PROCESSING NEW INFORMATION

CLASSROOM TECHNIQUES TO HELP STUDENTS ENGAGE WITH CONTENT

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Contents

Instructional Technique 1

USING COLLABORATIVE PROCESSING

Cooperative learning is a teaching model in which students work in groups to accomplish tasks or projects the teacher assigns. The effects of a rigorous implementation of cooperative learning on student achievement can be seen in a solid body of research (Johnson et al. 1981; Walberg 1999). The cooperative model is an indispensable tool in facilitating your students' active processing of new information. Cooperative learning differs from simple group work in two important ways: 1) individual and group accountability are built into every processing activity, so that all group members are required to participate and produce, and 2) group members are taught and then expected to fulfil certain roles during the cooperative process (McEwan 2007). You cannot assume that your students will understand these two essential aspects of cooperative learning merely because they have experienced it in other classrooms. Take time at the beginning of each school year or new term to model and directly teach your students about how active processing works using the cooperative model. Heterogeneous cooperative groups provide all students with a measure of control over their own learning and offer struggling students opportunities to work with strong academic role models.

How to Effectively Implement Processing New Information Using Collaborative Approaches

The effective implementation of processing new information using collaborative techniques requires that you take a careful look at exactly how you view the widely used teaching model known as cooperative learning. There is no real difference between the dictionary definitions of the terms *cooperative* and *collaborative* – they both suggest a shared effort to accomplish a task or endeavour. They also appear as synonyms for each other in the thesaurus. In some contexts, authors refer to students working together as cooperative and teachers working together as collaborative. In this technique, as in other techniques found in the book, the

Common Mistakes

There may be instances when problems arise during your implementation of processing new information using the Think-Pair-Share method. Knowing in advance where the roadblocks lie can result in a more effective implementation. Here are some common mistakes to avoid:

- The teacher fails to teach and model the technique for students.
- The teacher fails to provide the necessary think time and thereby undermines the effectiveness of the technique.
- The teacher fails to monitor students' processing to determine whether they are actively processing the new information that the teacher presents or the students read.
- The teacher fails to keep the process moving along in a timely fashion, and students' attention lags.
- The teacher fails to design questions and tasks for students to think about that are directly related to the new critical information.
- The teacher overuses the Think-Pair-Share method for unimportant or trivial tasks rather than focusing on students' active processing of critical information.

Examples and Nonexamples of Processing New Information Using Think-Pair-Share

Review the following examples and nonexamples from both primary and secondary levels. Although the year levels or subject matter may differ from who and what you teach, use this opportunity to think about how you would design similar Think-Pair-Share opportunities for your students to process new information.

Primary Example of Processing New Information Using Think-Pair-Share

The learning target for this primary example is the following content description from the Australian Curriculum: English for Year 4:

- Create literary texts by developing storylines, characters and settings (ACELT1794)

Table 3.1: Definitions of Terms for Implementing Concept Attainment

Term	Definition and Discussion for the Teacher
Concept	An important idea related to your information. You might even call it a big idea. Choose the concepts for using concept attainment with care, making sure that they are connected to your learning targets and worthy of the time that you and your students will devote to them.
Example	An effective model of a specific concept.
Nonexample	An ineffective model of a specific concept.
Attribute	A characteristic, trait, quality or feature of a particular person, place, thing or idea.
Defining attribute	A characteristic that must be present to distinguish a particular person, place, thing or idea. For example, the defining attributes of triangles are that they are closed and three-sided.
Nondefining attribute	A nondistinguishing characteristic of a particular person, place, thing or idea. For example, different triangles might have various sizes, colours or orientations, but none of these attributes define a triangle.

There are two versions of the concept attainment technique. In the first version, a less demanding cognitive exercise, the teacher identifies the concept, a familiar one to students, and they then determine the attributes of that concept. This first version is more suited to younger students or for your first experience using the concept attainment technique as a teacher.

