Student Involvement in Choice of Work in Progress: Course Activities and the Impact on Student Experience

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(Work in Progress) Student Involvement in Choice of Course Activities and the Impact on Student Experience

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Abstract

Instructors have long emphasized the need to involve students in their courses. Student involvement has been strongly linked to student motivation, engagement, satisfaction, and learning. Drawing from Astin's Student Involvement theory, this mixed methods study measures the effects of choice of activities on student experience and learning via control and intervention groups. This study leverages mandatory teaching assistant training to conduct this research where the Fall 2022 offering is the control group, and the Winter 2023 offering is the intervention group in which graduate students are offered choices in their activities. An online survey was conducted via Qualtrics to gather student demographic details and data on their engagement and satisfaction. Audio-recorded semi-structured focus group data from both semesters will help understand student needs and perspectives further. Similarly, audio-recorded, semi-structured instructor interview data will help explore instructor perspectives on the design and delivery of the course and activities. Coursework, pre-test and post-test results will contribute to data on student learning. Quantitative analysis of surveys and course performance, as well as qualitative analysis of student and instructor perceptions, will be used to create a professional development workshop for Engineering instructors who wish to strategically integrate meaningful choice of activities into their course designs.

Introduction

The long-established theory of Student Involvement focuses on involving postsecondary students to better their experiences at different levels, psychological and physical [1]. Instructors have involved students in 1) individual and collaborative activities with hands-on, experiential, problem-based or inquiry-based components and 2) feedback strategies using peer feedback and instructor feedback [2],[3]. These active learning and collaborative pedagogies enhance interaction and increase student engagement with content and peers and better learning and achievement in in-person, blended, and online STEM courses [4], [5], [3].

Even with such innovative pedagogies and resulting higher grades, STEM students may feel unsatisfied with the course experience citing lack of interaction as the main reason [6].

Student involvement literature suggests that offering students choices in course activities can improve their experience for several reasons: 1. Students take ownership and bring their own individual learning styles to their course, 2. The design of the course shifts from teachers as designers to students as partners in their learning process, 3. Students engage with the course, instructors, and peers at a psychological level i.e., they are motivated, 4. Students interact and engage more with the content, instructors, and peers, and learn better, and 5. Students report satisfaction with course experience [7], [8], [9], [10].

Purpose of the study

This project investigates the impact of student choice of course activities on student experience (content learning, course engagement, and course satisfaction) when compared to a control group. The courses used in this project are Fall 2022 (control group) and Winter 2023 (intervention group) offerings of a two-week mandatory training course (ExpecTAtions), for teaching assistants (TA) in the Faculty of Engineering.

Research questions

Thus, this project will investigate the following research questions:

RQ1: Do students involved in choosing course activities (intervention group) have a better course experience than students who only experience instructor-designed course activities (control group)? Course experience of students in the Fall 2022 term (control group with instructor-led course activities) will be cross-compared to those in the Winter 2023 term (intervention group allowing students to choose from the instructor-led activities),

RQ2: What themes emerge when instructors and students are asked to reflect on the pros and cons of offering student choices in selecting course activities?

The results of this study will help better TA training and help create a teaching development workshop for the STEM instructors interested in adopting a student involvement strategy by offering students choices.

Method

This mixed-method study is spread over two terms (Fall 2022 and Winter 2023).

Context: To study the effects of student involvement in the choice of course activities on student experience, the instructors of ExpecTAtions, also the collaborators, permitted redesigning their content and intervention within their activities. The research conducted in this two-week Teaching Assistant training course will offer a snapshot of 'student involvement in course activities' to the instructors and course designers in the Faculty of Engineering.

Research Design: The pre-research online version included four modules, with each module including content (policy, teaching and learning, feedback and assessment, and mental health, self-paced quizzes and assignments, which were graded Credit/No Credit, and students could request early feedback from instructors to help with their submissions. The redesigned online versions for Fall 2022 and Winter 2023 offerings received focused content for TAs (four modules: policy, teaching and learning, feedback and assessment, and student mental health), hands-on activities, and an opportunity for online mentoring. The Fall 2022 offering was the control group (redesigned online version), and the Winter 2023 offering was the intervention group (redesigned online version with choice in activities). Students of both groups were given a pre-training and post-training quiz to measure their learning in their courses. Students in both groups (control and intervention) were offered training designed to experience identical content, instructional team, workload, and fair way to earn the ExpecTAtions Certificate. The study was

reviewed and given ethics clearance from the University Research Ethics Office prior to the start of the Fall 2022 term.

