

# Analysis of Autumn 2020 Mid-Quarter Course Evaluations

## Executive Summary

In this report, we investigate mid-quarter course evaluation topics by courses and college, as well as changes in topics since these evaluations were first administered in spring 2020. Mid-quarter course evaluations include three items: what is helping you learn in this course, what is hindering your learning in this course, and what can your instructor do to improve your learning.

### “What is helping you learn in this course?”

- Four topics were identified: Quality of course engagement, quality of graded assignments, quality of non-graded assignments, and quality of course organization and content.
- Group discussions, working through examples in breakout groups, and instructor engagement are common topics within 39% of the evaluations.
- 36% of the evaluations pertained to general coursework and practice material.
- Engaging online course content, such as discussions, guest speakers, videos, and examples of concepts, was a common topic in 25% of the evaluations.
- While topic prevalence varies among colleges, most colleges appear to have trends similar to those in mid-quarter evaluations from last spring.
- While STEM courses emphasize assignments, engagement helps the most with learning.

### “What is hindering your learning in this course?”

- Three topics were identified: Course organization, feeling overwhelmed, and exam preparation.
- 43% of evaluations related to feeling overwhelmed with academics or with current events. This has fluctuated less than 1% from mid-quarter evaluations in spring 2020.
- 37% of course evaluations are primarily concerned with online course organization, which is a 3% decrease since the end of spring 2020.
- The remaining 20% of evaluations focus on exam preparation, which is a 3% increase since spring 2020.
- Evaluations from STEM courses emphasize course organization and material for exam preparation, whereas evaluations from the humanities primarily indicate feeling overwhelmed.

### “What can your instructor do to improve your learning in this course?”

- Four topics were identified: More practice material for exams, applied examples of concepts, gratitude for professors, and better organization of course content
- 28% of evaluations desire improved communication or express gratitude for instructors.
- 30% suggest better organization of course content, although this is down from 40% at the end of spring 2020.
- The remaining 42% are equally composed of students requesting more practice or exam resources, and students who would like more examples and solutions to course exercises.
- Requests for more exam preparation material and examples have increased by nearly 10% since spring 2020 and are primarily from STEM courses.

## Introduction

Following our analyses of spring 2020 mid- and end-of-quarter course evaluations, we aim to not only investigate prevalent topics found in open-ended text responses from UW-Seattle, but also to investigate topics by college and to identify changes in overall topics since mid-quarter evaluations were administered in spring 2020.

## Approach

We use Latent Dirichlet Allocation (LDA) to model topics, which is a generative algorithm designed so that for each input body of text, a distribution with a predefined number of topics can be obtained. Each topic consists of a set of words and their associated probabilities given the topic. Different topics can share the same words, although the shared words will have different probabilities.

We use Structural Topic Modeling (STM) to determine differences in prevalent topics across time points and colleges. This method is similar to typical topic modeling, although it employs metadata from a response when building topics and can be used for analysis of topics in relation to metadata. In this analysis we use time point, college, course level, total course enrollment, and response rate as covariates. For more information on this approach, please see the methods section in Appendix.

Documents were created as the concatenation of every respondent's cleaned text response for each question type, for each class; hence documents are at the course level for each question.

