

Made it clear how each topic fits into the course

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Why this Teaching Method Matters

College teachers have invested years of work and thought in their disciplines. By virtue of their disciplinary skills, training, experience, and intuitions, they are experts with deep knowledge of the details of their subjects and broad understanding of the principles, theories, and concepts that underlie their disciplines. They have a “gestalt” that allows them to think in broad strokes, but also in parsimonious and elegant ways, about the content and its implications and applications. Compare this to the knowledge and experience of students, especially new students, and the gulf is apparent.

How can the teacher’s breadth and depth of knowledge be translated into language, terms, concepts, and applications that students can grasp? One way to consider this question is to first identify the kinds of knowledge that teachers possess and to compare it to the knowledge students possess. Lee Shulman (1) has outlined three kinds of knowledge: 1) content knowledge – knowledge of one’s discipline; 2) pedagogical content knowledge – knowledge of teaching and its application to one’s field; and 3) curricular knowledge – knowledge of both kinds accompanied by a repertoire of strategies and understandings that allow the most effective teaching and learning to take place. All college teachers possess content knowledge. It is the foundation of their base (disciplinary) profession. Some have pedagogical knowledge as a result of trial and error experience, having had skilled mentors, or because their instincts and innate ability allow them to communicate effectively. But curricular knowledge is the province of the master teacher and takes years to develop. How can IDEA results connect with expertise?

IDEA item #6 addresses one of the key components in curricular knowledge: being able to organize content so that students can best understand not only the basic facts

and principles, but also their relationships and the ways in which they connect to form larger ideas. Though making clear how topics fit seems obvious and simple on the surface, it is often the case that the deep expertise of the teacher leads to presumptions about students’ grasp of the material. In effect, what is crystal clear to us may be “clear as mud” to students. Indeed, as people with native ability and vast experience, we may not be able to immediately perceive what problems students are having or why they are having them because we simply never had to deal with these problems. We intuitively understood the material and its structure. Thus, one basic aspect of curricular knowledge is the ability to translate this understanding and to show students how content is structured and connected.

From another perspective, research on the dimensions of college teaching (2, 3) also provides powerful evidence of the importance of helping students to organize the content. With respect to student achievement, the most strongly correlated teaching dimensions are organization and clarity. These dimensions are also powerful predictors of student ratings, perseverance, and retention. When teachers make clear how topics fit, they help students to construct accurate schemas and they clarify the structure of the discipline. The result is better student learning and increased student satisfaction because that learning becomes more apparent.

As additional information, look at your scores on IDEA items #2 (helping students to answer their own questions); #4 (demonstrating the significance of the subject), #11 (relating content to real-life situations); #13 (introducing stimulating ideas), and #10 (explaining material clearly). There should be some similarities, and if your scores on this group of items are consistent and positive, then you can feel comfortable that you are doing a good job of providing students with a solid un-

derstanding of foundational issues. In terms of student achievement, this kind of organization also promotes more accurate note-taking and more effective studying. Item #6 also correlates strongly with IDEA learning objectives #21 (gaining factual knowledge); #22

(learning principles and theories); #23 (learning to apply course material); #24 (developing specific skills and competencies); and #32 (acquiring an interest in learning more about the subject).

Applying this Teaching Method in the Classroom

In order to show the relationships of topics, it is often helpful to use reviews and summaries. Advance organizers and reviews reinforce organization and re-emphasize the sequence of past topics before new material is presented, and summaries help to bridge topics by demonstrating the relationships of previously learned material to new subject matter. Some content (math, for example) is linear and hierarchical. One requisite skill follows another and it is relatively easy to demonstrate how knowledge of one topic allows successful learning of another. For example, division is taught before fractions because it is a prerequisite skill. However, in many other disciplines, the relationships of topics are not as apparent. Thus, a second hint is to tell students when transitions occur and re-emphasize how and why topics fit. When the material is more complex, it may be necessary to point out specific instances where similarities and links exist and to help students learn processes that they can apply when other new material is presented. There is a disciplinary critical thinking component involved here, and when we make these connections and show students the epistemology of the discipline, we are introducing them to not only to content, but also to underlying structure. Zull (4, 5) has stressed the need to help students make these connections and to construct knowledge by connecting new learning to prior learning. Without a grasp of the structure of knowledge in a discipline, students treat content material as discrete bits of information which they memorize for tests and rapidly forget. Thus, from early in the term, it is helpful to assess not only recall of information, but also understanding of the structure of knowledge. Active learning, group projects, and other strategies that engage students in applying information and in finding solutions to problems force the issue of assembling and integrating information into a usable form. Thus they not only provide practice for students, they also offer mechanisms for the teacher to monitor progress and understanding.

