Assessing Student Perceptions of Co-Teaching in a 3rd-Year Computer Science Course[*]

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Abstract

In this research, the effects of various teaching methodologies such as solo teaching, parallel coordinated teaching (PCT), and sequential teaching (SEQT) on student perceptions in a third-year programming language course at Boston University (BU) are studied. PCT and SEQT, as variants of co-teaching, contrast with the independent approach of solo teaching. This research uses student evaluation data to analyze eight distinct evaluative questions, including areas such as fairness in grading, stimulation of student's interest in the course material, and overall instructor ratings. These eight questions are analyzed using student course evaluations across the three aforementioned teaching methodologies to determine if there are statistically significant differences in perceptions. The results show that consistent instructor presence throughout the semester, as seen in solo teaching and PCT scenarios, significantly enhances student perceptions of fairness and overall satisfaction. In contrast, SEQT, which involves instructor changes in the middle of

the semester, is associated with less favorable student evaluations. The study highlights the importance of instructor consistency and the potential disruptions caused by changing instructors mid-course.

1   Introduction

In higher education, it is common for multiple instructors to teach different sections of the same course (referred to as co-teaching) or for one instructor to handle multiple sections (referred to as solo teaching). In this paper, we look at two different kinds of co-teaching: (1) Parallel coordinated teaching (PCT) when two instructors operate separate sections of the same course, independently managing their classrooms while engaging in a highly collaborative process. They share a common set of lessons, assignments, and resources to maintain consistency across sections. Coordination meetings on a weekly basis ensure synchronized instructional planning. Despite sharing a unified course structure, each instructor independently executes their teaching responsibilities. (2) Sequential Teaching (SEQT) on the other hand involves a single instructor leading the instruction for both sections during the initial half of the semester, with the other instructor observing and providing feedback. At the semester's midpoint, a role reversal occurs: the observing instructor takes over teaching duties for both sections, while the initial instructor assumes the role of observer.

These variations, PCT and SEQT, represent distinct forms of co-teaching strategies that diverge significantly from the solo teaching approach. Solo teaching is defined as a single instructor teaching multiple sections of the same course for the entire semester. This research aims to evaluate which of these strategies is most effective from the students' perspective. By analyzing student course evaluations, this study seeks to understand students' perceptions regarding the effectiveness of these teaching methods and determine which is deemed most conducive to their learning.

In the fall of 2020, PCT was employed, where I[1] and a colleague independently taught different sections of CS 320, sharing the same teaching assistants, tutors, assignments, and projects. We held weekly meetings to ensure consistent progress across both sections, allowing students in different sections to learn the same material and collaborate on identical assignments. This method aimed to leverage collaborative efforts to improve teaching results, regardless of the hybrid format required by pandemic restrictions, where students participated both in person; remotely and asynchronously. The spring of 2021 saw the continuation of the hybrid model as I took on solo teaching responsibilities for two separate sections of CS 320. This period allowed for an evaluation of

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the effectiveness of a single instructor managing multiple course sections. In fall of 2021, while most students had returned to campus, the SEQT method was introduced. I taught the initial half of the semester, and my colleague, the same from the previous year, took over for the latter half. This structure included a complete handover and mutual class observations to provide feedback, ensuring continuity and instructional coherence.

This study examines how these different teaching formats affected student perceptions across eight questions: (1) The instructor's effectiveness in explaining concepts; (2) The instructor's ability to stimulate interest in subject; (3) The instructor's encouragement in class participation; (4) The instructor's fairness in grading; (5) The instructor's promptness in returning assignments; (6) The instructors quality of feedback to students; (7) The instructor's availability outside of class; and (8) The overall rating of the instructors. By examining student feedback gathered across these eight questions from teaching evaluation, the study aims to gain understanding into the most effective teaching methods among solo, PCT, and SEQT.

2 Literature Review

Co-teaching is a multifaceted approach that adapts to various educational settings, as detailed in the literature by [7] and [1, 2]. These authors delineate several co-teaching strategies, such as: (1) One Teach, One Observe, where one instructor leads the class while the other observes; (2) Parallel Teaching, where instructors teach multiple sections of the same course; (3) Teaming, where both instructors share the instructional space equally, often teaching and interacting together with the students; and (4) One Teach, One Assist, where one instructor primarily leads the lesson while the other provides targeted support to students as needed. [8] introduces other variants of co-teaching such as (1) Supportive, where one instructor provides assistance to individual students while the other delivers the main content; (2) Complementary, which sees one instructor enhancing the lessons of the other with additional information or learning activities; and (3) Synergetic, a dynamic approach where both instructors merge their expertise to create an enriched learning environment for the students. Despite the variations in terminology, there is considerable common ground among these co-teaching models, reflecting the adaptability of co-teaching to suit diverse educational needs.