Participant details and sample size: The study is conducted at a large university in southwestern Ontario, Canada. The participants for this study are 1) graduate students of the Faculty of Engineering in the Fall 2022 control group (n=354) and the Winter 2023 intervention group (n=97), and 2) the instructors of ExpecTAtions. The students comprise domestic and international students and are from multicultural backgrounds.

Instruments: The following instruments helped collect this study's qualitative and quantitative data.

1. Student engagement and satisfaction survey: This survey includes a combination of 5-point Likert scale items and a few open-ended questions. The questionnaire was drawn from the National Satisfaction Survey (2020) and the Satisfaction and Engagement Survey of Owston et al. (2019).
2. Student focus group: The focus group questionnaire included semi-structured questions to probe the design and delivery of the training. It also included questions on activities and asked to enhance student experience.
3. Instructor reflective interviews: The instructor interview also included semi-structured questions to ask instructors about their experiences with 1) The Fall version of the redesigned course and 2) the Winter version of the redesigned course that included choices of activities.

Student coursework and the pre-training and post-training quiz scores of participating scores will contribute to student learning and achievement data.

Procedure

Recruitment and Data Collection: Faculty of Engineering graduate students who registered in the Fall 2022 (n=363) offering of ExpecTAtions were informed that an educational research study would be conducted in their cohorts, and they would receive an invite for voluntary participation after their training grades were uploaded.

This initial invitation offered a brief detail on the research project, requesting student consent to use their course works (feedback and quiz responses and assignments/discussions). Students were confirmed that their participation is voluntary, that their identities would remain confidential, and that they could withdraw from this study any time before December 2023 (before submitting the final report).

After the grades were uploaded, students were sent a personalized Qualtrics link. This Qualtrics link included the details of the study and requested their voluntary consent to a) use their course work (quiz responses, feedback responses, and assignments/ discussions for analysis and b) complete a 20–25-minute student engagement and satisfaction survey, including demographic details. Finally, c) this link asked the students if they would participate in a 20–30-minute focus group session. Only those who agreed to participate were included in the data. Of the 363

students registered in the Fall 2022 cohort, 99 students started the online survey, and 39 students completed the survey.

Students (n=34) who showed interest were invited via email to participate in a 15–20-minute in-person or virtual focus group with 2-5 peers. The focus group sessions (n=6) were audio-recorded, and permission was sought before recording. Instructor brief interviews were conducted (n=2) to capture their initial experiences with the redesigned content and activities.

The same process is being repeated with the Winter 2023 registrants after their grades are uploaded; Winter 2023 registrants have completed their training, received certificates, and have received personalized Qualtrics survey link to complete their engagement and satisfaction survey. Once students complete the online survey, interested participants will be invited to participate in focus groups.

Data storage and retention: Student and instructor data from student survey responses, pre and post-training quizzes, assignment/ discussion details, focus group recordings, instructor interview recordings, all transcripts, and the linked codes are being saved in the personal computer and drop box. Anonymized data will be securely stored for at least 7 years in the PI Dropbox and on password-protected computers.

Coding and Data Analysis: The Fall 2022 cohort quantitative student survey data was coded for demographic questions to ensure the confidentiality of the participants. For example, the email ids of the respondents were allotted participant codes 1,2, 3 etc., for gender the codes allotted were: male=0, female=1), and for the year of their program, year 1 was coded 1, year 2 was coded 2. Quantitative data is being analyzed using Excel and SPSS. Student quiz scores and course works will be coded using a rubric, and overall scores will be given to students to measure their learning.

The open-ended survey question responses and focus group interviews are coded in NVIVO. Instructor interviews are in the process of coding in NVIVO. The Winter 2023 data will be coded similarly.

