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Exploring Immediate and Sustained Changes in Teaching Practices Following Midterm Student Feedback

ABSTRACT

Midterm student feedback is increasingly considered to have greater potential for improvement in post-secondary teaching than end-of-term course evaluations. While many benefits have been established, the process for gathering midterm feedback has been studied exclusively with the aim of characterizing short-term effects. At McMaster University, in Hamilton, Ontario, Canada, midterm student feedback is called a "course refinement." As the final part of a multiphase study investigating instructors' perceptions of the course refinement process and its impact, this paper examines whether changes made by instructors following the course refinement process are sustained beyond the term. The study involved two phases of data collection: initially, a semi-structured in-person interview or survey completed one to three months following the conclusion of an instructor's refined course, followed by an additional interview one year after the instructor's course refinement. Changes to instructors' teaching practices were evident in both phases. Furthermore, a thorough examination of sustained change revealed two predominant themes: the relationship between sustained change and instructors' beliefs about teaching, and the impact of sustained change on various levels of higher education. The latter theme is explored via an ecological systems framework, which revealed much broader implications than we ever imagined. Course refinements do, indeed, lead to lasting changes that go beyond the boundaries of a course and have effects departmentally, institutionally, and inter-institutionally—and conceivably even influence post-secondary society and culture more widely.

KEYWORDS

midterm student feedback, small group instructional diagnosis, ecological model, ecological systems framework, beliefs about teaching

INTRODUCTION

Student feedback on teaching is collected at many post-secondary institutions for formative (developmental) and/or summative (judgmental) purposes, such as evaluating teaching performance (Murray 1984, 117), assessing student learning, and hiring and promotion decisions (Zabaleta 2007, 55). It is most common to encounter end-of-term student evaluation of teaching processes in post-secondary institutions, which are typically designed with a set of closed, scale-based questions (Sozer, Zeybekoglu, and Kaya 2019, 1004) that can be applied globally to all courses across an institution (Murray 1984, 123). Though it has been reported that end-of-term evaluations can capture

student perspectives on instructional qualities, such as clarity and student participation, their typical design can make it difficult to incorporate suggestions given the lack of individualized feedback (Murray 1984, 123). Other significant issues with end-of-term evaluations have been noted, such as low response rates and bias (Sozer, Zeybekoglu, and Kaya 2019, 1004). These issues limit the value of end-of-term evaluations for any purpose but are particularly detrimental to their use as a formative, long-term development tool to improve teaching (Omer et al. 2023, 19).

In contrast, student feedback processes designed with open-ended questions are often viewed as far more valuable for formative use (e.g. Omer et al. 2023, 16). Alongside open-ended questions, collecting student feedback immediately after teaching performance, engaging a consultant to mediate the process, and debriefing the feedback in a consultation have been found to enhance the effectiveness of student feedback for teaching. These elements are all in line with common characteristics of midterm student feedback processes (Brinko 1993, 578).

One of the first published midterm student feedback processes is small group instructional diagnosis (SGID). Since its development in the United States in the 1970s (Redmond 1982, 3), post-secondary institutions across North America have widely accepted SGID (Diamond 2004, 218), and it has had some uptake internationally as well (e.g. Dukhi, Southwood, and Srinivas 2014, 2). The SGID process includes 1) an initial consultation between the instructor and a trained facilitator in collecting student feedback, 2) a class visit where the facilitator arranges students into small groups to discuss their feedback and later present back to the class for further large-group analysis (without the instructor present), and 3) a feedback debrief conversation between the facilitator and the instructor (Redmond 1982, 3–7). While this process can make feedback more effective for formative use, implementation is a challenge due to the amount of time and people resources required (Veeck et al. 2016, 158).