In their exploration of collaborative teaching in large computer science classes in India, [8] discuss the effectiveness of various collaborative teaching methods, including parallel teaching where multiple instructors teach different sections of the same class. Drawing from these insights, my research presents three distinct approaches to teaching CS 320 at BU. The first scenario serves as

a baseline, where I alone taught multiple sections of CS 320 during the spring of 2021. This instance provides a reference point for comparing the impact of solo versus co-teaching instructional approaches. Data from course evaluations were analyzed across these three teaching methodologies. We conducted Welch's t-test on student ratings to analyze the data, and this approach revealed statistically significant differences in the evaluations across the teaching methodologies. To the best of our knowledge, no other research has examined students' views from course evaluations on co-teaching in a 3rd-year computer science course, using solo teaching as a benchmark.

[4] mentions that co-teaching is a powerful but often overlooked way to encourage deep and thoughtful discussions. When instructors reflect together, they bring up important questions and issues, leading to discussions that can result in changes and improvements in teaching. In the fall of 2020, the other instructor and I held weekly meetings where we reflected and discussed effective teaching pedagogy and what should be included in the curriculum. Through these discussions, we decided to enhance the curriculum to include a topic on parser combinators. We had both noticed in our previous teaching experiences that students often wrote ad-hoc parsers that did not scale well, and students struggled to write effective parsers. The inclusion of parser combinators was inspired by our collaborative reflections on improving teaching methods and curriculum content.

[2] found that middle school 6th graders preferred co-teaching over a traditional single-instructor approach. Our research takes a similar inquiry into co-teaching's efficacy but focuses on 3rd-year computer science students at the university level. Using course evaluations, we examine student perceptions of teaching effectiveness using both co-teaching strategies and traditional solo teaching methods within the same course. As presented in Section 3, student evaluations consistently rated the sections I taught solo more favorably compared to those taught using PCT and SEQT. Personally, I noticed an improvement in my lesson organization during SEQT, when I was responsible for teaching only the first half of the semester. I would receive regular feedback from my co-instructor as he would observe my teaching and give me constructive feedback. [3] also mention that one of the benefits of co-teaching is to provide ongoing supportive feedback based on direct observation of the other instructor teaching throughout the semester. SEQT also allowed me more time to also observe and learn from the other instructor when the other instructor took over both sections in the second half of the semester. Other instructors as mentioned in [9] observed similar gains. One of the instructor mentions that her co-instructor allows her to observe her teaching, where she notice strategies and methods she'd like to try. However, the statistical analysis in Section 4 of this paper suggests that students do not prefer SEQT, finding PCT and solo

teaching to be much more effective for their learning.

3 Data

In the fall of 2020, I taught one section of CS 320 at BU, while my colleague taught another section concurrently. I refer to this arrangement as PCT. The course evaluations for my section are documented in Table 1. In the spring of 2021, I independently taught two sections of CS 320 at BU, a scenario I refer to as solo teaching of multiple sections of the same course. The evaluations for these sections can be found in Table 2. During the fall semester of 2021, I began teaching two sections of CS 320 at BU but only continued until mid-semester. At that point, my colleague took over and completed the semester. This method is termed SEQT, another variant of co-teaching. Evaluations for the portion of the semester I taught are available in Table 3.

Students completed course evaluations separately for me and my colleague during the last week of the semester. For SEQT, students completed evaluations for both instructors also in the last week of the semester. The course evaluations presented in this paper are solely mine, as I did not have access to my colleague's course evaluation data. In these tables, N is the sample size, SD is the standard deviation and M is the mean.

Table 1: Parallel Coordinated Teaching of CS 320 in Fall 2020 for section A. My colleague taught the other section B.

Question #	Faculty Evaluation	N	SD	M
1	Effectiveness in explaining concepts	42	0.65	4.62
2	Ability to stimulate interest in subject	42	0.70	4.52
3	Encouragement of class participation	42	0.98	4.26
4	Fairness in grading	42	0.73	4.50
5	Promptness in returning assignments	42	0.83	4.21
6	Quality of feedback to students	42	0.82	4.43
7	Availability outside of class	42	0.92	4.33
8	Overall rating of instructor	42	0.53	4.76

Table 2: Solo teaching of CS 320 in Spring 2021 for sections A and B.

