Experts as teachers: Can we Abate the Disconnect between Expert and Student?

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Experts as teachers: Can we Abate the Disconnect between Expert and Student?

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ABSTRACT
Studies have found that experts often fail as good teachers, mainly because there is a lack of communication within their specific area (Feldon, 2007). Experts may routinely underestimate how difficult a task can be for a novice learner (Hinds, 1999) and even when attempting to make a task easier, they omit information a novice would find valuable (Hinds, Patterson, & Pfeffer, 2003). Because they underestimate the amount of knowledge that only those already familiar in the field might have, and would thus know what they are talking about. Furthermore, these are factors controlled by the professor, and not the students, that can determine a degree of student success (not to imply that student's don't need to take their share in responsibility for their learning). The lecture style and format of a classroom can change the outcome of how much students learn. For example, the use of academic jargon can make it difficult for non-experts to assimilate information and this style of academic writing can also have an impact on students' ability to understand the subject (Lawson, 1995, VanderSloot et al., and the implementation of multiple-choice versus short answer exams can have an effect on how students study and learn subject material (Scoular, 1998). It is important that professors and experts be aware of these factors, and manipulate them as they see fit (e.g., improve efficiency and quality of learning). However, it has been found that the correlation between teacher experience and effectiveness is statistically low (Matte, 2009 p.118), implying that most experts fail to pass on their expertise to future generations.

BACKGROUND
• The science of learning: Distribution study time with large gap intervals, active-studying techniques, and intermixing increases material retention quantitatively and for a longer duration (Rohever & Passler, 2007).
• Active studying techniques include quizzes yourself, drawing diagrams from memory, creating charts to compare and contrast different concepts, teaching material to other classmates, creating potential exam questions, and making flowcharts to connect different topics to each other and to the big picture.
• Active studying is more effective than passive studying (Lawson, 1995, VanderSloot et al.), which includes re-reading or rewriting notes, revealing the text, having another individual teach you, or going over problems you did previously without redoing them.
• Interleaving is a technique that involves mixing up subject material as opposed to blocked subject material. In other words, as opposed to “alobedel,” students arrange topic material to look more like “abolobeda.”
• Test-taking strategies: Strategies differ for exam type.
• Example of a multiple choice type strategy: Students are presented with a question in which two of the answers are opposite of each other, one of the answers is correct, while the other is wrong regardless of any other options. This narrows your choices to 2, and results in a 50/50 probability.
• Example of a true/false type strategy: words like “sometimes, often, ordinarily, or generally” open up the possibility of accurate statements. On the contrary, absolute keywords such as “no, never, none, always, ever, entirely, or only” imply that the statement must be true 100% of the time and usually indicate “false” answers.
• Example of a short answer strategy: never leave anything blank. These basic keywords or formulas can result in partial credit.

METHODS
• Academic Coach Training: Training for this position began during the fall semester and continued through the end of Spring semester. Trainings were hour-long intervals conducted once a week. Preparation for each meeting included reading both primary and secondary sources. Ted Talks on the science of learning and teaching. Discussions revolved around individual interpretations of each article or video, and also on problematic situations and how to personalize an academic coaching session towards each student's needs.
• Academic Coach Sessions: Sessions were one-on-one with students who were struggling academically. In these sessions, students provided a background of their college experience, explained what they sought academic help (e.g. study skills, time management, motivation, anxiety/stress management). Strategies that would promote academic success were constructed.
• Workshop 1: Study Smarter, Not Harder
  Students were shown a PowerPoint presentation with material presented in the background section of this poster.
  Students read a short article and then divided into two groups. One group reread the article after a 20 minute interval, while the other group was quizzed on the material (without the ability to reread). After another 40 minute interval, both groups took a quiz, and results were scored.
  Students formed two groups based on enrollment in either BIO 101 or 102. Each group read an article on information relevant to their class material and performed a short active studying activity to digest and digest the material.
  Students filled out a weekly agenda as a time-management activity. Class hours, work hours, club activities, eating times, and a minimum of 6 hours each week to account for studying were entered. 3 of these study hours were for studying current information, while the other 3 were for reviewing past material.
• Workshop 2: Students were asked to discuss their current methods of taking specific types of tests. A follow up discussion with the entire group went into why these methods are effective, and additional methods were provided.
• Students were given a small quiz designed to test their understanding of the material presented to them, designed to articulate each different type of exam question and how to tackle it, even if the students do not know the relevant content necessary to answer the question.
• A BIO 101 practice exam was reviewed and dissected for upper-level thinking on material.

RESULTS
• Workshop 1:
  • Quizzing while studying: the group who quizzed themselves while studying performed much better on the final quiz than those who reread information from the article.
  • Active studying: BIO 101 students explained material to the other students. Students from the 2nd group learned a phylogenetic tree to visualize evolutionary relationships between plant types.
  • 83.5% of students found the workshop to be beneficial towards academic success and thought that their grades would improve after implementation of the study skills. 66.7% incorporated new study techniques into their studying habits.
• Workshop 2: 100% of the students found this workshop to be extremely helpful, specifically they found the test-taking strategies might give them an advantage on a future exam. They also enjoyed the review exam and claimed they felt more prepared for the exam after participation in this workshop.

DISCUSSION
• Gained information on the science of teaching and learning: This serves as professional growth, as it has increased my understanding on the implications of classroom format and student success. I am now conscious of the responsibility of a professor to prime their classroom for efficient teaching.
• Developed an understanding of the college student experience: This is important in developing an understanding of the diverse issues that factor into an individual’s academic success past the notion that student’s simply “need to study more.” Such knowledge contributes to an increased empathy towards students and their unique needs, which will ultimately influence the regulation of individual lesson plans in future classroom settings.
• Gained experience in teaching a classroom setting: Lesson plan development requires asking myself, “Why are my students performing poorly, and what can they learn from me?” Carrying out the workshops strengthened my public speaking and leadership skills, and increased my ability to present myself as a personable mentor for creating a positive, relaxed environment in which timid students can feel more comfortable. I also gained experience on keeping students engaged in the classroom setting.
• Professional development as a future professor: My workshops will be constructed with the student experience in mind, facilitating the process of transforming students into experts themselves. Furthermore, in a future classroom setting, empathy and a personable nature will translate into an increased perception of personal effort that students will have of me, minimizing the communication or human relationship disconnect between professor and student.

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REFERENCES