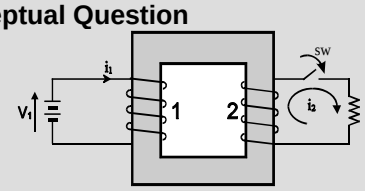
PISER

Description PISER stands for Peer Instruction and Student Electronic Response. It is a specially designed classroom based activity which integrates two elements: Peer Instruction (PI) and Personal Response System (PRS). Peer Instruction is the central thrust of the activity while the Personal Response System is only a machine which collects responses from remote transmitters. The design of the PISER method makes use of the convenience of the PRS to enhance the effectiveness of peer instruction in class as illustrated in example 1 below. On the other hand, the PRS is sometimes used simply for displaying answers from students as in Example 2 which misses the essential spirit of the PISER method.

Example 1 A conceptual question like the one shown below is presented to the students.

Conceptual Question



Two mutually coupled windings are arranged on a ferromagnetic core as shown in the adjacent figure. Winding 1 is connected to a DC voltage source V_1 and winding 2 is connected through a switch to a resistor.

When the switch SW closes, the current induced in winding 2 will be:

a. clockwise
b. counter clockwise
c. zero
d. depends on when the switch closes
e. need to know number of turns

(Snider, 2001)

- Students tackle the question individually in the first place.
- They submit their answers by using the PRS, which displays the result pattern of the whole class on the screen immediately.
- Prompted by the results, students are given a few minutes to discuss their answers with their peers through the process of explaining and justifying their answers, listening to and challenging other peers' answers and critically examining other alternatives.
- Then, they answer a second time by using the PRS.
- This will be followed by a micro lecture dealing with the theories and principles behind the correct answer.

Example 2

- Students tackle a question individually.
- They submit their answers by using the PRS.
- Students tackle another question and submit their answers again by using the PRS and so on.
- All responses are transmitted to the machine and scores are calculated.

How Active?

- Example 1 shows clearly that the PISER method allows students to make their first attempts at the question and then engages them in critically evaluating their answers and discussing with their peers to rectify errors and refine their answers. The spontaneous display of the answer statistics serves as a quick and helpful feedback to the students, which motivates them to debate and clarify their answers.

	• While Example 2 also provides opportunities for working on problems in class, it misses the most important point of peer learning.
How Related to Real Life?	The PISER has been used successfully to bring in authentic and conceptually difficult problems and real-life issues for discussion in the classroom and even in the mass lecture.
What Learning Outcomes?	PISER is an effective method for increasing interactions amongst students. However, if used in a wrong way as depicted in Example 2, the concept of Peer Instruction can be overlooked. In this example, PISER is employed solely as a tool in a quiz where students are encouraged to memorise information in order to get the marks. In contrast, in Example 1, students do not only learn to solve conceptual problems but also to become more critical and analytical when they justify their choices and challenge the others. When discussing with their peers, they also learn to communicate effectively.