Question #	Faculty Evaluation	Section A			Section B		
		N	SD	M	N	SD	M
1	Effectiveness in explaining concepts	52	0.69	4.58	45	0.56	4.64
2	Ability to stimulate interest in subject	52	0.91	4.44	45	0.85	4.62
3	Encouragement of class participation	51	0.75	4.51	45	0.70	4.64
4	Fairness in grading	51	0.69	4.59	45	0.85	4.60
5	Promptness in returning assignments	51	0.85	4.43	45	0.91	4.42
6	Quality of feedback to students	51	0.78	4.51	45	0.86	4.47
7	Availability outside of class	51	0.85	4.43	45	0.64	4.62
8	Overall rating of instructor	50	0.65	4.68	45	0.57	4.73

Table 3: Sequential Teaching of CS 320 in Fall 2021 for sections A and B.

Question #	Faculty Evaluation	Section A			Section B		
		N	SD	M	N	SD	M
1	Effectiveness in explaining concepts	32	0.96	4.34	45	0.83	4.40
2	Ability to stimulate interest in subject	32	0.91	4.28	45	1.12	4.11
3	Encouragement of class participation	32	0.89	4.38	45	1.10	4.18
4	Fairness in grading	32	1.01	4.19	45	1.22	4.07
5	Promptness in returning assignments	32	0.97	4.00	45	1.12	4.18
6	Quality of feedback to students	32	0.90	4.25	44	1.23	4.07
7	Availability outside of class	32	1.08	4.22	45	0.99	4.33
8	Overall rating of instructor	32	0.79	4.44	45	0.88	4.38

In the evaluations, students rated my performance on a scale from 1 (poor) to 5 (superior) across eight questions. Specifically, in Question #8, "Overall rating of instructor," I received my highest mean rating of 4.76 during the fall 2020 semester, under the PCT method. The lowest I received is 4.38 in Section B of the SEQT teaching in the fall of 2021 semester. A key question arises from this observation: Is the difference in mean ratings of eight questions across Table 1, Table 2 and Table 3, statistically significant? Understanding whether these differences are statistically significant is crucial. It enables us to determine whether the variations observed between solo teaching of multiple sections, PCT, and SEQT are due to the teaching methods themselves or if they occur purely by chance. This analysis is not just academic; it has practical implications. Confirming that different co-teaching strategies such as PCT and SEQT significantly affect student perceptions could influence future pedagogical approaches in computer science education. Such insights could guide universities and educators in structuring their courses to enhance learning outcomes and student satisfaction. However, it is essential to acknowledge that other factors could be at play between semesters that might affect my ratings, including changes in class size, different student cohorts; otherwise, I had the same course material, similar assignments and delivery methods.

To address these questions, student course evaluation data from Table 1, Table 2, and Table 3 were analyzed using a two-tailed Welch's t-test. The results of these statistical tests are detailed in Section 4 of this paper.

4   Results and Discussions

In this study, we perform a statistical analysis to evaluate the effectiveness of different teaching methods in CS 320. The methods compared include solo teaching, PCT, and SEQT. In the case of solo teaching and SEQT, each involved two sections of the same course, which are treated as distinct entities for the purpose of analysis. Conversely, for PCT, I taught one section while my colleague taught the other; hence, only the course evaluation data from my teaching is considered in this analysis, not my colleague's.

We set up our null hypothesis (H_0) and alternative hypothesis (H_1) as:

- H_0: There is no difference in the mean ratings of each of the 8 evaluation questions across the different teaching sections and methods.

- H_1: There is a significant difference in the mean ratings of the 8 evaluation questions across the different teaching sections and methods, which could be either positive or negative.