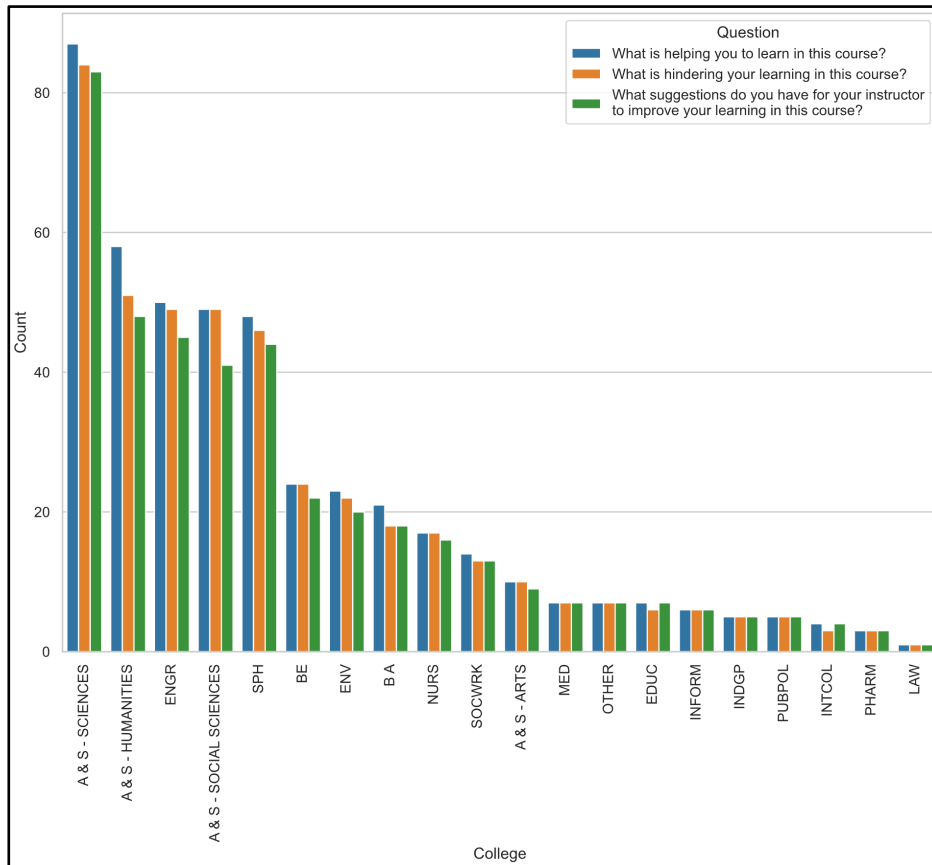
## Sample

The same three questions that were asked the previous two quarters were analyzed (Table 1). The number of responses by College can be found in Figure 1; Arts and Sciences is divided by division. STM results related to Education, Environment, Law, Medicine, Pharmacy as less reliable due to an insufficient number of course-level evaluations available and should be interpreted with caution.

**Table 1:** The sample of responses from autumn quarter 2020 mid-quarter course evaluations.

Question	Total Student Responses	Number of Courses	Avg N Responses Per Course	Avg Response Rate (%)
What is helping you learn in this course?	13842	853	16.2	42.7
What is hindering your learning in this course?	12721	846	15.0	42.8
What can your instructor do to improve your learning in this course?	12240	842	14.5	42.8

**Figure 1:** Course response counts by College for Autumn 2020 mid-quarter evaluations. Those Colleges with fewer courses, especially large courses, will have a lower count of courses included in the analyses.



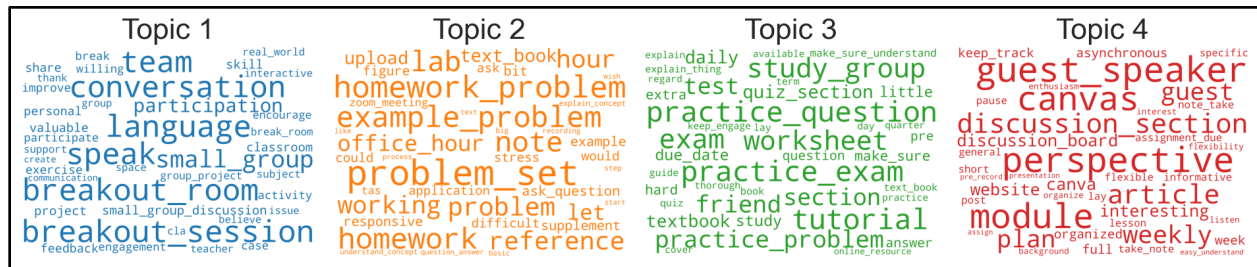
## Findings

This data was analyzed in aggregate and by College/School; the latter analysis was conducted for two reasons. First, the online learning experience likely differs for, say, a nursing, theater, engineering, or philosophy student. Second, disaggregating the results enables College and School leadership to identify and act upon the unique challenges their students face and discover what contributes to student learning.

### “What is helping you to learn in this course?”

For this question, 446 course-level evaluations with a sufficient number of responses from the Seattle campus were considered, from which 4 topics were identified.

**Figure 2:** Word cloud of term weights based on word topic probabilities and their frequencies.



Topic 1 centered around the quality of course engagement, with relevant topic key terms like “group”, “engage”, “breakout\_room”, and “think”. Key terms for topics 2 and 3 consist of similar terms, however it appears they are distinguished by graded and non-graded coursework respectively, with topic 2 containing “homework”, “problem\_set”, and “lab” while topic 3 consists of “practice\_problem”, “tutorial”, “quiz\_section”. Finally, topic 4 is related to quality of course organization and content with terms like “interesting”, “content”, and “organize”.

