A Case of Multiple Meanings? Perspectives and Tips for Integrating Students Into Specialized Language Use Within Disciplines

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Words and phrases used in discipline-specific contexts may have a meaning distinct from non-academic settings. Popular STEM examples are "theory" or "culture." Use of these words may be confusing to students during the learning process. We will discuss the importance of, not just contextualizing, but also defining terminology in explicit ways. Instructors will gain new perspectives and teaching strategies. Together, we will have a discussion inclusive of all disciplines.

Outcomes:

Participants will have increased awareness and understanding of the importance of meaning for terms that are used in their discipline and also in non-technical manners. We will explore teaching techniques collaboratively and participants will leave with new perspectives and strategies for engaging their students and creating additional clarity in meaning in their classroom. The goal of the session is to increase awareness of potential classroom challenges as well as gain quick and easy activities to help students understand discipline-based terms.

Category: Integration

Indicate the broad area of teaching and learning in higher education that you are integrating. Describe how your paper integrates the research of others in this area.

In the sciences, understanding the uses of linguistic features indicating specialized uses conveying scientific knowledge is essential to developing overall scientific literacy (Fang, 2004). The presenter is a science educator; however, this presentation will be focused on teaching techniques that can be applicable for attendees from any discipline.

While discussions of lexical ambiguity may be considered to be primarily in memory, language, and cognition, it has been considered and analyzed in other fields. Examples include mathematics (Durkin & Shire, 1991; Adams, Thangata, & King, 2005), statistics (Kaplan et al., 2009, 2011; Lavy & Mashiach-Eizenberg, 2009), and genetics (Rector, Nehm, & Pearl, 2013).
Lavy and Mashiach-Eizenberg (2009) describe how terminology can have the same meaning in everyday language, different meanings, or opposite meanings as compared to technical uses in statistics. In genetics, for example, we find this in words like pressure and select (Rector et al., 2013). This type of ambiguity is prevalent across multiple disciplines, yet appears understudied in the educational literature and may not often be discussed in the classroom.

Instructors may need multiple, quick activities to help students differentiate between colloquial use and technical use in the discipline. Kaplan et al. (2014) summarizes different teaching strategies, including listing and writing sentences (Adams et al., 2005), differentiating statements (Lemke, 1990), questioning students' prior knowledge (Adams et al., 2005), or contrasting word meanings (Lavy & Mashiach-Eizenberg, 2009). Simply put, Lavy and Mashiach-Eizenberg (2009) propose that instructors should present formal and the informal definitions to their students.

**Compare and contrast the theories, innovations, and applications in this area.**

As mentioned, Kaplan et al. (2014) summarizes a number of different approaches to addressing areas of learning challenges created by words and phrases that are lexically ambiguous. In general, many of these ideas, like questioning (Adams et al., 2005), contrasting (Lavy & Mashiach-Eizenberg, 2009), and differentiating (Lemke, 1990), all appear to be focused on a central point: awareness. This awareness will be central to the presentation. We will develop plans for participants to tackle some of these ideas with their students in class. As a group, we will be comparing and contrasting strategies.

**Critique results in selected items in this area.**

In order to help students understand words that may have different meanings in daily life versus disciplines, it may be important to provide explicit instruction. Recognizing students' prior experiences and knowledge and using formative assessments (Rector et al., 2013) can help students become integrated into the discipline's community. At this time, the literature seems to be focused mainly on individual studies on words and phrases focused on a single discipline. This work seeks to broaden the perspective and critical application of teaching techniques focused on lexical ambiguity.

However, this presentation will work to integrate these ideas and make them broadly applicable by opening up the conversation and awareness of lexically ambiguous terms. Rector et al. (2013) recommend that "educators should use a combination of multiple choice, written open-response, and oral assessments" to help students understand lexically ambiguous terminology in their field. First, however, an instructor needs a solid understanding of what words in their fields may have colloquial use and meanings for students. The early part
of the presentation will help develop that awareness.

In the sciences, it is essential for teachers to understand the role of language in learning in order to be proactive in helping students join the community's discourse (Fang, 2004). Although essential in the sciences, this concept is widely applicable to other disciplines. Together, we will integrate and critique teaching techniques. Additionally, we will explore the applications of these ideas and techniques in other disciplines.

**Provide a context and description for future exploration.**

Exploration during the Lilly Conference will include focusing on specific terms relevant to the attendees' fields, as well as discussing or developing quick and easy teaching techniques collaboratively. These likely will help instructors to have awareness of words and phrases with multiple meanings for their students and help to integrate them into the discipline's dialogue.

While it is simple to say that language use is important to the educational process, it often may be easy to overlook particular nuances. For an instructor who was "new" to the field many years ago, it may be difficult to recognize or recall the distinctions between colloquial use and technical use of a word. As an expert, this may become second nature. Future work will focus on exploring the nuances of words, including those that are found in single disciplines and multiple disciplines.

Lilly conference attendees will be able to take their observations from the session back to their classroom. Instructors may gain increased awareness of terminology that may be confusing to students. In their classrooms, instructors will be able to explore these ideas with their students. Additionally, they may be equipped with quick and easy activities to help their students master lexically ambiguous concepts as a result of this workshop's exploration.

**References:**


**Organization:**

The session will be conducted in a workshop style, where participants are actively engaged in activities and dialogue with the presenter and their colleagues in attendance. The initial discussion will focus on topics that can create lexical ambiguity for students (words with different meanings in the discipline compared to daily life; Barwell, 2005; Kaplan, Fisher, & Rogness, 2009; Lemke, 1990). Examples will be given from multiple disciplines, especially from the sciences, including popular words and phrases. Following the initial mini-discussion, participants will be asked to volunteer some examples from their discipline. They will be asked to discuss with their neighbors a few of the words to gain greater interdisciplinary perspective on their meanings. If the individuals are from similar disciplines, they can think about how the meanings may compare with use outside of their field.

Following the think-pair-share activity, the group will come back together to make a list of words that may be confusing to students due to multiple potential meanings. We will discuss any potential crossovers with other disciplines.

Next, the workshop-style presentation will include a short presentation of active learning techniques and classroom activities that may be useful for addressing meaning for students. We will work to connect some of the words and phrases to core concepts in the respective disciplines to emphasize importance. The bulk of the remainder of the presentation will be group discussion about easily implemented teaching strategies. At the end, we will share final thoughts and ideas as group, in addition to a general question-and-answer session.
Keywords:

Assessment
Awareness
Class Participation
Collaborative Learning
Critical Thinking
Lexical Ambiguity