Scholars have established various adaptations of SGID and alternative methods of collecting midterm student feedback. These methods may include focus groups and/or surveys, may be conducted in person or online, and have been customized to best serve particular teaching and learning paradigms, disciplinary, or institutional contexts. For example, one adaptation added three additional open-ended feedback questions that prompt students to consider their role in the learning process (Hurney, Rener, and Troisi 2014, 56). This approach reflected a learning-centred paradigm, placing some responsibility for their course experience upon the students themselves, rather than placing responsibility exclusively on the instructor. Another adaptation of SGID involved regularly collecting feedback from a small focus group of students enrolled in a nursing program about a variety of their experiential and clinical learning experiences (Peterson and Fogelson 2022, 127–28). This dialogic approach created frequent opportunities for iterative improvement and offered an efficient method to obtain student feedback on multiple learning experiences/instructors at one time. Finally, a distinct midterm student feedback approach named the “online collaborative evaluation” leveraged a free, online, collaborative document creation tool to record student feedback (Veeck et al. 2016, 157). In contrast to the SGID method, Veeck et al.’s online collaborative evaluation took less time, did not require a facilitator, and allowed real-time response to students offering input.

Though the processes may take different shapes, increasing evidence suggests that midterm student feedback has greater potential to improve student ratings of instructional skill (Finelli, Pinder-Grover, and Wright 2011, 71) or teaching practices (Golding and Adam 2016, 6; Hendry and Dean 2002, 76) than end-of-term student feedback. Collecting and acting on midterm student feedback has clear benefits to student satisfaction later in the same term (Snooks et al. 2007, 68), as instructors receive guidance on what changes would benefit students during the remainder of the term (Veeck et al. 2016, 162). Furthermore, when the process is carefully structured and analyzed, institutions can refine the

support and services offered to their instructors using midterm student feedback (Sozer, Zeybekoglu, and Kaya 2019, 1013).

While benefits of midterm student feedback have been established, research has predominantly focused on short term effects for the course and instructor. However, if benefits only apply within the term in which the feedback is collected, then midterm student feedback would be an inefficient method of improving teaching effectiveness over time.

Other educational development practices have been investigated to establish their potential for fostering sustained change in instructors' teaching skills and knowledge, including postgraduate certificate programs (Ensor 2004, 229), online learning communities (Dancy et al. 2019, 1), disciplinary teaching institutes (Derting et al. 2016, 4), and formally recognized teaching mentorship programs (Turner et al. 2015, 660). As midterm student feedback is a common educational development practice offered at post-secondary institutions, this research sought to similarly examine its lasting impacts on instructors. We explored this question as part of a multiphase study of a midterm student feedback process offered by McMaster University's teaching and learning centre, the Paul R. MacPherson Institute for Leadership, Innovation, and Excellence in Teaching (the MacPherson Institute), located in Hamilton, Ontario, Canada.

Course refinements

The midterm student feedback process at McMaster University is voluntary and initiated by an instructor. Throughout this paper, we will refer to the process at McMaster University as a "course refinement," and the more general process as "midterm student feedback." The course refinement process begins with an intake consultation between an educational developer (also commonly referred to as faculty developer, pedagogical consultant, academic developer, among other titles) and an instructor to produce a set of co-constructed feedback questions. Two educational developers conduct the second step during a mid-semester class period without the presence of the instructor. In contrast to the SGID method, which relies on small group discussion followed by large group analysis, the questions identified during the first step of the course refinement process are posed to students by way of a survey. After the survey is completed individually by students, the educational developers facilitate a full class discussion to further probe key themes. Finally, an educational developer subsequently consolidates student survey responses and class discussion feedback into a report and meets with the instructor for a second consultation to discuss strategies to address the recommendations.

In a previous paper, the authors describe principles for good practice in midterm student feedback (Taylor et al. 2020). That investigation sought to capture instructors' perceptions of (i) the course refinement process, outcomes, and recommendations; (ii) whether the process leads to changes in teaching practices; and (iii) what attributes of the course refinement process contribute to these changes. As reported in that paper, good practice in midterm student feedback includes developing reciprocity and cooperation amongst instructors, students, and educational developers; encouraging active learning in instructors' enhancement of instructional skills; and respecting diverse talents and ways of teaching. These, as well as other characteristics of the course refinement process, not only contributed to changes in instructors' individual teaching practices but also encouraged change in departments and within institutions (Taylor et al. 2020, 353–54).

