

PEER-LED TEAM LEARNING LEADER TRAINING

FACULTY GUIDE MODULE: **WHY THERE ARE NO ANSWER KEYS**



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The Importance of This Topic

It is common for students to work through problems and check the answer to make sure they got it right. However, this technique puts more emphasis on getting the right answer and less emphasis on understanding the problem's concepts. Without answer keys, students are able to focus on understanding how to solve a problem so that it makes sense according to the theories and information they have learned in lecture. This method not only gets students to the correct answer (if there is one) but also helps them understand how they got there and why it makes sense.

Putting Theory into Practice

Students often ask the leaders how to solve the problems in their workshops. Leaders can avoid this by not bringing worked out problems to workshop. Leaders can suggest concept maps, round robin approaches to problems and paired problem solving techniques to help students understand how to solve the workshop problems. Perry's Model of Intellectual Development suggests that there are four levels of development ranging from dualistic thinking to broad conceptual thinking. Leaders can use this theory to pair students appropriately.

What Leaders Will Gain From This Module

- An understanding of why there are no answer keys
- An understanding of why they should not give students answers or figure out problems for them
- An understanding of Perry's Model

Outline of LT-Module Activities and Expected Outcomes

Tooth Pick Game

The leaders pair up and try to eliminate toothpicks from a pyramid set up. The player that is left with the last tooth pick loses the round. The leaders play this way several times then combine with another two-member team to play two-on-two. They continue playing the game until time has run out or they have discovered one or several solutions.

Outcome

The leaders will discover that there is no single way to always win the game.

Objective

This game will help the leaders understand why there are no answer keys in PLTL. Often times in science the answer is unknown or there may be more than one solution to a problem.

Possible Discussion Questions for Weekly PLTL meeting

- Was there one solution that assured you a win every time?
- How can you use what you have learned from the game to explain why there are not answer keys in PLTL?

Scenarios

The leaders will choose one of the following scenarios to discuss within the group.

- A student tells his professor that they do not work in pairs during workshop. Rather, they work on problems and compare answers.
- A leader's workshop group copies a concept map that is left on the board to leave time to work on the "real" problems.
- One student writes the answer on the board to an entire problem that is intended to be completed by a round-robin approach. The other students say that they understand how to do the problem but get it wrong on the test.
- The leader allows the students to look at the answers to the problems after they have finished the workshop. After getting a question wrong on a quiz, one of the students complains to the teacher that the leader gave him the wrong answer during workshop.

Outcome

The leaders will choose one scenario to discuss and talk about why it is important not to give the students answers.

Objective

The leaders should learn that by giving the students the answers or by allowing other students to give students answers, the students are not able to truly learn the material. This will affect the students' understanding of the material, which will affect their grade.

Possible Discussion Questions for Weekly PLTL meeting

- How does working on problems and comparing answers differ from paired problem solving?
- Why is it important to work through problems that use round robin or concept maps as opposed to skipping them to work on "real" problems?
- How does giving student answers affect your role as a leader?

Perry's Model of Intellectual Development

The leaders discuss Perry's Model:

- *Dualism*: right vs. wrong
- *Multiplicity*: multiple viewpoints that have equal weight
- *Relativism*: no absolute right or wrong
- *Commitment in relativism*: broad conceptual understanding

Outcome

The leaders will discuss whether or not a student can utilize different types of thinking in different subject. They will also create a concept map of the Perry Model.

Objective

This activity allows the leader to get an in-depth look at the Perry Model. It also allows them to evaluate what kind of thinker they are, their students are, and what type of thinking they feel is most productive.

Possible Discussion Questions for Weekly PLTL meeting

- Can a student have a different thinking style for different subjects?
- Where are you in the Perry Scheme of Development?

Leader/Faculty Meeting Outline

1. Hand out sign-in sheet

2. Questions to ask to open up discussion (20 min)

Toothpick Game

- Was there one solution in the Toothpick Game that assured you a win every time?
- How can you use what you have learned from the game to explain why there are not answer keys in PLTL?

Scenarios

- How does working on problems and comparing answers differ from paired problem solving?
- How does giving student answers affect your role as a leader?

Perry Model of Development

- Can a student have a different thinking style for different subjects?
- Where are you in the Perry Scheme of Development?

3. Points to emphasize

- Do not give students answers. To help a struggling student, ask questions that will allow the student to figure out the answer.
- Use concept maps, round robin, and paired problem solving to help the students understand difficult concepts

4. Have the leaders work on the workshops (30 min)

References and further readings

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