To assess these hypotheses, we employ a two-tailed Welch's t-test for each of the 8 evaluation questions. A two-tailed test is chosen because it allows us to detect both increases and decreases in teaching effectiveness, regardless of the direction. The traditional Student's t-test assumes equal variances between the groups being compared. From the data available in Section 3 this is not the case. Consequently, relying on the Student's t-test could lead to inaccurate conclusions. In contrast, Welch's t-test does not require the assumption of equal variances, making it more suitable for the teaching course evaluation data [5, 6] in this paper. This test provides a more reliable assessment by adjusting the degrees of freedom according to the sample sizes and variances of each group. Here is how the $t\_statistic$ and $Degree\ of\ Freedom$ are calculated for the Welch's t-test:

$$t\_statistic = \frac{\mu_1 - \mu_2}{\sqrt{\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}}}$$

$$Degree\ of\ Freedom = \frac{\left(\frac{\sigma_1^2}{n_1} + \frac{\sigma_2^2}{n_2}\right)^2}{\frac{(\sigma_1^2/n_1)^2}{n_1-1} + \frac{(\sigma_2^2/n_2)^2}{n_2-1}}$$

μ_1, μ_2 are the means of the two groups, σ_1^2, σ_2^2 are their variances, and n_1, n_2 are the sample sizes.

We conducted a total of 10 pairwise comparisons for each of the eight questions.

1. Solo Section A vs. Solo Section B
2. Solo Section A vs. PCT
3. Solo Section A vs. SEQT Section A
4. Solo Section A vs. SEQT Section B
5. Solo Section B vs. PCT
6. Solo Section B vs. SEQT Section A
7. Solo Section B vs. SEQT Section B
8. PCT vs. SEQT Section A
9. PCT vs. SEQT Section B
10. SEQT Section A vs. SEQT Section B

The data for Solo Section A and Solo Section B is sourced from Table 2. Data pertaining to PCT is detailed in Table 1, while the data for SEQT Section A and SEQT Section B can be found in Table 3.

The significance level for rejecting the null hypothesis is set at 5%, aligning with standard practices for statistical significance. This means that if the test results show less than a 5% probability, we reject the H_0 in favor of H_1. By conducting this analysis, our aim is to identify precisely whether specific teaching approaches in these various setups significantly impact student evaluation outcomes.

The pairwise comparison results of performing the Welch's t-test for the evaluative questions are systematically presented across several tables. On each of the table, we present the t-statistic, p-value and the degree of freedom. p-value that are statistically significant i.e., less than 5% are bolded in the table. Table 4 details the comparisons for Questions 1 and 2. Similarly, Table 5 outlines the results for Questions 3 and 4, Table 6 for Questions 5 and 6, and Table 7 for Questions 7 and 8. Each table provides insights into 10 pairwise comparisons, illustrating the variances in student perceptions across different teaching methodologies.

Table 4: Comparison of Questions 1 and 2 across all sections

Comparison	Question 1			Question 2		
	t-statistic	p-value	Degrees of Freedom	t-statistic	p-value	Degrees of Freedom
Solo. Sec A vs. Solo. Sec B	-0.473	0.6377	94.63	-1.007	0.3167	94.43
Solo Sec A vs. PCT	-0.289	0.7736	89.80	-0.482	0.6312	91.81
Solo. Sec A vs. SEQT. Sec A	1.232	0.2237	50.73	0.783	0.4367	65.76
Solo. Sec A vs. SEQT. Sec B	1.151	0.2530	85.87	1.577	0.1186	84.77
Solo Sec B vs. PCT	0.153	0.8786	81.18	0.601	0.5497	83.73
Solo.Sec B vs. SEQT. Sec A	1.586	0.1195	45.92	1.660	0.1017	64.03
Solo. Sec B vs. SEQT. Sec B	1.608	0.1119	77.18	2.433	**0.0171**	82.06
PCT vs. SEQT. Sec A	1.420	0.1615	51.67	1.239	0.2206	56.56
PCT vs. SEQT.Sec B	1.381	0.1709	82.56	2.062	**0.0427**	74.53
SEQT. Sec A vs. SEQT. Sec B	-0.286	0.7761	60.64	0.733	0.4657	73.59

Table 5: Comparison of Questions 3 and 4 across all sections

Comparison	Question 3			Question 4		
	t-statistic	p-value	Degrees of Freedom	t-statistic	p-value	Degrees of Freedom
Solo Sec A vs. Solo Sec B	-0.878	0.3821	93.69	-0.063	0.9501	84.81
Solo Sec A vs. PCT	1.358	0.1785	75.66	0.606	0.5458	85.55
Solo Sec A vs. SEQT. Sec A	0.687	0.4947	57.68	1.970	0.0544	49.20
Solo Sec A vs. SEQT. Sec B	1.695	0.0942	76.21	2.525	**0.0139**	67.60
Solo Sec B vs. PCT	2.068	**0.0421**	73.76	0.590	0.5569	84.43
Solo Sec B vs. SEQT. Sec A	1.377	0.1739	56.56	1.873	0.0660	59.46
Solo Sec B vs. SEQT. Sec B	2.367	**0.0205**	74.62	2.391	**0.0192**	78.57
PCT vs. SEQT. Sec A	-0.550	0.5841	69.73	1.468	0.1478	54.11
PCT vs. SEQT. Sec B	0.359	0.7207	84.82	2.010	**0.0481**	72.74
SEQT. Sec A vs. SEQT. Sec B	0.880	0.3817	73.68	0.471	0.6392	73.19

