

Reflecting in Online Discussion Posts: Connecting Technical Content to the Broader Context

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Context: Out of class; Alternative Energy Sources

Keywords: broader context, sustainability

Student Activity Time: 1-2 hours/week

Students engaged in reflection on online discussion posts about technical content related to alternative energy sources.

Introducing the Reflection Activity

In an alternative energy sources course, upper-level undergraduate and graduate students engaged in a collection of external and internal reflections. The purpose of the external reflections was for students to think about and reflect on their technical knowledge, specifically thinking about how that knowledge can be applied to the real world. External reflection was supported in two ways—an online discussion response and an extra credit analytical paper.

The external reflection was supported in online discussion responses. The purpose of these online discussion responses was for students to be introduced to a variety of topics related to alternative energy sources. In addition, students were asked to reflect on what they learned as an opportunity to connect the technical connect with broader systems thinking, even using a PESTLE analysis approach¹ (i.e. political, economic, social, technical, legal, and environmental implications). Students were invited to:

1. Read (or create) two threads/posts per week and provide their opinion about the topic.
2. Posts can include discussion topics, re-posting of interesting stories or reports you find, questions seeking information, etc.
3. Make posts or pose questions related to specific topics discussed in the class (e.g., ethanol policies, wind turbine demo and lessons learned, fuel cell operation, calculation of power input into car during gasoline refueling and comparison of result vs. electric car charger and also to a wind turbine).

These online discussion reflections were graded using different rubrics for undergraduate and graduate students. The graduate students' reflections were more heavily weighted on the content and the words; the undergraduate students' reflections were more heavily weighted on the volume and completeness. In the

¹ Chartered Institute of Personnel and Development. (2008). PESTLE Analysis.

end, the grading was an opportunity for students to get feedback about how they could explore their thoughts more deeply in future practices of reflection.

In terms of outcomes, by students writing or responding to weekly blog posts there is potential that students will understand the course content better and connect their learning to the broader context.

Recreating the Reflection Activity

	Description
1	Assign students the online discussion reflections—reading or creating posts and reflecting on the content.
2	Grade online discussion reflections.
3	Remind the class throughout the semester about these assignments and debrief high-level ideas coming out of the reflections.

**DIGITAL
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CONTENT**

8.1 Online
Discussion
Guidelines and
Instructions

In the words of the Educator: Tips and Inspiration

Continue to support students' engagement in the reflection activity. Since the reflection activity involves continued iteration, it is a good idea to periodically check-in with students about their engagement with the reflection activity. This strategy is important because in academia, students have been trained with a linear understanding of how to solve problems. This iterative reflection activity supports students connecting their technical knowledge to broader economic, environmental, and social contexts inherent to real-world problems. Much like critical thought is not just a skill, but somewhat of an art, reflective practice takes repetition, time, and feedback.

Begin the reflection assignment with a transparent description. Because most students may not have ever participated in an iterative reflection activity that requires them to connect their technical knowledge with the broader context, it is important to start the assignment with a transparent assignment description. In the assignment description, include a short paragraph describing the relevance, requirements, and grading approach. A transparent assignment description can help ensure that students' reflections are fairly refined by the end of the course.

Grade the reflections and give conversational feedback. While it may seem subjective to grade students' reflections, it is important to grade them so that students know you value reflection. In addition, it is important to give them feedback on their reflection. When giving students feedback, present the feedback in a way that is casual and conversational to parallel the ill-defined nature of the "perfect answer." This approach to feedback is more easy-going and constructive, and is a bit easier for the technically-minded student to learn from without rebuff. Additionally, in grading, focus on the process and thinking versus the end

result. Remember, there is no perfect answer. We are training students how to think, so place emphasis on how they think rather than the end product.

Involve students in the reflection. When engaging students in the reflection activity, encourage them to be open and to be themselves. When touching base periodically in-class about the reflections, it is a good time to encourage them to be authentic. This can be facilitated by sharing the viewpoint of prior students, other researchers or educators, or even yourself. However, you may choose not to share your own opinion, especially at the beginning of a discussion, because students could converge on that opinion as being the “right answer” due to your authority in the classroom.

What was the inspiration for the reflection activity? Often students become so focused on getting a job after graduating. I think it’s important as educators that we help students think broadly about their degree, and help them gain perspective about how they can and may apply their skills in the future and in different contexts. In doing so, we may contribute to students living more purpose-driven lives by encouraging them to think critically about the *why* behind their career actions and technical inquiry. In having students engage in a number of these reflections, it gives them an opportunity to think about a number of different technical ideas, as well as how these technical ideas connect to the broader context. In the end, my hope is that more students can walk away with greater clarity about the type of career or issues they seek to pursue, and better yet, with passion to pursue them.