How To: Use “Chunking”

DQ2: HELPING STUDENTS EFFECTIVELY INTERACT WITH NEW KNOWLEDGE

Element 9
Strategies For Chunking Content into “Digestible Bites”

We process new information in our working memory which is very limited in space. Our brains become overwhelmed when given too much information and are unable to retain new information. Thus, breaking the content into small chunks of information allows the brain to actively process the information. The more the students know about the material, the larger the chunks can be. When students are introduced to brand new concepts, the chunks should be smaller to allow the brain time to process and make connections to the new material. Teachers need to plan how they will break the material into “chunks” or “bites” when presenting new information. This can be done by pausing a lecture, video, demonstration, or reading at strategic points.

After each small chunk of new information is provided, the students should work in small groups to discuss the new information. The teacher might ask them to summarize and restate the information, discuss any confusion they have, and might finally have them predict what will come next in the lesson or what would happen if a small change occurred. The underlined techniques help students’ process information. The teacher might want to bring the whole group back together to answer any remaining questions, but after the cooperative groups’ discourse, when the students appear to have mastered the material, the teacher should move onto the next chunk of information.

The teacher needs to distinguish between declarative (informational) or procedural (skills and processes) knowledge when planning the chunks. Declarative information usually requires talking in detail about the information. Procedural knowledge usually requires demonstrating and practicing the new skill or strategy. Either type of critical-input experience requires the elements listed above - small group interaction, summarizing, clarification of unclear components and prediction of what is to come or what happens when a component is changed.

Examples are included on the following pages.
Example 1 taken from *A Handbook for the Art and Science of Teaching*
Demonstration of Ecological Interdependence (Declarative Knowledge Focus)

In this biology class, students are studying the concept of symbiosis and interdependence within ecosystems. The teacher begins his presentation by showing them a series of photographs and short DVD clips of a specific type of ecosystem found throughout the planet. He then stops his presentation and asks students to form groups of three to discuss the information presented. The focus of their discussion becomes identifying key concepts and structural components of each of the systems presented. As the teacher presents additional system descriptions, students in each triad select a letter: A, B, or C. Member A summarizes the information presented in that segment. Then students B and C add to or modify what student A has said. At the conclusion of this activity, groups share their conclusions and questions they would like answered for clarification. The entire class then brainstorms predictions about what they may encounter as they learn about the next ecosystem. They continue this process as they explore each of the major ecosystems they will investigate in the course.

Example 2 taken from *A Handbook for the Art and Science of Teaching*
Introduction to Designing a PowerPoint Presentation (Procedural Knowledge Focus)

Students in this computer applications class are learning to create a basic PowerPoint presentation on a subject of their choice. The teacher carefully chunks her introduction of key skills and strategies students might use. The first chunk involves a demonstration with follow-up small group debriefing and application of the ranges of slide formats that can be chosen and the purpose for each. The second chunk involves the creation of a slide involving a title and illustrative bulleted items. The final chunk models and allows students to practice their use of various visual techniques, such as fade and fly-in animations. Between each section of teacher demonstration and modeling, students debrief on what they have learned, collaborate on trying out specific strategies, and discuss clarifying questions such as:

- What are the key skills and procedures you learned in this segment?
- How would you teach someone else to use these skills and procedures?
- Are there areas you would like to revisit or have modeled again?
- How can you apply what you learned in this segment to the PowerPoint presentation you will be designing?

Students also make predictions about what they will learn in the next segment.

Example 3 taken from *The Art and Science of Teaching* of an editing strategy for a compare-and-contrast composition (Procedural Knowledge Focus)

Assume a teacher has taught a specific strategy for editing an expository compare-and-contrast composition for overall logic. The strategy involves the following components:

1. In your own words try to state the two things you are comparing.
2. Look over your composition and make sure the elements being compared are clear to the reader. If not, make the necessary changes.
3. Next, state the specific characteristics on which the elements are compared.
4. Look over your composition and make sure these characteristics are clear to the reader and that you have clearly described how the elements being compared are similar and different on these characteristics. If not, make the necessary changes.
5. Next, state the overall conclusion you came to as a result of your comparison.
6. Look over your composition and make sure this is clear to the reader. If not, make the necessary changes.

The teacher designs a critical-input experience for the students using two unedited compare-and-contrast compositions from two anonymous students from the previous year. Steps one and two constitute the first chunk. One of the sample essays is placed on the overhead, and used as the composition with which the teacher demonstrates the procedure. Each student has a copy of the second composition. Also each student has a copy of the six-step process. The students are separated into cooperative learning groups of three. The teacher places the composition on the overhead and talks through the first two steps, verbalizing her thoughts as she executes the steps. She then asks the groups to address these steps. All members of the group try the first two steps. Member A summarizes his experience and elicits input from members B and C. Groups also identify confusions that one or more of the group members have. These are addressed by the teacher in front of the class. Conjectures about other parts of the procedure are elicited, and a new chunk of information is presented. The group members rotate the responsibilities and member B summarizes his experience during the next chunking phase. The process continues until all of the steps of the strategy have been discussed.