While this earlier work focused primarily on the process of course refinements, questions remain around longer-term impacts, how enduring the impacts are, and who in the higher education system is affected by them. Given the similarities in process between course refinements, SGID, and SGID-adapted midterm student feedback methodologies, the intention of this research study is to

speak to the range of impact of midterm student feedback processes generally using the course refinement as a proxy.

Ecological systems frameworks

First presented in the domain of psychology, ecological systems frameworks provide a theoretical perspective on human development and the external factors that impact it (Bronfenbrenner 1979, 3). Ecological systems frameworks organize the developing individual, the environments surrounding that individual, and the relations between them into a conceptual scheme identifying various systemic levels. They aim to capture the context and change created by complex interactions between these levels and emphasize the impact on the individual's perceptions, desires, fears, thoughts, and insights (Bronfenbrenner 1979, 9). They can serve as particularly useful tools for examining longer-term changes, in contrast to methodologies based on short-term assessments or data points (Bronfenbrenner 1979, 14).

As a natural site for human development and change, the higher education sector has utilized ecological systems frameworks to explore various teaching and learning contexts and phenomena (Hodson et al. 2018; McLinden 2017, 379; Shelton 2018, 291). For example, Shelton's (2018) study on university faculty members' thinking about technology presents an ecological model that features contextual levels for the self, the department (including management, colleagues, students), the institution, the higher education sector, and most broadly, society and culture. They also included transcending contextual layers for one's subject/discipline and one's profession in order to connect people across institutions and disciplines. Interestingly, the application of ecological systems frameworks to higher education contexts revealed that influence is not just uni-directional. Individuals can impact their environment just as the environment can impact the individual (May and Bridger 2010, 97).

An ecological model similar to Shelton's (2018) but capturing a multi-directional influence is represented in Figure 1, reflective of the findings we present below.

Purpose of this study

While scholarly evidence of midterm student feedback has existed since the 1980s, much of the focus has been on instructor and student satisfaction with the process, student learning, and instructor description of immediate course impact (Hurney et al. 2023, 89). Further, scholars have recognized "the burden of follow-up that is required to document longer term impacts" of studying sustained change in teaching as a result of midterm student feedback (Hurney et al. 2023, 89).

This paper takes up the challenge of exploring the longer-term impacts of McMaster University's course refinement process. In order to consider impacts at various levels of the institution, as suggested by our earlier work, we approached this analysis using an ecological systems framework. This investigation includes characterizing the kinds of changes instructors made to their course delivery and teaching effectiveness (referred to as "teaching practices" throughout this paper) following their course refinement. Both "immediate" and "sustained changes" are explored. We are distinguishing between immediate and sustained changes as the difference between changes to teaching practices which were made within the same academic term during which the centre collected feedback and changes to teaching practices which instructors implemented at any point in subsequent terms (up to a year following the course refinement, as per the end of our study period), respectively. This difference is depicted in Figure 2.

Figure 1. An ecological model of sustained impacts following a course refinement intervention