Limitations of the study

The research team is comprised of 1) the researcher (principal investigator) (PI) and 2) members of the instructional team. The roles of the PI (researcher) and the instructional team (other researchers) were divided to mitigate potential bias or influence on student data. PI (researcher) was responsible for data collection, storage, coding and de-identifying, data analysis and writing results/ report. The instructional team (other Researchers / Instructors) will contribute to the analysis of de-identified data and the writing of results/ report. Moreover, to reduce student perception that participation in the research study might affect their training outcomes, the research team waited until after the student's grades were uploaded and the certificates issued before sending a Qualtrics link with an invite to participate; however, the time lag between the training course and the study invitations may have reduced the survey response rate.

Initial findings and emerging themes

Below are some initial findings and themes that emerged from the Fall 2022 data.

Design of the course: The importance of clear organization and communication has been emphasized by several researchers, especially for online and blended courses [14]. The initial findings of this study also direct us in this direction.

While the Fall 2022 quantitative data is still being analyzed, overall, of the 39 respondents, most students felt the course was well organized and ran smoothly (n=30) and thought that the course/teaching was communicated effectively (n=28). Focus group participants also complimented the organization and clear communication of the course. Below are some quotes from the student focus group interviews.

"it was very organized, and I like the progression through the content" (focus group participant 6, Feb 2023)

"I think that the best part for me and also the way that it has like four modules it was very organized" (focus group participant 4, Feb 2023).

Student voice and choice: Several students in this study felt that the instructors valued student opinions about the course (n=22).

In the Fall 2022 offering, students did not feel they had a choice except to cover the online content at their own pace and complete the activities within a fixed time frame.

"I would say the course was pretty much predesigned…the only choice was that we could study in any order, do any assignments first or like go through the material in the sequential order that was prepared for. …Scenarios and the discussion board that we were allotted was… based on that scenario, so that choice was not like…given to us, but like, yeah, you had that. You made it in advance so." (Focus group participant 5, Feb 2023)

"so, you kind of have most of the things you assigned to do to pass the course..." (Focus group participant 6, Feb 2023)

It would be interesting to see how students in the Winter 2023 term feel about their choices in the course and if they felt it helped enhance the student experience.

Student community- a balance between interaction and satisfaction: Embedding peer feedback in activities and assignments is a great way to increase student participation, engagement and to build communities in online courses [15].

Students felt they had the right opportunity to work with other students in their course (n=23) and felt a part of the community of the instructional team and students (n=25). Overall, students were satisfied with the quality of the course (n=28 of 39 respondents) and found

"The course content was amazing; I believe it was in-depth, really engaging" (focus group participant 5, Feb 2023)

Most participants in this study also found scenario-based and discussion-based activities engaging; however, some students felt the peer feedback was not always meaningful and wished for individual instructor feedback instead.

> "..times the feedback you get from peers just wasn't…. it's a big thing, having feedback from me compared to what you get from an instructor. Someone who is more..." (Focus group participant 6, Feb 2023)

Next steps: As we complete the data collection for Winter 2023 and complete our analysis for Fall 2022 and Winter 2023, we will examine student value around choices in activities and how those choices impact learning. One goal is to consider generalizable findings that can be transferred to the design of engineering and other STEM courses.

Significance of this study

The study will help explore if and how student involvement strategies, such as offering choices to students may better student learning, engagement, and satisfaction. If the student involvement strategies are found to be effective, then such strategies can be implemented in other courses in the Faculty of Engineering to enhance student experience.

Drawing from the experiences of students who have completed ExpecTAtions, this project should benefit the TA training offered at this University and other universities implementing TA training, especially in their engineering/ STEM faculties.

The project will benefit the larger Higher Education Community through dedicated workshops and publications on the effectiveness of student choices in assignments as a student involvement strategy in large-class STEM courses. Lessons learned from implementing and evaluating the effectiveness of student choice in course activities will be shared.

Moreover, this study and any associated professional development workshops may showcase student involvement strategies to instructors teaching engineering and other STEM courses.

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