We are also able to get representative text of every topic from the cleaned course responses, which have been provided here to give a better understanding of topic content. Some information is removed to prevent identifying instructors or departments.

#### Topic 1 - Quality of course engagement

- “[Instructor] is very responsive to student [questions and provides a supportive learning environment. [They are] amazing. [They] challenge us so much and bring a huge wealth of knowledge. The breakout sessions are helping me learn the material in this course. I appreciate the feedback from the instructor.”

#### Topic 2 - Quality of graded coursework

- “Going over the lectures and hw assignments during zoom time. Recorded lectures and provided [examples] are very helpful.”
- “The homeworks and when concepts are put in the context of their purpose/ relevance and how engineers might use them”

#### Topic 3 - Quality of non-graded coursework

- “I find all of the practice problems available to us, practice exams, study questions, and questions of the day very helpful. The lectures are helpful with lots of examples and explanations.”
- “The ability to collaborate on labs and practice exams is, I think, very helpful and really helps drive in the material.”

#### Topic 4 - Quality of course organization and content

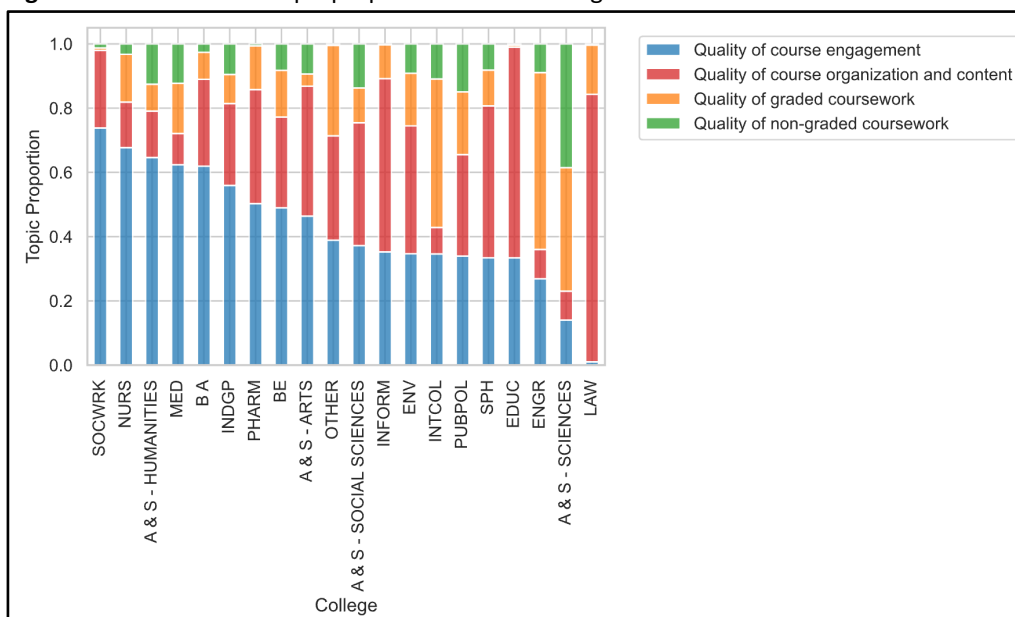
- “The simplicity in accessing assignments all posted in one place with labeling makes sense and outlines for expectations are all included with each week’s instructions, and the variety of media sources we get to interact with - not just powerpoint but also short video clips, longer video clips, podcasts, readings really helps keep the material feeling fresh and engaging.”

Topic 1 (quality of course engagement) was the most common (39.4%), followed by topic 4 (quality of course organization and content, 24.5%), topic 2 (graded coursework, 21.5% and topic 3 (non-graded coursework, 14.5%). Although topic 1 (quality of course engagement) was the most prevalent, topics 2 (graded coursework) and 3 (non-graded coursework) are closely related and are frequently present simultaneously which could reduce the significance of the prevalence of topic 1 (quality of course engagement).