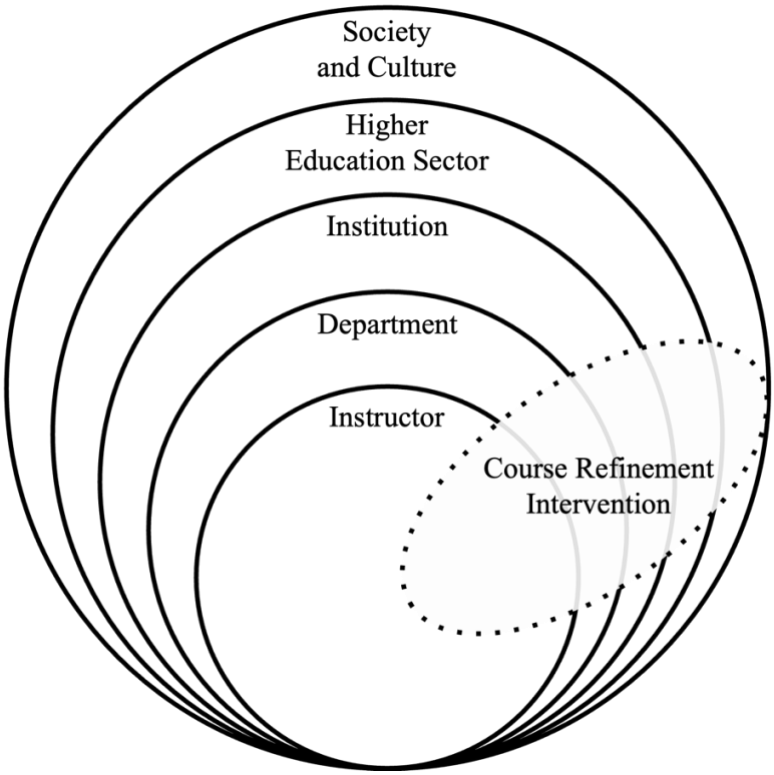
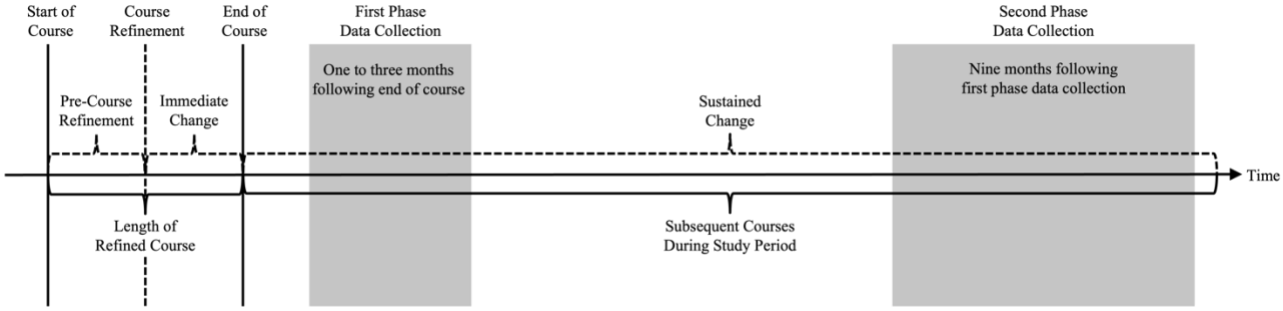


Figure 2. Timeline differentiating immediate change from sustained change relative to the course refinement process



METHODS

After receiving institutional ethics clearance, the data for this study was collected in two phases. The first phase invited participation from all instructors who had engaged in the course refinement process at McMaster University; we extended the invitation one to three months following the conclusion of their refined courses. To sufficiently address our research questions, we opted for a flexible data collection approach that allowed participants to go in-depth about their unique experiences with the course refinement process. We offered participants a choice of either a semi-structured interview conducted in-person or a survey completed online. Data collected at this point largely informed our understanding of "immediate changes," as described above. During this first phase, participants were asked the following questions:

1. Why did you choose to participate in the course refinement process?
2. What changes did you make to your teaching and learning approaches as a result of the course refinement?
3. What suggestions were made by the students that you did not implement, and why?
4. What impacts do you think this course refinement process had on student learning gains and satisfaction in your course this semester?
5. What impacts do you think this course refinement process will have on your teaching in future semesters?
6. Did you feel like you had the resources and skills necessary to change your teaching techniques based on the feedback you received? Please explain your response.
7. Please indicate your satisfaction overall with the course refinement process on a 5-point scale from very satisfied or very unsatisfied. Please explain your response.
8. What could the MacPherson Institute do in the future to improve the course refinement process?

