Guidelines for Using any Article as a Professional Development Experience

As facilitator of a mathematics professional learning community (PLC), there are many opportunities to use articles from the NCTM professional journals to increase teachers' content and pedagogical knowledge. Whether the chosen article focuses on content specific task or Research to Practice, there is flexibility in how the article can be used.

PRE-PLANNING FOR FACILITATOR
Read the selected article in its entirety. The following decisions will need to be made before using the article with the PLC:

- Which parts of the article will be read – before, during, or after – the session?
- Which reading/text-based discussion strategies will be used, such as jigsaw, Last Word, anticipation guide, charting group ideas, or K-W-L?
- How will participants be grouped? Which group facilitation strategies will be utilized?
- Which sequence will be followed during the session: (1) Read-Do-Apply-Reflect or (2) Do-Read-Apply-Reflect?

READ gives an overview of the research or task; DO allows participants to actively participate with the content and instructional techniques implied and extended in the article's task; APPLY has participants discuss necessary preparation to use the task or research in their classroom; and REFLECT has participants react to student work after having performed the task or research in their classrooms. If the task is completed within the article, it might be worthwhile for participants to complete the task before reading the article.

READ THE ARTICLE:
Prior to reading the journal article, the facilitator elicits from participants their prior knowledge about the article's content. The participants will expand their knowledge as they read the selected article. After reading the article, the group in their predetermined arrangement reflects on the following questions:

- What insights did you gain from reading the article?
- What questions arose from the reading of the article?
- How does this information challenge/confirm your thinking about the topic?
- What will you do in your classroom as a result of the information from this article?

DO THE TASK
Choose the task in the article or one that is similar to the article's content to demonstrate the strategies. The participants should complete the task, either individually or in partners. Discuss the following questions:

- What mathematics content and processes are important in the task? Specifically relate the task to state/district mathematics standards.
- What does this task have the potential to reveal about students' understanding of the content and process?
- What student errors or misconceptions might emerge as a result of doing the task? How might you, as teacher, address these errors or misconceptions?
- How is this task similar/different from other problems in the curriculum? What will this task replace/compliment in the curriculum?

APPLY THE TASK

In preparation to apply the task in the participants' classrooms, it will be important to discuss the following questions as a group.

- What prior instruction/knowledge needs to occur in order for students to be successful on the task?
- What challenges might be encountered by the students as they complete the task as described?
- What modifications are needed to the task based on the needs of your students? What extensions can be included for the task?

The Professional Learning Community decides on a time to return for more discussion after completing the task with their students.

If the chosen article focuses on Research to Practice, each participant will design an action plan to validate the research ideas in their classrooms. Each PLC member should document the effect of the research on students and their learning before, during, and after the action plan is implemented.

REFLECTING ON THE TASK

Each participant brings their student work from the completion of the article's task, picking one to two papers from their sample they consider to be completed at a high, medium, and low level. They should also include student work that illustrates interesting approaches, significant mathematical misconceptions, or other papers they wish to discuss with the entire group.

Before looking at the student work, facilitate a discussion using the following questions:

- What did the task reveal about students' understanding of the content? What did you learn about your students as a result of them completing the task?
- Why do you think the task was challenging/easy for your students, such as lived experiences, prior knowledge, intellectual strengths, and/or personal interests?

Each of the participants' papers can be combined at each level to reflect on the following questions:

- How did the students at the various levels approach the completion of the task?
- How does the task help/hinder the students' conceptual understanding of the content?
- What further instruction is needed to enhance the students' understanding of mathematics?

With "Research into Practice" articles, conduct a follow-up discussion on the application of the research to the participants' classrooms.

- How did the new ideas impact your classroom and instructional practices?
- What did you learn about your students as a result of the research action plan?
- How did the Research into Practice enhance students' conceptual understanding?
- How did the Research into Practice enhance students' mathematical reasoning?
- What will you do now as a result of the Research into Practice classroom action research?