Table 6: Comparison of Questions 5 and 6 across all sections

Comparison	Question 5			Question 6		
	t-statistic	p-value	Degrees of Freedom	t-statistic	p-value	Degrees of Freedom
Solo Sec A vs. Solo Sec B	0.055	0.9559	90.58	0.238	0.8128	89.54
Solo Sec A vs. PCT	1.258	0.2116	88.36	0.479	0.6334	85.80
Solo Sec A vs. SEQT. Sec A	2.060	**0.0438**	59.50	1.347	0.1830	58.98
Solo Sec A vs. SEQT. Sec B	1.219	0.2263	81.55	2.045	**0.0446**	70.69
Solo Sec B vs. PCT	1.126	0.2635	84.96	0.222	0.8248	84.96
Solo Sec B vs. SEQT. Sec A	1.921	0.0592	64.22	1.077	0.2856	65.01
Solo Sec B vs. SEQT. Sec B	1.116	0.2677	84.46	1.774	0.0800	76.79
PCT vs. SEQT. Sec A	0.981	0.3304	60.90	0.885	0.3792	63.43
PCT vs. SEQT. Sec B	0.143	0.8870	80.94	1.604	0.1130	75.25
SEQT. Sec A vs. SEQT. Sec B	-0.752	0.4544	72.03	0.737	0.4636	73.99

Table 7: Comparison of Questions 7 and 8 across all sections

Comparison	Question 7			Question 8		
	t-statistic	p-value	Degrees of Freedom	t-statistic	p-value	Degrees of Freedom
Solo Sec A vs. Solo Sec B	-1.246	0.2161	91.82	-0.399	0.6905	92.94
Solo Sec A vs. PCT	0.540	0.5908	84.62	-0.650	0.5172	89.93
Solo Sec A vs. SEQT. Sec A	0.933	0.3547	54.66	1.435	0.1566	56.92
Solo Sec A vs. SEQT. Sec B	0.527	0.5992	87.34	1.873	0.0647	80.41
Solo Sec B vs. PCT	1.696	0.0943	72.60	-0.254	0.7998	85.00
Solo Sec B vs. SEQT. Sec A	1.874	0.0672	46.38	1.774	0.0818	53.08
Solo Sec B vs. SEQT. Sec B	1.650	0.1031	75.31	2.239	**0.0281**	75.39
PCT vs. SEQT. Sec A	0.462	0.6455	60.72	1.977	0.0534	51.34
PCT vs. SEQT. Sec B	0.000	1.0000	85.00	2.458	**0.0163**	73.01
SEQT. Sec A vs. SEQT. Sec B	-0.456	0.6501	63.21	0.313	0.7551	70.93

In Table 8, we provide a summary of the statistically significant results from Table 4, Table 5, Table 6, and Table 7. Additionally, Table 8 includes the frequency of statistically significant results, indicating how often each teaching method was perceived by students as either positive or negative.

The questions regarding Question #1 i.e., "Effectiveness in explaining concepts" and Question #7 i.e., "Availability outside of class" have zero occurrences of statistically significant results across all comparisons as shown in Table 8. This statistical insignificance indicates that these questions are less sensitive to changes in teaching methods. For instance, the ability to explain concepts effectively is related to individual instructor skills and less to the mode of delivery (Solo vs. PCT vs. SEQ). Similarly, availability outside of class is influenced by the instructor's commitment to student interaction outside formal teaching sessions, rather than how the content is delivered. This consistency could be seen as a strength, suggesting that my core teaching competencies are stable across different teaching environments. However, it might also imply a ceiling effect, where improvements are harder to achieve because students cannot rate any of the questions above 5.

