Teachers' Corner

Applying Gibson's Concept of Affordances to the Study and Use of Pedagogy in the Classroom: An Ecological Approach

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The growth of Scholarship of Teaching and Learning (SoTL) efforts as well attempts to apply findings in the Science of Learning are both influencing teaching and pedagogy in developmental courses from very different vantage points. Yet, both have yet to thoroughly address critical issues that are important for informing classroom teaching practice.

Like many emerging fields, the field of SoTL has amassed literally hundreds of studies describing concrete classroom applications. A closer look at theses studies, however, reveals a conflicting array of main effects with little effort to develop theoretical models that could form the framework with which to explain and integrate these findings into an organized explanatory system. This not a new problem in science, and certainly not new to Developmental Science. On the other end of the spectrum, findings in the Science of Learning are just beginning to move from the controlled setting of the laboratory toward acknowledging the complexity of the teaching and learning process in the many contexts in which it occurs. This, too, is not a new issue to Developmental Science (e.g., Bronfenbrenner, 1977; 1979). From a teaching perspective, this abundance of conflicting main effects and decontextualized findings can lead to a rather simplistic array of techniques and explanations that lack the sophistication and complexity to properly generalize to the classroom.

For example, much of the pedagogy in introductory-level developmental textbooks is derived from a literature devoted to improving reading. Poor readers may have difficulty prioritizing their reading or knowing what information in the narrative is primary and what is supportive. The addition of features such as bold words, summaries and key word lists signals to the poor reader what is important. In the lab, that is. In a very interesting study on the pedagogical features of textbooks, Regan Gurung (2004) found neutral to negative effects for such pedagogical features when assessing classroom performance. How is a teacher to resolve these conflicting findings?

One of several concepts that can be brought to bear on this issue is Gibson's concept of affordances (1977). Briefly, objects may have many properties and uses to an individual, realized or not, other than those for which the object was designed. For example, while a chair may be designed to sit upon, it can also be used as a support to reach a light bulb, to fight a lion, to make certain noises and even to chew on (although I do not recommend it!). Thus, while a particular metacognitive or pedagogical strategy may work under supervised, constrained or guided conditions, it may not work as designed to encourage learning in a less structured context. In fact, if the student adopts different goals (for example, efficiency rather than learning impact), lacks sufficient prior knowledge, is deficient in requisite skills to interact with the technique properly, or is confused about the optimal way in which to use the method, the strategy may actually subvert learning in the desired manner. That is, the affordance(s) that were accessed in the lab may not be the same affordances that the student chooses to interact with independently.

Let's examine a very typical example: While a student may interact with bold words in a textbook as a signaling device to prioritize the reading when instructed to do so (and, perhaps, supervised), they may interact with that very same feature as a tool to avoid the reading when left to their own devices. Thus, while the bold words are designed to support reading, the way they are presented in textbooks also offers perhaps more salient affordances that support focus on learning decontextualized vocabulary words.

This argument puts the onus of learning squarely in three areas: The learner, who we are used to blaming; the context (by default, this is actually most often the teacher, who is a major player in developing learning goals, classroom culture, course design, assignments, structure and support); and the designer of the pedagogical or learning strategy. I would like to suggest that, much like iPods, pedagogical strategies can be better designed for the learner and practitioner by making the distracting affordances less salient, if not by removing them completely, in favor of a more targeted and strategic interface. Until this becomes part of the process of moving from the lab to the classroom, I suggest a few guidelines for teachers to improve the likelihood that students will interact with pedagogy in the way we hope they will:

1) Design – As much as you can, design away the potentially subversive affordances and make the desirable ones more prominent.

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2) Instruct – Teach the students how to properly use the technique. Textbooks, while nominally replete with pedagogy, rarely meaningfully instruct the student on how to use these components (and even fewer provide evidence that using the included pedagogy correctly will actually enhance learning!).

3) Align Goals - As mentioned above, a common student's goal is to get finished quickly, while teachers are looking for learning impact. In both cases, however, these goals are often implicit. Making your teaching goals explicit and mapping them onto the desired strategy can motivate certain students to interact with the pedagogy more appropriately.

4) Find Your Level – Make sure that the strategy or tool that you are making available is accessible to the level of the student in terms of prior knowledge and requisite skills. A technique that is above the level of the student may encourage shortcuts while one far beneath the level of the student may be ignored or misused.

5) Cognitive Load – The more complex or unfamiliar the strategy, the more the student has to devote effort navigating its use rather than learning. Target the strategy and scaffold it appropriately.

6) Formative Assessment – Consider building opportunities for the student to check the impact of the strategy or tool into the exercise. This could provide critical feedback to the student whether they are using it improperly and encourage appropriate adjustments.

7) Don't Commit – Pilot pedagogical techniques and strategies in YOUR context before committing to them 100%. Remember, not everything works for everyone, everywhere, every time.

Lastly, I encourage teachers to be very picky consumers. Demand from the literature, and the publishers, evidence that specific techniques hold promise in your context before adopting or including it with ubiquity. Even then, remember that you will have to adapt pedagogical strategies to your own goals, style and students to make it work effectively. By paying attention to the various ways in which your students may use, or misuse, particular pedagogical tools, a good teacher has the opportunity to intervene and optimize their learning impact.

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