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From Passive Listener to Active Learner: Using Peer Instruction to Increase Student Engagement

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Views of Education
Peer Instruction: Results from a Range of Classrooms

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1 Introduction
Peer instruction (PI) is a widely used pedagogical approach in which students are presented with a question (or set of questions) and are asked to respond individually on paper or with a clicker. After approximately one minute, the instructor reveals the correct answer and asks for volunteers to explain why the other answers are incorrect. This process is repeated for each question until all students agree on the final answer. PI has been shown to improve student learning in a variety of settings, including large lecture classes, small group tutorials, and online courses.

2 Literature

3 Conclusion

Figure 1: Percentage of students who correctly answered the question before, during, and after the discussion. The percentage of students who correctly answered the question increased from before the discussion (20%) to during the discussion (60%) and then to after the discussion (90%).
Learning Objectives

I can...

- Describe multiple perspectives regarding what it means to be a teacher.
- Identify the structure of a Peer Instruction (PI) and Jigsaw Strategy sequence of events.
- Describe the research supporting the defining characteristics of PI.
I'M TEACHING
What is the role of a teacher?

Is a teacher’s job to simply transfer information?
Our Plan

- Experience Peer Instruction as learners
- Reflect on our experience to determine what Peer Instruction is
Example Lesson - Peer Instruction

Let’s Practice!
Views of Education

Peer Instruction

(Mazur, 2014)
Thermal Expansion

(Mazur, 2014)
Thermal Expansion

(Mazur, 2014)
When metals get hotter, they expand because:

A. The atoms get closer together
B. The atoms stay the same distance from each other
C. The atoms get farther apart
D. None of the above

(Mazur, 2014)
1 Views of Education

2 Peer Instruction

3 Literature

4 Discussion
When metals get hotter, they expand because:

A. The atoms get closer together
B. The atoms stay the same distance from each other
C. The atoms get farther apart
D. None of the above

(Mazur, 2014)
Suggestions for Using Questions During Instruction

1. Use questions as an assessment for learning, not just an assessment of learning.
2. Use questions to drive instruction forward.
3. Explicitly prepare questions in advance.
4. When possible, ask questions about a real world thing and not the concept that explains a real world thing.
Thermal Expansion

(Mazur, 2014)
Thermal Expansion

(Mazur, 2014)
Consider a rectangular metal plate with a circular hole in it.

When the plate is uniformly heated, the diameter of the hole:

A. Increases
B. Stays the same
C. Decreases

Please submit answer to pollev.com/vh568 or text VH568 to 22333 to join the session, then text letter answer

(Mazur, 2014)
When the plate is uniformly heated, the diameter of the hole:

- Increases
- Stays the same
- Decreases
Please take a minute to discuss your answer with someone who gave an answer that was different from yours.

(Mazur, 2014)
Consider a rectangular metal plate with a circular hole in it.

When the plate is uniformly heated, the diameter of the hole:

A. Increases
B. Stays the same
C. Decreases

Please submit answer to pollev.com/vh568 or text VH568 to 22333 to join the session, then text letter answer

(Mazur, 2014)
When the plate is uniformly heated, the diameter of the hole:

- Increases
- Stays the same
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Start the presentation to activate live content

If you see this message in presentation mode, install the add-in or get help at Poll Everywhere.
Before I give you the answer, let’s analyze what happened.

(Mazur, 2014)
Some of the reasons why Peer Instruction can help support learning:

- Students commit to an idea, encouraging metacognition.
- Students externalize their ideas.
- Students move from fact recall to application of ideas.
- Students become emotionally invested in the learning process.

(Mazur, 2014)
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Views of Education

1. Peer Instruction

2. Discussion

3. Literature

4. Discussion

(Mazur, 2014)
(Mazur, 2014)
Views of Education

Peer Instruction

(Mazur, 2014)
Example Lesson – Jigsaw Strategy

• We’ll split into Home Teams and then break out into temporary Expert Teams.
• Each Expert Team will be responsible for reading and digesting the important points of a section of the review paper.
• Then, the members of each Expert Team will be responsible for sharing their findings to the members of their Home Team.

![Diagram of Home Teams, Expert Teams, and Home Teams splitting and combining]

1 Views of Education
2 Peer Instruction
3 Literature
Example Lesson – Jigsaw Strategy

Expert Teams’ Reading Assignments

Team 1: “Why Does the Type of Question Posed Matter?”
Team 2: “Does Individual Thinking Matter?”
Team 3: “Does Showing the Distribution of Answers after the First Vote Matter?”
Team 4: “Does Peer Discussion Matter?”
Team 5: “How Does the Role of the Instructor Affect PI?”
Team 6: “Does Grading Matter?”
What are some of the ways that you currently use questions during your classes?
<table>
<thead>
<tr>
<th>Real world thing</th>
<th>Concept</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper cut</td>
<td>Mitosis</td>
</tr>
<tr>
<td>Trees growing</td>
<td>Photosynthesis</td>
</tr>
<tr>
<td>Dropping a ball</td>
<td>Gravity</td>
</tr>
</tbody>
</table>
What are some examples of real world things vs. concepts in your discipline?
Learning Objectives

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- Describe the research supporting the defining characteristics of PI.
Thank you!

References


Elements of this presentation, include some content and slide layout, are from: Andrew West at Colorado State University and Cornell Center for Teaching Excellence (2014, January 16). *Eric Mazur/Turning lectures into learning* [Video file]. Retrieved from https://www.youtube.com/watch?v=dUJS48XQeXE