In the second, more demanding version of the technique, the teacher does not name the concept, often introducing it as a mystery term, and the students must make informed guesses about the concept based on the examples and nonexamples the teacher provides. A step-by-step lesson plan for introducing the first version to your students is shown in Table 3.2. Column 1 contains directions for the lesson step, while Column 2 provides additional explanatory information. Once you have read and understood Column 2, you need to consult Column 1 only when you wish to review the lesson steps.

Figure 3.1: Ins and Outs from the Secondary Example Lesson

INs (example)	OUTs (nonexample)
volcano	geyser
flood	ocean tides
tornado	explosion
earthquake	eclipse
landslide	bridge collapse

The teacher has some evocative questions ready to ask students when they think they have determined accurate attributes. She asks, "What about a drought? Would you call that an 'In' or an 'Out'? What about a bushfire? An oil spill?" The students go on to create a list of attributes from this activity. Figure 3.2 displays their list.

Figure 3.2: List of Defining Attributes for a Natural Hazard

1. *much destruction results*
2. *happens in the natural world*
3. *caused by weather, geology or humans*
4. *can be either somewhat predictable or totally unpredictable*

At the end of the lesson, the teacher asks students to write their own definitions of a natural hazard and list its defining attributes. Teacher and students agree that the best part of the lesson is the friendly controversy that occurs during the discussion about whether an oil spill is a natural hazard. Some students want to change their definitions at that point, and others argue that it fits the criteria they have determined.

Secondary Nonexample of Processing New Information Using Concept Attainment

The learning target for this secondary nonexample is the following content description from the Australian Curriculum: Geography for Year 8:

- The causes, impacts and responses to a geomorphological hazard (ACHGK053)

Determining If Students Can Process New Information Using Jigsaw

As the final step in the implementation of the Jigsaw process, take time to monitor that your students accomplish two things: 1) they understand the power of collaboration for solving problems and processing new information, and 2) they have sufficiently processed new content information. Here are some behaviours that effective teachers can monitor:

- Students can provide an exit ticket explaining the main ideas presented by each group member or a summary of all the information they learnt.
- Students can engage in a whole-group discussion in which the teacher carefully notes the depth of their information.
- Students chosen randomly from each group can share information presented from an expert in their group.
- Students make corrections or ask the teacher for clarification.
- Students assume ownership of their responsibility as group members in both their home groups and their expert groups.
- Students ask each other pertinent questions about the information during both their home groups and their expert groups.
- Students can verbally explain what they learnt.
- Students can actively discuss and report the information from other experts.
- Students ask each other questions about the information and generate conclusions.
- Students readily teach their assigned content and eagerly learn content from other home group members.

Table 4.3 (p. 74) displays a student proficiency scale for processing new information using the Jigsaw process. Use it to plan for instruction that targets the desired result.

thinking, 2) teach and model the four cognitive processes for your students, and 3) implement one or more of the various versions of the RT method.

Master the Four Cognitive Processes of Reciprocal Teaching

The first step to the effective implementation of RT is mastering the four cognitive processes and experimenting with them as they apply to your own thinking and reading. If you teach reading comprehension in your classroom, you will likely have enough background knowledge to make this first step nothing more than a quick review. However, bear in mind that if you have used different definitions or approaches for these processes in your classroom, you should continue to use terminology that your students have already mastered. Table 5.1 presents a set of definitions to scaffold your learning and teaching of the processes.

Teach and Model the Reciprocal Teaching Process for Your Students

Do not attempt to implement RT by simply telling your students to predict, question, clarify and summarise. You might assume that since your students are in the upper primary or secondary years, they are quite familiar with the terms, can define them, can describe them and actually know how to apply them in their reading and thinking. If so, you are most fortunate. However, if you want your students to routinely use these processes to assume a role as a leader or teacher of a small collaborative processing group, take the time to teach and model each cognitive process.

Modelling what a strategy sounds like can seem awkward and scripted, but until students can actually hear the words the teacher speaks, they will be less likely to assume the role comfortably. Figure 5.1 provides some examples of what each of the RT strategies might sound like in the context of a discussion. Use these suggestions to prepare your own think-alouds, or share them as prompts to students who will be assuming the various roles or leading the discussion on their own.