We analyzed the data by College/School to provide insight into what helps students learn across different learning contexts. These data can help leadership pinpoint, emphasize and encourage pedagogical practices that are effective in these unique times. It is important to note that some colleges have a relatively small number of responses and these results should be interpreted with caution. Looking at topic usage, we see that many colleges share similarities in regards to their distribution of topics (Figure 3). Courses in the College of Engineering, and science courses in the college of Arts & Sciences make up a large proportion of evaluations and have noticeably different topic usages from most other colleges (Figure 3).

Aggregating the colleges and school, we can evaluate topic trends over time. While topic usage varies to an extent between colleges (Figure 3), most colleges appear to have similar to those in mid-quarter evaluations from last spring.

**Figure 3:** Distribution of topic proportions across colleges and schools.



### “What is hindering your learning in this course?”

For this question, 426 course-level evaluations with a sufficient number of responses from UW-S were considered, from which 3 topics were identified.

Topic 1 appears to consist of concerns with course organization, including clarity of course goals, ability to engage with instructors, and availability of instructor help. Terms in topic 2 are generally related to being overwhelmed by the quarter, whether it is due to the volume of work, to current events, or to remote learning. Topic 3 terms are mostly related to exam preparation and availability of adequate resources to

understand critical content. Topic 2 was the most common (43.1%), followed by topic 1 (36.8%), and topic 3 (20.1%)

**Figure 4:** Word cloud of term weights based on word topic probabilities and their frequencies.



Below we have representative text of every topic from cleaned course responses, which have been provided here to give a better understanding of topic content.

**Topic 1 - Course organization**

- “The course is organized very poorly so most people had literally no idea what was going on, what was expected of us, or any of that until at least the third or fourth week. Most people did not understand what the [course topic] was or the scope and many of us still do not.”
- “The point of this class was not clear to anyone in it for a very long time constant mentions of deliverables with no clear indication of what those even are.”
- “Nothing specific, just the structure of the class is confusing to me.”

**Topic 2 - Feeling overwhelmed**

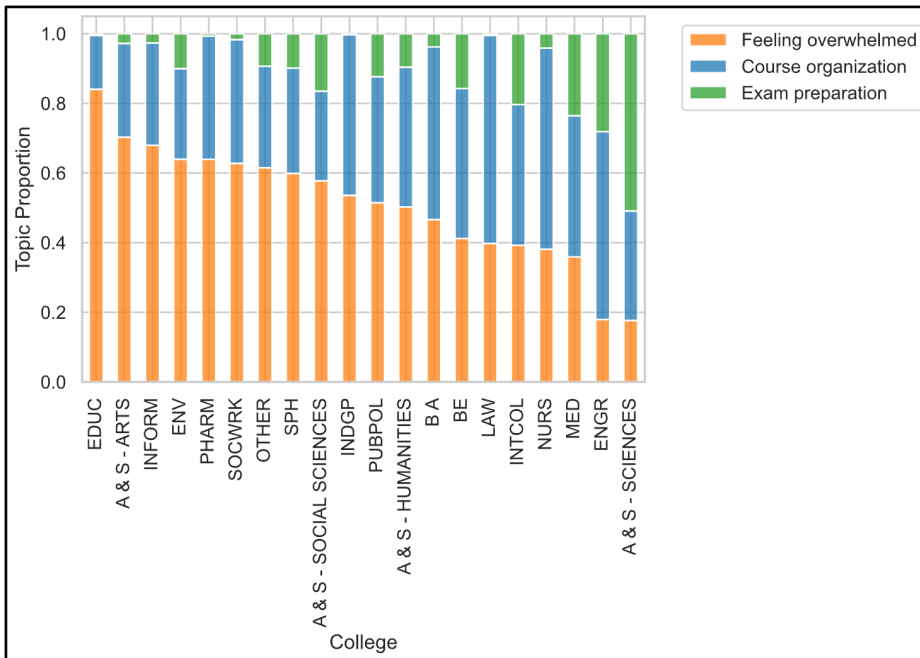
- “There is a lot of reading and not all of the material is talked about much during class. Sometimes the workload can be a bit too much and I feel like I could easily start being behind.”
- “The amount of course work and reading required is overwhelming at some points and can take away from some of the subject material.”
- “I am having a hard time digesting all of the connections being made between readings and discussion boards”
- “Homeschooling my children, covid nineteen pressure, stress with juggling all the social abnormalities of two thousand and twenty but nothing related to the course.”