For Question #4 i.e., "Fairness in Grading," it is noteworthy that Solo Sections A and B, as well as the PCT section, consistently outperformed SEQT Section B. This observation indicates that sections taught by a single instruc-

tor throughout the semester are perceived as more fair in their grading practices compared to those experiencing an instructor transition. Furthermore, the lack of statistically significant differences in grading fairness perceptions between Solo Sections A, B, and the PCT method suggests that consistency in instructor presence throughout the semester creates a stable environment for equitable grading practices. In contrast, in SEQT where the instructor changes midway through the semester, may introduce elements of uncertainty or perceived inconsistency in grading criteria among students. This difference highlights the potential challenges posed by instructor transitions in maintaining perceived grading fairness and underscores the importance of ensuring that both instructors in a SEQT arrangement closely align their grading standards and transparently communicate any necessary transitions in assessment strategies to the students. Although the differences in "Fairness in Grading" for SEQT Section A do not reach statistical significance at the conventional 5% level, they are notable at the 10% level. However for Section B of SEQT, statistical significant results are observed at the 5% level. This suggests a trend towards significance, indicating that while SEQT Section A's grading perceptions are not as clearly differentiated as those in SEQT Section B, they still do not align as favorably when compared to the more consistent outcomes observed in Solo Sections A and B, and the PCT section. This finding highlights a potential area for improvement in ensuring grading consistency across different teaching formats, particularly in sections experiencing instructional transitions.

For all statistically significant results involving SEQT Section B, SEQT Section B performed worse. Specifically, for Questions #2, #3, and #8, i.e., "Ability to stimulate interest in the subject," "Encouragement of class participation," and "Overall rating of instructor," SEQT Section B was worse off compared to Solo Section B and PCT. However, SEQT Section A also performs less favorably compared to sections taught by a single instructor throughout the semester. It does not reach the conventional threshold for statistical significance at the 5% level, but is significant at the 10% level. This implies that the instructional transition in the middle of the semester transition in SEQT Sections A and B may disrupt the continuity that students seem to prefer, impacting their engagement and overall satisfaction with the course. Students prefer a single instructor to teach for the entire semester whether the instructor is teaching both sections of the same class or the instructor is engaged in PCT but is still responsible for the entire section for the entire semester. These findings reinforce the idea that consistent instructor presence, whether in solo-taught sections or in PCT where the instructor remains the same throughout the semester, is critical to maintaining student interest, participation, and overall satisfaction.

Table 8: Comprehensive Summary of Statistically Significant Results. In this table, '+' represents the number of statistically significant results within the count of that method that are perceived positively by students, while '-' indicates those results perceived negatively.

Summary of Results		Frequency of Methods			Frequency by Question	
Category	Count	Method	Total Count	Perception	Question	Count
Total # of significant results at the 5% level:	11	Solo Sec A	3	+3	Question 1	0
		Solo Sec B	5	+5	Question 2	2
		PCT	4	+3 and -1	Question 3	2
		SEQ. Sec A	1	-1	Question 4	3
		SEQ. Sec B	9	-9	Question 5	1
					Question 6	1
					Question 7	0
					Question 8	2

The three major findings of this research are that: (1) Universities should maintain the same instructor throughout a course to enhance perceptions of fairness and grading, as well as overall instructor ratings. Our study shows that solo teaching and PCT outperform SEQT. (2) To ensure smooth transitions in SEQT, have instructors collaborate closely, communicate changes clearly to students, and select instructors with similar teaching styles to minimize disruptions. (3) PCT is preferred over SEQT due to consistent instructor presence, which enhances student comfort and engagement. This preference is reflected in higher overall learning experience and satisfaction in student evaluations.

We acknowledge the limitations of our research. I lacked access to my colleague's teaching evaluations, which could have provided more insight into correlations. Expanding the study to include different disciplines and course formats could also enhance the generalizability of the findings.

5   Conclusions

This research explored the impact of two specific co-teaching methods, PCT and SEQT, compared to solo teaching. The study examined how these different instructional strategies affect student evaluations across eight questions. Solo teaching and PCT, where a single instructor is responsible for the course throughout the semester, consistently led to more favorable student perceptions. This was particularly evident in the areas of grading fairness and the overall rating of the instructor. Students valued the consistency and continuity provided by having the same instructor, suggesting that frequent changes in instructional personnel can disrupt student satisfaction and engagement.

SEQT, especially in Section B where the instructor changes midway through the semester, often resulted in less favorable evaluations. This method appeared to introduce a level of disruption that negatively impacted student perceptions, particularly in terms of grading fairness and the encouragement

of class participation. For courses that must be taught by multiple instructors, our research suggest that it is probably best to use PCT and not SEQT form of co-teaching.

Acknowledgement

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