We later invited all instructors who consented to participate in the first phase to participate in the second phase. As survey responses from the first phase lacked the richness and level of detail required to satisfactorily address this study's research questions, we eliminated the option of the survey and the second phase consisted of only semi-structured interviews conducted in-person. These took place one year after the instructor's course refinement (approximately nine months after the first phase). Data collected in this phase contributed to our understanding of "sustained changes" as described above. We asked participants who consented to participate in the second phase the following questions:

1. Why did you choose to participate in the course refinement process?
2. Thinking back to the term when we performed the course refinement for your course, upon completion of your course refinement, did you follow up with your class about the results?
3. Do you think your students' learning and/or satisfaction changed following the course refinement? If so, how? If not, why not?
4. Are you currently teaching, or will you later teach the same course that we conducted the course refinement for one year ago? Please elaborate as needed.
5. Has your course refinement impacted your teaching in subsequent terms for this or other courses that you teach? How so, or why not?
6. Has this course refinement experience impacted your approach regarding student feedback in any way? Please explain.
7. Do you believe that the course refinement will or has led to any other impacts long-term? Please elaborate.
8. What could the MacPherson Institute do to ensure and/or enhance long-term impacts of the course refinement process on instructors' teaching?

In total, we invited 36 instructors and 26 (seven contract instructors, nine early-career instructors, and 10 mid-career instructors) consented to participate. Of the 26 instructors, 24 participated in the first phase and 12 (three contract instructors, five early-career instructors, and four mid-career instructors) participated in the second. Attribution of quotations to study participants throughout this paper maintains consistent numbering as used in Taylor et al. (2020).

In both phases of the study, a secure online transcription service transcribed interviews. Three researchers independently reviewed each participant's responses using a general qualitative inductive analysis approach to identify participant-specific themes (Creswell 2012). Next, the researchers compared emerging themes from each of the participants' responses to ensure reliability

and consistency in the analytical processes (Bryman, Teevan, and Bell 2009). We then compared these individual themes question by question to find trends across the participants. When themes were identified by at least two researchers, we included them in the secondary analysis. Several times throughout the data analysis process, the researchers met for calibration sessions to ensure consistency in analysis and to minimize discrepancies (Miles, Huberman, and Saldaña 2020, 79).

RESULTS

Changes to instructors' teaching practices were evident in both the first phase immediately following the course refinement and the second phase interviews with participants one year later. In addition, instructors' teaching changes —whether they were immediate or sustained—could be categorized into the "levels" associated with the ecological model (i.e., instructor, department, institution, higher education sector, society and culture), as adapted by Hodson et al. (2018), McLinden (2017) and Shelton (2018) for the higher education context. In Table 1, we present an overview of teaching changes noted by participants, followed by a more thorough examination of these changes to teaching and beliefs in the subsections below.

Table 1. Overview of teaching changes based on participation in the course refinement process

Change	Description of change
Immediate change to practice	A teaching change that occurred as a result of the course refinement process and was implemented in the same course offering as the course refinement (i.e., in the second half of the course).
Sustained change to practice	A teaching change that was implemented immediately following the course refinement and continued into subsequent courses. These sustained teaching changes were reported by the participants during the second phase (one year after the course refinement).
Changes in beliefs	A change in belief that occurred as a result of participating in the course refinement process.

Due to the nature of our methodology to interview individual instructors, most of the data reflects each participant's personal experience of the course refinement process, with a particular focus on identifying changes (immediate or sustained) made to their own teaching practices. As a result, more data is located toward the centre of the ecological model (e.g., instructor-, department-, and institution-levels). Our interview questions did not ask specifically about the outer levels of the ecological model (e.g., higher education sector, society and culture), therefore there is much less data to report at these levels in our analysis. As a result, these subsections below tend to be more hypothetical in nature.

We address each level of our ecological model in the results, exploring the following observed changes: (i) immediate changes to practice, (ii) sustained changes to practice (iii), and changes to beliefs.