**Topic 3 - Exam preparation**

- “No historical exam published on the web. Nothing. I feel like connecting with students is still really difficult and it is hard to find students who are genuinely willing to work together and study rather than those who say they are. I would like more practice doing the things that we will be doing on the test”
- “I did all of the practice exam questions including CLUE, read extra from the textbook, and did practice problems from the book. Despite all this I feel like my exam score did not reflect my studying and knowledge so I do not know what to do. Cannot ask questions directly and could not receive answers immediately.”

For topic 2 (feeling overwhelmed), 46% of courses respond with it as the dominant sentiment, which could indicate that most students are largely overwhelmed with their courses and/ or current events.

**Figure 5:** Distribution of topic proportions across colleges and schools.

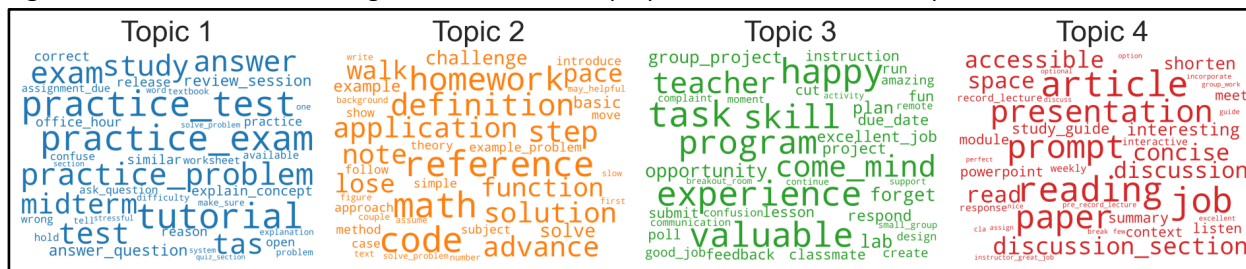


We analyzed the data by College/School to provide insight into what hinders learning for students in different learning contexts. Using this data, academic department leadership can identify problems that may be unique to their program, and develop plans to mitigate these hindrances in future quarters. For the majority of colleges and school, course organization and feeling overwhelmed are very likely to be the key issues for many students with topic 3 (exam preparation) making up a relatively smaller proportion of course evaluations. STEM courses seem to emphasize course organization and material for exam preparation, whereas humanities courses primarily seem overwhelmed (Figure 5). In aggregate, the topics have been relatively stable since the pandemic started.

“What suggestions do you have for your instructor to improve your learning in this course?”

For this question, 404 course-level evaluations with a sufficient number of UW-S responses were considered, from which 4 topics were identified.

**Figure 6:** Word cloud of term weights based on word topic probabilities and their frequencies.



Topic 1 is composed of requests for practice material in order to prepare for exams. Responses most relevant to topic 2 are generally requesting motivation for course content or applied examples of concepts. Topic 3 responses typically express appreciation for their instructors or clarification. Responses for topic 4 generally ask for better organization of course content. Topic 4 was the most common (29.7%), followed by topic 3 (28.1%), topic 1 (19.9%), and topic 2 (22.3%)

#### **Topic 1 - More practice material for exams**

- “I think a link to archived exams would be incredibly helpful and really help me succeed. More practice questions and the way to solve them - not just answer.”
- “I think more practice problems would help. They are not going to be grade just to check if I really understand the lecture.”

#### **Topic 2 - Course content or applied examples of concepts**

- “[Professor] did lots of conceptual and mathematical proofs without further illustrating the meaning behind each formula. Maybe provide links to examples of concepts in the lecture. Real life scenarios/ real life computations.”
- “I think if the professor was more explicit with introducing new things by giving examples and saying how it relates to other concepts I would have an easier time in this course.”

