussions

In order to reflect on the entire process of this intervention, We gathered informal feedback at the end of this intervention using a form. Total 14 students shared their experience about the intervention.

- The process of learning or improving technical skills related to the course as a result of this activity.
- The extent to which this exercise added value to their present knowledge level.
- The notion of extending this practise to lab classes in other courses is also being considered.

The participants' overall reaction was quite positive. We are confident in executing this intervention this year, with some improvements and recorded feedback.

Contribution to learning



Applications

- Recall prior knowledge
- Interpret and describe any image
- Finding an answer using the available data
- Propose a hypothesis to be tested
- Brainstorming of all materials associated with a specific concept.

References

- [1] Derek Bruff. *Teaching with classroom response systems: Creating active learning environments*. John Wiley & Sons, 2009.
- [2] Ahmed Amin Awad Raba. The influence of think-pair-share (tps) on improving students' oral communication skills in efl classrooms. *Creative Education*, 8(1):12–23, 2017.
- [3] Firda Razak. The effect of cooperative learning on mathematics learning outcomes viewed from students' learning motivation. *JRAMathEdu (Journal of Research and Advances in Mathematics Education)*, 1(1):49–55, 2016.
- [4] Mary Budd Rowe. Wait-time and rewards as instructional variables: Their influence on language, logic, and fate control. 1972.
- [5] A Sampsel. Finding the effectiveness of think-pair-share on student confidence and participation. *Bowling Green State University, Honors Project.(link)*, 2013.