Applying this Teaching Method Online

Many of the techniques usable in face-to-face instruction apply equally in online situations through the use of different media. Reviews, summaries, and linkages among topics can be provided through lecture notes or videos. Online, timely response to a message serves essentially the same purpose as answering a question in class, and a well-designed syllabus available on the Web is not really different than one provided on paper. However, there may be some advantages in online situations. For example, it is often the case that redesigning courses for online learning requires a review of the organization of content and materials to compensate for the lack of direct opportunities to provide such information and because sharing course content online requires organizing that content to fit some organizational scheme supported by the course management system (CMS). One area for review is required reading lists. Is it clear how readings fit into the course and address important topics? Recent comments on educational blogs (6) suggest incorporating such review and re-thinking in a 'backward design' (7) strategy. At least anecdotally, reports suggest that this review process improves organization and provides students with more detailed descriptions of course objectives and of content topics and relationship. Recent research (8) includes several "principles" that focus on this kind of review and clear specification of course and content structure. In face-to-face classes, there are opportunities to directly address the relationships of topics and to immediately address questions or confusion. In online settings, immediacy often takes the form of a response to an individual question in an exchange of electronic messages or postings that are preserved via CMS and thus, have the advantage of providing a permanent set of notes that can be referred to at any time. These notes can be archived and turned into a "Frequently Asked Questions" (FAQ) resource that can be used again if the course is repeated. Thus, the online environment offers a unique opportunity to reinforce important points, deal with confusing content, and to make clear, how topics fit together. Rather than a one-time explanation in class, accessible only to those students who were present at the moment, the teacher can now

provide an accessible and lasting resource available at any time. This suggests that another useful strategy is to locate and make available other sets of resources that serve the purpose of providing learners with structural and epistemological information that weaves discrete course/content components into a more understandable whole cloth. Such resources could include visual representations such as concept maps (9, 10) that provide alternative structures of subject epistemology and topical relationships. This can be done online or face-to-face, but it is important to remember that learner frustration or confusion can occur unnoticed in online environments and providing such resources reduces the risk of attrition due to learners' failure to grasp the organization and relationships of course topics.

understand the material and whether it is appropriate to introduce new material or to spend more time on current material to correct inaccuracies or any misunderstanding.

Assessing this Teaching Method

Assessment is critical to understanding whether students have acquired the knowledge and skills necessary to move ahead with new material. This assessment is best done on an ongoing basis so that the teacher can follow students' progress rather than waiting until mid-term to discover that many students have not grasped basic material. Angelo and Cross (11) offer specific methods for assessing knowledge, skills, analysis, and critical thinking, and each description of a technique includes examples drawn from various disciplines. For example, techniques such as the "misconception/preconception check," "minute paper," "categorizing grid," and the "content, form, and function outline" have the potential to help students organize content and to see the extent to which they can explain topical relationships. When used in conjunction with active learning and/or group work where students have to explain their thinking to others, these techniques are useful tools for self-assessment. Another very useful strategy is to use "knowledge surveys" (12, 13). These surveys ask students to rate their perceived understanding of subject matter, and when coupled with measures of actual content knowledge, these surveys help teachers and students to discover what parts of the content are well- or poorly understood. This understanding saves time by identifying learner areas of strength and also brings the focus of teaching and learning to those topics where better understanding is needed. When regularly used, these assessment processes let the teacher know in a timely fashion whether students

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