Qualifier Question
CS6460: Education Technology

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***Abstract*—**This work us broken down in to 3 sections, with the goal of properly answering the 4 proposed qualifier questions. Part 1 provides question background & introduces the 4 questions. Part 2 provides an overall project background with explanations of Canvas & Slack. Part 3 concludes the work with answers to the 4 qualifier questions

1. QUALIFIER QUESTION BACKGROUND

1.1. Background

In your prior assignment you discuss an idea to integrate between Canvas and Slack. You also mention the use Slack at work it is way of structure "public" discourse is something that you think could really help the classroom. Slack would be the "public square" where this system will automatically created channels for assignments as to encourage conversation scoped to that assignment.

2. PROJECT BACKGROUND

2.1 What is Canvas?

Canvas is an open-sourced Learning Management System (LMS) which combines teachers & students in a digital classroom (Canvas the Learning Management Platform | Instructure, n.d.). Canvas states that over 30% of Higher Education Institutions use Canvas. Canvas isn't a single tool, but is a composition of multiple tools together. Canvas was selected for this project because its something I have direct experience with. A majority of courses in the OMSCS program provided by Georgia Tech use Canvas for managing assignments, grade books, tests, quizzes, etc.

2.2 What is Slack?

Slack is a communication tool used to replace email. It tries to replicate the collaboration people have when working face to face (Slack, n.d.). Slack attempts to be a collaboration hub where conversations can happen, applications can in-

tegration with, and work can get done. Conversation is focused around channels, and threads allowing for focused and open communication. Slack was selected for this project because if my previous experience using it at my job. It is a powerful tool for allowing structured conversation to happen, and extendable by other applications that make its Users more efficient.

2.3 What is the need?

Structure, collaborative conversation can be an effective way to limit procrastination and keep learners engaged. PARQR is a tool developed to augment the online forum Piazza which allows its Users to reduce the number of duplicate threads posted in the forum, further structuring & focusing the conversation (Bilgrien et al., 2019). By focusing the conversation you reduce the risk of enabling procrastination.

Previous work has been done in this area. Specifically around the use of Slack in a learning environment (Cook et al., 2019). This work attempted to capture 2 key concepts in collaborative work, assessment & feedback. Other work has attempted to leverage Slack as a way to measure engagement in a collaborative learning environment (Zhang et al., 2019). Put another way, the idea of integration an LMS and Slack is not novel. The need this integration attempts to meet or solve is around enabling students to collaborate will affording teachers an ability to structure and measure the students engagement.

3. RESPONSES

3.1 What factors from a psychology perspective motivates students to learn?

To be motivated is to be moved to do something (Ryan & Deci, 2000). In the context of students in a learning environment this could be engaging in actions and behaviors that will help them learn, grow, develop skills, or even simply complete school assignments (Kalas, 2019). Motivation can be measured in different ways. From the amount, to the orientation. The orientation of motivation describes the type of motivation which concerns the underlying goals and attitudes that give rise to action (Ryan & Deci, 2000). Motivation is the why of the action (Ryan & Deci, 2000).

Examining the orientation of motivation further, existing work makes the distinction based on different reasons or goals that give rise to action (Ryan &

Deci, 2000). *Intrinsic* motivation, which is the student in this case doing something because they find it inherently interesting, and/or enjoyable. As opposed to *extrinsic* motivation, which is doing something which leads to a separable outcome (Ryan & Deci, 2000). Connecting this to examples above, a student might be intrinsically motivated to learn or participate in discussions about Artificial Intelligence (AI) because they find it interesting. Where as they might complete an assignment because they need the grade to pass the course.

In terms of factors, students can be motivated by any number of factors. Students can be self-motivated to provide a better life than they currently live, or that their parents lived. A student could be motivated by the value they see in learning a new skill. For example, I, the student, see the value in getting my Masters Degree because it will likely lead to a higher paying job that will provide for my family. Which is a mixture of intrinsic & extrinsic motivations.

Previous work has shown a mini-theory around the effect of social environments on intrinsic motivation (Deci & Ryan, 2012). That is one of the underlying motivations of this project. If this project can create a structured & organized environment for learning via a digital public square within Slack we can enhance or amplify a students intrinsic & extrinsic motivation.

