

Understanding and Improving Learners' Feedback Seeking Behavior

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Abstract: Feedback in education is predominantly a teacher initiated practice. Even when peers exchange feedback, it is the teacher who initiates and manages it. The same is reflected in the design of online learning environments. But this idea is incompatible with the real world challenges, where individuals are often required to proactively elicit and judge feedback from multiple sources for accomplishing their goals. Interventions to nurture such learner agency in feedback seeking are rare. My study investigates learners' proactive feedback seeking behavior during a chemistry representational task. Using microgenetic analysis, I examine how the factors related to the learner, task, feedback sources and the tools influence the learners' feedback seeking behavior. In the preliminary findings, I describe how these factors interact in determining the variables such as timing, purpose, choice of feedback source, mode of seeking and using the feedback received. Ultimately, my thesis objective is to arrive at guidelines that can inform the design of learning environments to better facilitate and improve learners' feedback seeking behavior.

Keywords: Feedback seeking behavior, cost-value framework of feedback seeking, feedback as dialogue, social constructivism, stereochemistry

1. Rationale

Major reviews of feedback interventions report that the effects of feedback can be negative, inconsistent and highly variable due to numerous interfering factors (Hattie & Timperley, 2007; Kluger & DeNisi, 1996; Shute, 2008). Those factors include the characteristics of the learner, task, feedback source along with the nature, mode, timing and frequency of the feedback messages provided (Ruiz-Primo & Li, 2013). Further considering the actual classroom complexities like student diversity, class size and teacher workload, conditions that can make the given feedback to work exactly as expected are said to be difficult to obtain (Boud & Molloy, 2013). Hence understanding learners' feedback seeking behavior might better inform us regarding the effective feedback practices.

'Feedback Seeking Behavior' (FSB) is a well-developed construct in the fields of organizational behavior, social and occupational psychology. FSB is defined as an individual's proactive search for feedback information in one's environment for accomplishing the goal directed activities (Crommelinck & Anseel, 2013). A dominant theoretical model used for studying FSB is the cost-value framework (Anseel, Beatty, Shen, Lievens, & Sackett, 2015). As per this framework, characteristics of the task, individual, feedback source and the context interact in generating perceptions of cost and value in seeking feedback. These cost-value perceptions in turn determine the timing, purpose, choice of feedback source, mode of seeking and using the feedback received. I use this framework for examining the learners' feedback seeking episodes.

2. Research Questions

- How the characteristics of task, learner, feedback sources and the tools in the environment interact in determining the variables of feedback seeking such as timing, purpose, choice of feedback source, mode of seeking and using the feedback received?

- How the answer to the above question informs the design of learning environments that can better facilitate and improve the learners' feedback seeking behavior?

3. Study Design

3.1 Theoretical Perspective

As per Thurlings, Vermeulen, Bastiaens, and Stijnen (2013) our notion of feedback is largely influenced by our notion of learning. I adhere to social constructivist perspective of learning. As per this perspective, feedback often comes from multiple sources in the form of dialogue and occurs as a result of interaction with an individual's internal or self-generated feedback (Askew, 2000; Boud & Molloy, 2013). Social constructivist perspective also informs the many decisions of my study design (Palincsar, 1998). The choice of learning task is an authentic real world problem. The learning environment includes domain specific cultural tools such as molecular models and software applications. The task requires making sense of symbolic representations and conventions employed by the chemists. My unit of analysis is a social unit which involves learner interaction with the feedback source mediated by tools and representations. My analysis does not see cognitive, emotions, motivation and identity aspects in isolation, instead examines how they are intertwined in determining the feedback effects. I employ microgenetic method of analysis which is suggested to be appropriate for studying processes having highly variable effects on learning (Chinn & Sherin, 2014).

3.2 Domain Context, Nature of Task and Participants

Participants in my study are undergraduate chemistry students who had recently completed an introductory stereochemistry course. Learning task requires students to interpret 2D symbolic representations of chemical reaction and then determine the relationship between spatial orientation of the catalyst used and the particular pharmaceutical drug formed (adapted from Wong, Sultana, & Vosburg, 2010a). Spatial arrangements in the drug formed is critical here since its effectiveness is tied to the spatial arrangements of its constituent atomic groups. Nature of the task demands learners to go beyond simple verbal feedback seeking to build complex molecular models and sketch their multi perspective symbolic diagrams for eliciting feedback from peers.

