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Fostering Engagement in Virtual Learning: A Critique of UW's Data Analytics Program Orientation for International Students

For three weeks, I participated in and observed a learning environment for international students within the UW Advance Data Analytics and Informatics Program at UW-Madison. This virtual learning platform enabled students to meet daily via Zoom meetings, strengthen their English and communication skills, participate in Data Science workshops, and much more. As an assistant to the professors during their online lectures, my observations of the course sought to understand the structure of a virtual learning environment, as well as how coursework and group collaboration could best be run effectively given the resources available to the students. In this essay, I would like to provide in-depth analysis as to how this online program ran its orientation, describing both the context and how future improvements can be applied to the learning that took place given the theories explored in Educational Psychology 501.

The UW Advance Data Analytics and Informatics Program included 48 Korean and Chinese students interested in Data Science. If students successfully attended a majority of the lectures and participated in virtual discussion, they received credit on behalf of their universities. To introduce students into the program, we provided an hour and a half long orientation on the start date to which each student attended. Because this was a large group, the course contents, program overview, and faculty and staff backgrounds were first discussed. At that time, the students could get a sense for how the course would run, what life is like on UW-Madison campus, and who they could reach out to for any questions. Towards the second half of orientation, we dove into icebreakers, splitting up students into small groups and having them discuss their background through multiple activities coordinated by the ALPS Program. It is important to note that due to the time difference in China, Korea, and Wisconsin, this orientation

ran at 7:30 A.M. central time, and during nighttime hours for the international students. Within this context, students then described their interests, educational majors, and what they wanted to obtain most out of the program.

The efficiency to which international students could share about themselves highly depended on discourse, and the subsequent analysis that comes with interpreting and responding to the other students within small groups. Here, discourse is defined as the formal language used between students to reflect knowledge about themselves, the environment, and the tools they would need to succeed in completing the course requirements. Discourse between students during orientation also allowed them to reflect their communication skills, as English proficiency levels differed between each student. Within six different breakout rooms, faculty and staff were available to support students' conversations through the methods used in discourse analysis, until students no longer needed additional aid in communicating their background and expectations of the course. What occurred can be described using Gee's (2015) notion of "Big 'D' Discourse", wherein the context of orientation strived to "... capture the ways in which people enact and recognize socially and historically significant identities or 'kinds of people' through well-integrated combinations of language, actions, interactions, objects, tools, technologies, beliefs, and values" (pg. 1). The information that students provided about themselves harbored said discourse and other prominent sub-components of the theory: scaffolding and revoicing.

To elaborate, Big 'D' Discourse was implemented through both Zoom and social interactions to further refine the students' English-speaking skills. An activity in particular that strengthened the discourse between students and staff was that students needed to find an item in their room that they cherished and explain why the item was valuable in their own words. One student decided to use a camera given to them by a friend to explain his newfound curiosity for photography. First, he described the functions of the camera and then proceeded to elaborate on its significance, as it was given to him by a friend who had recently passed away. As observers,

discourse did not only allow further explanation of the functionality of the camera, but students and I also recognized that the item contained historic and social value.

This same student was still at less-than proficiency in their English speaking skills, and needed assistance from both other students as well as myself to provide linguistic support for his story of the camera. This is where discourse analysis played a part in contextualizing the social environment, as Tabak & Reiser (1999) mentioned synthesizing and revoicing student remarks for the purpose of "... model[ing] the preferred ways of communicating, and help[ing] students recognize what they had generated over a number of speech turns" (pg. 12). For example, another staff clarified that a common English phrase when using a camera is to "snap a photo", to which the student successfully added into his lexicon (as he brought up the phrase in a later lecture).

This technique was implemented until the student no longer needed additional support with their English skills to finish his story. In other words, he reached the zone of proximal development. This learning theory, originally developed by Vygotsky and elaborated on in lecture by Shaffer (2021), denotes the basic idea behind an analysis of how one person learns from another. Revoicing what the student couldn't previously explain using common English phrases eventually allowed the student to use English as a tool to communicate without continual assistance. Not only was improved communication skills the sole outcome of this exercise, but within the small group activity, other students chimed in and felt more comfortable with providing a discourse of their own unique interests and backgrounds. As an observer, this was a profound achievement made possible given the theoretical framework of discourse analysis as it is well-integrated into the other theories of thinking and learning taught from this course, such as narrative intelligence.