3.2 How does the early experience of college or a MOOC program effect the outcomes?

Existing work in the effect of MOOC's (Massive Open Online Course) has shown that autonomy, diversity, openness and connectedness/interactivity are indeed characteristics of a MOOC (Mackness et al., 2010). Which grounds MOOC's in Connectivism and Connective Knowledge. The results of this work showed that MOOC's having these characteristics isn't inherently good, and present their own challenges. The more diverse, open, and autonomous the course the more likely the students would be negatively affected by a lack organization & structure. Moderation becomes key in a MOOC. Thus an unstructured MOOC could potentially negatively effect a students outcomes. Which is an example of why the need for this project could turn the potentially negative characteristics of a MOOC into positive characteristics which open up the student to a more diverse, open, and connected learning environment.

Other work suggests that participates in a MOOC are driven by similar things , those being self determination and intrinsic motivation (Barak et al., 2016). This work also showed that there is a positive relationship between the size of an online forum (number of people), and the number of messages. Which suggests, the more people, the more messages, the more ideas flow. Hypothesizing off these conclusions, a student having this experience early in their educational career could lead to higher retention & competition rates.

3.3 What are learning communities and how do they effect student retention?

Previous work defines learning communities based on 2 concepts, primary membership, and primary form of interaction (Lenning & Ebbers, 1999). Extrapolating from this work, learning communities can be thought of as a group of people who may have different types of membership, but gather together to learn & teach. For the purposes of this work, these different types of member ship can be scoped to teacher & learner. Previous work identifies 4 categories of student learning communities, 1) circular learning communites 2) classroom learning communities 3) residential learning communities 4) student-type learning communities (Lenning & Ebbers, 1999). The primary focus of this work will be around student-type learning communities. Charateriscs of an effective student-type learning community can be defined to have higher academic achievement, better retention rates, diminished facility isolation, and increased circular integration (Lenning & Ebbers, 1999). Higher retention rate is a key focus of this project.

Previous work has shown that factors like faculty interaction, teaching strategies, and co-circular actives significant predict first year undergraduate retention rate and the University education level (Iroegbu & Agboola, 2019). This work later goes on to suggest that faculties should create a healthy learning atmosphere and positive interaction between student & faculty (teacher) to guarantee student retention (Iroegbu & Agboola, 2019). The key take away form Iroegbu & Agboola (2019) is creating a structured learning environment, where teachers interact with students has a positive affect on student retention. This is a key feature of the Canvas & Slack integration.

3.4 What are social methods of gaining engagement of online or distance students?

Previous work has showed social methods such as weblogs, or forum-based communication prompted better interaction (engagement) than those who did not communicate via forum-based communication mechanisms (Huang et al., 2020). What separates online or distance students from in class student is obviously the modality of communication. Online students are limited to forms of digital communication. In personal experience, these have been primarily forum based. While in a professional environment, you have asynchronous messaging systems like Slack which have aspects of both forum-based, direct messaging communication. A benefit of digital messaging platforms like Slack or Piazza is the ability to open up discussion such that a student that has a question can ask it, but the answer is not limited to just that student. Other students that have that question can get that same answer. This centralizes the discussion, allowing for the student to trust that they can go to this source to get answers to the questions they have. Which in turn would lead to engagement in the modality of communication.

For the scope of this work, we consider online students. When doing so we must also consider how software can facilitate engagement. A personal example of this is working on this project. There are 2 distinct flows of engagement. One being posting to a public channel. For example, if I had a question regarding the number of sources required for the Qualifier Question assignment, I can post this question to a public channel scoped to this course and any engaged student can respond. It's important to note that this requires a student or teacher to be engaged enough to answer my question. Where this engagement comes form has been highlighted in the previous questions, but put clearly here could be based on intrinsic motivation of the student, or extrinsic motivation of the teacher being judged based on how well student perform in their course.

The second flow is around private messaging. For example, a student posts in a public channel, "Hey everyone what do you think of my idea … (Insert Idea)". An engaged student could then post their thoughts based on their own personal experiences. An engaged student might be motivated to do this because perhaps they feel that this effort will be reciprocated when they have a question at some time in the future. The student that posts the question could then private

message the answering student to engage in a deeper conversation which may not be beneficial to the other observation students.

The key point in both of the flows highlighted above is the medium where the conversation took place afforded these 2 different flows. That medium is Slack. The structure of the application (Slack) facilities these different types of iterations. Slack affords its User these different types of discussions based on the heuristics the User has around what conversation should go where (Public vs Private). From personal experience, because Slack affords me these levels of interaction I will be engaged with it more so that if it were just a forum-based application like Piazza.

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