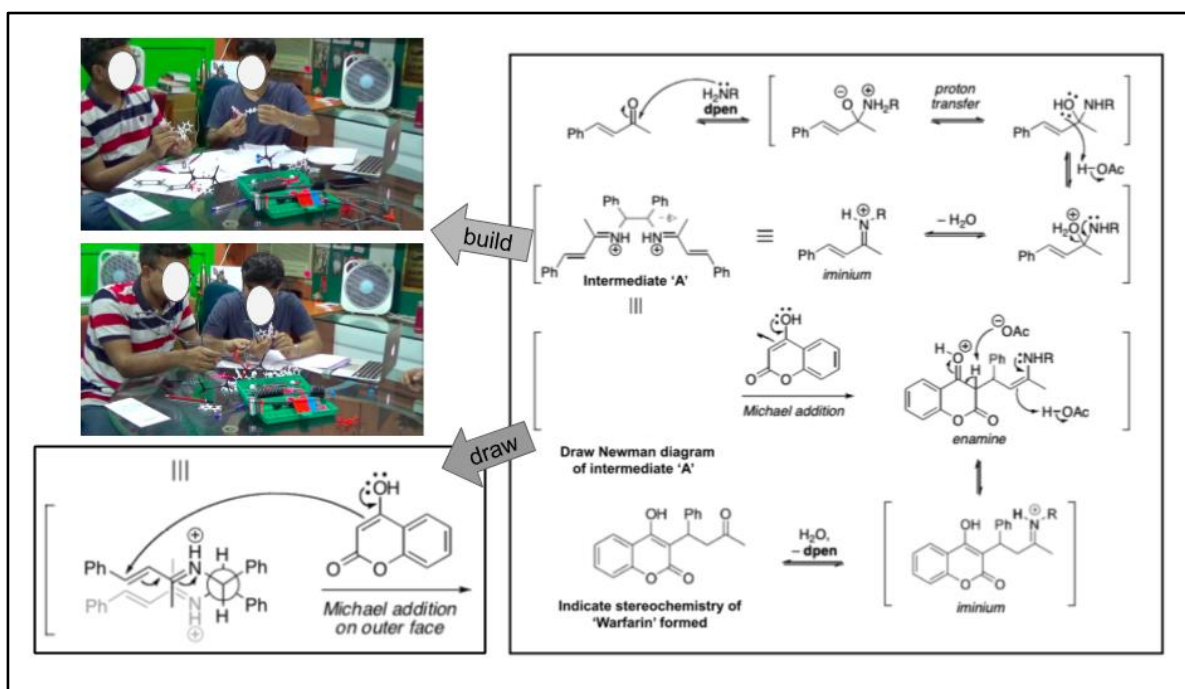


Figure 1. A Green, Enantioselective Synthesis of Warfarin (Wong et al., 2010).

3.3 Study Procedure, Method of Data Collection and Analysis

A pilot study was done with two participants. It was an hour long activity. Participants were informed both verbally and in written instruction that they were free to discuss if needed. They were also told to consider researcher as their last resort for any discussion. Researcher would provide them with a series of subtasks in sequence. Participants had to report themselves after completion. Overarching strategy was to delay final answer for each subtask until participants had tried different possibilities.

Data collection involved video recording of participant interaction. Other data sources were participant sketches, comments on worksheets and instructional material. Data analysis involved identifying episodes of learner's proactive feedback seeking from peers. By proactive I mean that decisions such as timing of feedback seeking, purpose for which feedback was sought, choice of feedback source, method of feedback seeking were all made by learner himself or herself. I distinguished one feedback episode from another by determining the change in purpose. I also consider the episode of dialogue as feedback dialogue if and only if it meets the purpose for which the learner initiated it. For examining the role of factors related to task, learner and feedback source in feedback seeking I would go back and forth a few seconds before and after the start and end of feedback seeking episode respectively. I employed competitive argumentation with colleagues for drawing inferences (Chinn & Sherin, 2014).