#### **Topic 3 - Gratitude for instructors and clear communication**

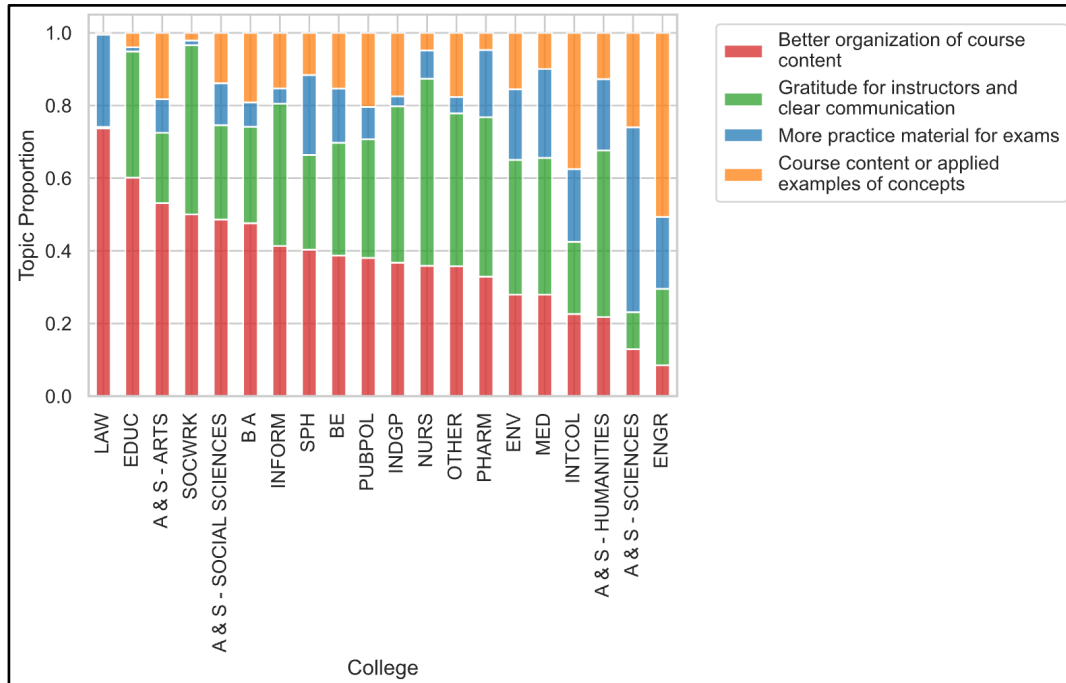
- “Being more clear about expectations, due dates, etc. otherwise this class has been really great.”
- “The course is very effective in its present format and execution. Continue the course.”

#### **Topic 4 - Better organization of course content**

- “Either assign less readings or more time to get them done. Clearer instructions on how to do things and what is required such as what is expected in the summaries...”
- “It would be really helpful for me if the class could be more organized.”
- “I also think some of the assignments have been a little unclear but that is likely due to transitioning onto a virtual platform.”



**Figure 7:** Distribution of topic proportions across colleges.



Topics for suggested improvements were also analyzed by College/School to provide insight into student views on how instructors can improve learning. Using this data, academic department leadership can determine which issues they should be focusing on and consider how they can support instructors to address these issues.

Requests for more exam preparation material and examples have increased by nearly 10% and are primarily from STEM courses. In aggregate, the topics have been relatively stable since the pandemic started.

# Appendix

## Methods

We use Latent Dirichlet Allocation (LDA) to model topics, which is a generative algorithm designed so that for each input body of text, a distribution with a predefined number of topics can be obtained. Each topic consists of a set of words and their associated probabilities given the topic. Different topics can share the same words, although the shared words will have different probabilities. We use the Hierarchical Dirichlet Process (HDP) to estimate a reasonable number of topics for LDA. While LDA is impressive, it can perform poorly when given shorter documents.

We use Structural Topic Modeling (STM) to determine differences in prevalent topics across time points and colleges. This method is similar to typical topic modeling, although it employs metadata from a response when building topics and can be used for analysis of topics in relation to metadata. In this analysis we use time point, college, course level, total course enrollment, and response rate as covariates.

By fitting a STM on evaluation data from multiple cycles, then using the resulting model to estimate the effect of a time point on expected topic proportion for each college as a moderator value we obtain a rough estimate for topic proportion over time for each college holding other covariates constant at median values. Essentially we are regressing our covariates on each topic proportion. The results can give us a rough idea of how topic usage might be changing over time within colleges.

Documents were created as the concatenation of every respondent's cleaned text response for each question type, for each class; hence documents are at the course level for each question. As per [OEA recommendations](#), we filter out all course level responses with less than seven student responses and analyze the remaining responses in aggregate due to lack of other course-level data. Text cleaning includes removal of line breaks and special characters, expanding contractions, converting numbers to text, removal of extremely common english words (it, is, a, etc.), and lemmatization. Additionally, it is advised to consider STM results related to EDUC, ENV, FISH, INTCOL, LAW, MED, PHARM, and colleges as unreliable due to an insufficient number of course-level evaluations available.