Instructor-level change

Instructors' immediate changes to practice

Our first phase data collection, which took place one to three months following the conclusion of the term of an instructor's course refinement, allowed us to explore immediate changes to teaching

practice. Of the 24 participants we interviewed, 23 identified implementing one or more changes as a result of the course refinement. The themes identified by the two-stage analysis for each research question are summarized in Table 2. Overall, changes varied from instructor to instructor, including increased clarity and communication, adjusting assessments, providing additional resources, incorporating engagement strategies, and lecture pacing. Importantly, instructors reported not implementing suggested changes outside of the instructor's control (including timing of the lecture and material covered) or in conflict with their beliefs about teaching (such as posting slides and changing assessments).

Table 2. Themes and frequency counts from immediate change-related questions in first phase data collection

Change-related questions	Participant responses categorized into themes	Frequency count
What changes did you make to your teaching and learning approaches as a result of the course refinement?	Increased clarity and communication (e.g., content, expectations)	10
	Adjusted assessments (e.g., schedule, alignment)	6
	Provided additional resources	5
	Adjusted engagement strategies (e.g., discussions/group activities)	4
	Adjusted pacing	4
What suggestions were made by the students that you did not implement, and why?	Changing logistics (e.g., textbook, material covered, lecture time/length)	10
	Changes that did not align with beliefs about teaching (e.g., changing assessments, posting slides)	8

Instructors' perceptions of the impact of the course refinement process on student learning and experience primarily focused on student satisfaction. Ten participants reported that student appreciation, satisfaction, or happiness increased following the course refinement, and an additional five participants stated that their students felt cared for or heard by the instructor. Some instructors speculated about the impact of changes made following the course refinement on learning. For example, one instructor (#9) noted an adjustment to their teaching practices that may have enhanced student understanding of concepts:

> After the course refinement, when, to build in more time, I would put the example we were going to do on a sheet of paper and photocopy it to distribute to the class so we didn't waste time copying onto the board. That provides an extra five minutes of my lecture time to be able to address questions, which is helpful.

This change may have resulted in better student learning outcomes. While we cannot establish causality between the course refinement and student learning, the data suggested an enhanced student learning experience.

When we asked the first phase participants about impacts on future semesters, almost all (22/24 or 92%) noted some kind of effect they expected the course refinement process to have on their

future teaching. These impacts included the commitment to carrying specific items of student feedback forward into future terms, intent to collect midterm student feedback again in the future, and adjustment of teaching practices, such as soliciting student preferences, communicating expectations, transparency of pedagogical rationale, and flexibility in assessment design. When analyzing our second phase data, we found that changes implemented during the course refinement had indeed been carried into future practice for many participants.

Instructors' sustained changes to practice

All second phase participants (12/12 or 100%) confirmed that, yes, the course refinement process impacted their teaching practices in subsequent terms. The changes participants described showcased these long-term impacts on their teaching. The number of changes to teaching practices mentioned per instructor ranged from one to four changes, with half mentioning three specific changes they had sustained (see Table 3). Similar to our first phase results, the types of sustained changes varied and included lecture pacing, more communication and feedback, clarity about expectations, engagement strategies, and providing additional support to students' skill development. Some participants felt that the changes were only applicable to teaching the same course in subsequent terms and others felt as if they could apply more broadly to any course.

Table 3. Number of sustained changes noted during second phase interview and frequency counts

Number of sustained changes noted by participants	Participant frequency count
0	1
1	1
2	2
3	6
4	2

Echoing sentiments from the first phase, instructors' perceptions of the impact of the course refinement process on student learning and experience focused primarily on student satisfaction. Seven participants noted an increase in students' feeling satisfied or heard following their course refinement. An additional three participants explained that students seemed to gain a deeper understanding of the pedagogical choices or constraints during the course. Again, some participants suspected that the course refinement process enhanced student learning but acknowledged that this is hard to prove outright. For example, one instructor (#3) shared their observations related to student learning following their course refinement:

> One thing I did notice is that particular topic, which is related to computing, they understood it very, very well compared to their counterparts in [an anti-requisite course]. How much is that because of the delivery of the course? I think it might be too early to say. But I do think that they understood that concept better than they had

> understood some of the other computing concepts that we had covered in the previous term. And I think that is a reflection of the tweaks that we made in delivery.