Narrative intelligence can be applied to the orientation because for many of the international students, their life experiences were shared in the form of storytelling. Students

were also asked to describe why they chose their major and what about Data Science peaks their interest. As aforementioned, these real-life experiences allowed for discourse to become deeply personal, and the students became situated in the context of an intimate learning environment through breakout rooms where these stories came to life. While I was not consciously aware of it, what these students began to share was their internalized landscape of consciousness. According to Bruner (1996), this landscape of consciousness involves "... the inner worlds of the protagonists involved in the action" (pg. 698). A more non-fictional definition is that each student has internal motivations (e.g., hobbies, desires, emotions, likes, dislikes, etc.) that shape the physical manifestation of their actions (e.g., Data Science, refining academic communication skills, participating in the program, etc.). One student, for example, shared that they grew a love for data analytics after binge-watching the *Black Mirror* series on Netflix, a show that explains the significance (albeit eerie) of technological advancements in our world. They shared this in the form of narrative intelligence by outlining how the unknowns of technology are *consistent* with what is now known about the dangers of a data-driven society, ultimately leading him to investigate how cyber-security can evaluate technological threats. As it pertains to the student, his internal motivations were *consistent* with his decision to continue research in big data. Given this connection, it is clear that narrative intelligence fosters an adequate learning environment by allowing students to share information that draws on relevant experiences as narratives.

Virtual learning, in contrast, situates students into a specific educational context that does not always draw connections to the tangible, physical experiences in the world. Because the program could only be made possible through remote accessibility, students needed to adapt to this shift in order to participate. The transition from conventional schooling models (e.g., in-person, physical authentic activities) is one such shift to accommodate for. Nevertheless, technological resources for students are continuously dynamic, and require a surplus of improvements. The first overall issue for this program was that students did not receive credit if

they were unable to attend synchronous lectures, which were held either early in the morning or late at night. This conflicts with the students' abilities to transfer their knowledge from the course and to apply it immediately through practice, as their schedule is filled with assignments and additional coursework non-related to the field of data analytics. The fundamentals of situated cognition, wherein the surrounding environment has a direct impact on students ability to learn, is therefore displaced by a lack of available authentic activities to practice outside of orientation.

According to Brown, Collins, & Duguid (1989), "the idea that most school activity exists in a culture of its own is central to understanding many of the difficulties of learning in school" (pg. 35). Students unfamiliar with online learning platforms therefore started at a disadvantage during orientation, as they were expected to understand how to use Canvas, Zoom, and other technological tools before starting the program. One idea to help improve the context of these learners could be to provide further information of online learning environments, such as directions from DoIt services as to how international students can operate Canvas and how they can change the English spelling of their name on Zoom (many students were confused as to how they could do this, to which we sent out individual emails to help solve the problem). An overview of the basic functions of virtual learning platforms could've been discussed during orientation to prevent such inadequacies throughout the course.

Not only does situated cognition apply to international students and their newfound environment, but so does embodied cognition. Embodied cognition theory explains how our bodies play a central role in how we think, as it allows us to interact between integrated ideas and concepts. During orientation, students and faculty sat for a majority of the presentation, learning about the course description from one physical perspective. As I continued to observe, students became tired; yawning, nodding off, and struggling to pay attention, preventing sufficient concentration and participation. Goldin-Meadow (2016) elaborates on this problem as

it concerns a *lack* of non-verbal communication, wherein this type of behavior "... expresses emotion, conveys interpersonal attitudes, presents one's personality, and helps manage turntaking, feedback, and attention (pg. 2). Without the key indicators of expressing non-verbal communication, such as gestures of body movements, a student's ability to convey a desired message or to achieve a certain outcome is limited by their inability to regulate physical interaction within the environment.

That is not to say that virtual learning environments prevent embodied cognition from flourishing. For example, one activity demonstrated by the ALPS Program during orientation had students get out of their seats, stretch, and move their bodies in any desirable position. Afterwards, I could observe a shift in the atmosphere - students laughing, participating, and engaging in the course. Continuing off of this single activity, a method of improvement could be to increase the amount of physical activities that students can participate in during virtual learning. We are beginning to see this even in the use of gestures to facilitate mathematics in virtual culture (Shaffer & Kaput, 1999), as physical representations of communication and engagement are not merely composed of language itself. It is necessary to continue to capitalize on the positive effects that the body and mind have in unison to harbor effective learning and thinking, and providing possible outlets (e.g., stretching, using gestures to solve complex problems) for this to take place may help drive individual development in a virtual environment.

Someone who intends to run a highly interactive, virtual program to support international students should consider the implications that the aforementioned theories of thinking and learning have on supporting cognitive and sociocultural development. This is considerable given that none of these theories act in isolation, but rather amalgamate to achieve efficacious outcomes. To improve an orientation for a virtual program, providing an enculturation model for virtual platforms via online resources while simultaneously engaging students beyond what is on their screens incorporates both theories of situated and embodied cognition. Honing in on what

works best for students, such as facilitating conversation and social interaction through the processes of storytelling and scaffolding, supports the combined efforts of discourse analysis and narrative intelligence. What we know now is that virtual culture is a continuously developing endeavor, in so much as staying attuned to potential improvements may also evolve the relationship between individual and social experiences in academia.

Sources

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