4. Discussion

Given below is a learner's feedback seeking episode while performing an analogical mapping of 3D models with the given 2D representations of a reaction mechanism. Duration of the episode was around 3.33 minutes.

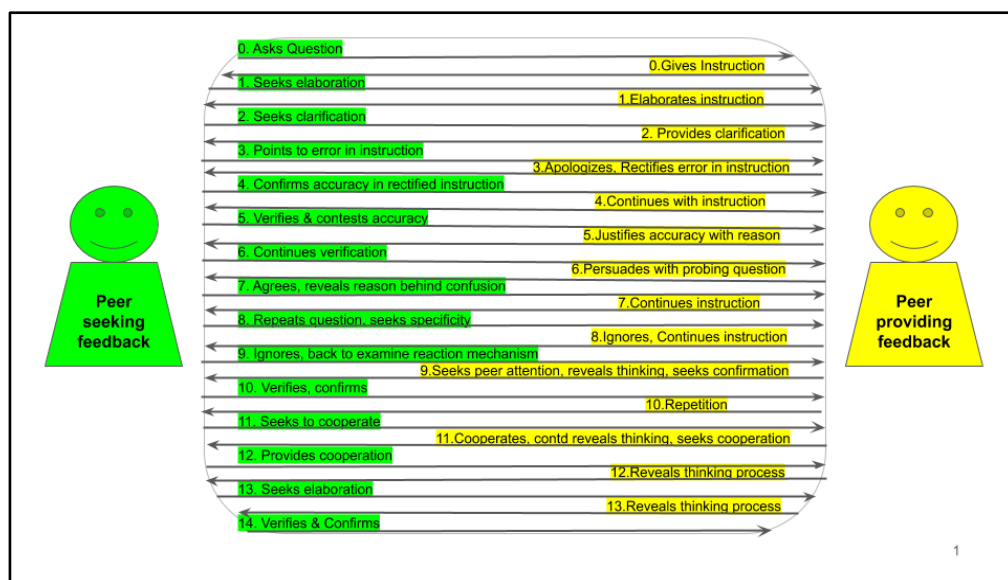


Figure 2. Proficiency of Learner, Feedback Source and the Nature of Feedback Seeking

In the above feedback seeking episode it took 14 conversational turns for the feedback to occur. In another episode, where the current peer providing feedback was in the seeking position the conversational turns that took the feedback to occur was around 70 turns. But that episode occurred while the seeker was trying to perform a mental simulation of the rotation of the intermediate molecule around a bond and determine the probable direction of the attack in the chemical reaction. Both the complexity of the task element and the proficiency of the individuals seeking and giving feedback in relation to the task element influence the extent and nature of the feedback dialogue.

Using the cost-value framework, I examine each feedback seeking episode in detail. Consider for example the process of seeking feedback as mentioned in Figure 2. Here the learner seeking feedback has to continuously monitor the feedback information received from the source, judge it against one's own requirements and then decide how to use or respond to it. The cost involved in the process might reduce if the feedback source is more proficient peers. In a collaborating group since the perceived value of feedback from more proficient peers would be more, they might be the preferred choice of feedback source but it might not contribute towards improving feedback seeking behavior. Further the time gap between the conversational turns was observed to be crucial for both the feedback seeker and feedback provider to interpret what each said to the other and construct the appropriate response. Time between conversational turns negotiated between similar proficiency peers would probably be more since both may experience similar difficulty levels. While this is just about the cognitive aspects in the feedback seeking dialogue then there are desirable and undesirable costs involved with regard to motivational, emotional and identity aspects. For instance, the act of seeking feedback also involves the risk of revealing one's ignorance. If the learners perceived threat to self is high then he or she might be embarrassed to indulge in feedback seeking behavior. The individual's perceived threat to self also might increase or reduce depending on the characteristics of the feedback source.

By identifying the desirable and undesirable costs related to cognitive, emotional, motivational and identity aspects during a feedback dialogue and how they interact with each other, my study aims towards arriving at guidelines that can inform the design of learning environments where we can intentionally introduce certain desirable costs and mitigate undesirable costs to facilitate and improve learner feedback seeking behavior.

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