Another instructor (#21) explained that students wanted:

> more instruction around some of the assignments, so I built that into the course. I gave them lots of practice, and sort of time for sort of low stakes [assessments] . . . I think that really helped their learning, and they did perform better on those assignments.

These participants' observations suggest that the course refinement may impact student learning. Ultimately, participants could assert the impact related to satisfaction far more confidently.

Reflecting back on the takeaways from their course refinement during the second phase interview, some instructors highlighted how they "took [the feedback] to heart in making the [same] courses for the next time" (Instructor 21) while others shared that "the comments that [students] brought up were things that I could address in any course" (Instructor 1). In some cases, instructors highlighted core elements of the course refinement experience itself—including communication and asking for student feedback—that they carried into future teaching. One instructor (#19) said that they now always collect midterm student feedback, "because I'm used to them, and I do find that it is positive for me and for the students." Another instructor (#13) explained that they now take a more active role in collecting student feedback rather than their prior approach of passively hoping students provide unsolicited comments: "It's eye opening to see that just you wanting to get feedback doesn't communicate that to the class. You have to demonstrate that as well."

Instructors' changes to beliefs

The course refinement process occasionally shaped new sustained beliefs in instructors. For example, Instructor 13 indicated the course refinement process:

> helps you see how flexible the course structure can be. Because we all think "No, no, I can't, this is set in stone, I can't change it, and everything's going to fall apart." But. . . . there's so many things that you can change. We *think* we can't, but we *really* can (emphasis added). That was the one thing that was really useful for me long-term.

Another participant (Instructor 24) shared that their course refinements influenced their approach to reflecting on and seeking feedback. They noted that:

> Don't zone in too much to an individual feedback if it's not representative of the majority. So be willing to get second opinions. As often it's very tempting to hear one piece of feedback that agrees with what your impression is or something that you're looking for, or maybe something that you're not looking for and take it too personally and all that, and then just run with it. What I'm learning is that it's hard to find people that are all on the same page.

Both of these instructors' new beliefs centre around student feedback. Given that many instructors indicated in the first phase that they intend to collect midterm student feedback in future terms, it is perhaps unsurprising to see that some of the feedback shaped new beliefs as well.

Department-level change

The next level we explored considers departmental impacts. Similar to the instructor-level, evidence suggests changes to immediate departmental practice as well as sustained changes that could impact the department in longer-term ways. In addition, we found evidence of changes to beliefs at the department-level.

One participant (Instructor 12) spoke about their extensive positive experiences with the teaching and learning centre (the MacPherson Institute), including the course refinement process. They noted that they regularly share opportunities available through the centre with colleagues in their department:

> I've been at many meetings of colleagues or graduate students that aren't aware of all the awesome things that are being done here . . . I spend a lot of time just communicating on [the MacPherson Institute's] behalf, promoting to your colleagues what resources that you have.

This participant's experience demonstrates how participating in the course refinement process can have an immediate positive impact at the department-level by influencing departmental colleagues to seek out teaching development programming.

We also observed the possibility of sustained, or longer-term impacts as another instructor (#2) suggested to "engage with a particular department as a whole, and to have [course refinements] done in some systematic way where every course somehow gets this exercise completed." In fact, some departments at our institution have indeed requested department-wide course refinements, often taking place over several semesters or years. These departmental course refinement initiatives have resulted in positive impacts on teaching in the departments, particularly by allowing discussions about teaching and pedagogy in their discipline.

Regarding beliefs at the department-level, it was suggested that engaging in course refinements across a department could benefit the cyclical institutional quality assurance process (IQAP) that occurs at all universities in Ontario, Canada:

> When you're writing reports like the IQAP, this becomes very useful and meaningful because you've done [course refinements] in a systematic way over all the courses, and your parameters are the same across all the courses. And so, the data that you're getting would be really meaningful. (Instructor 2)

This exemplifies how systematic course refinements across a department could change beliefs around the value of this process.

Institutional-level change

Next, we considered how the course refinement process impacts the institutional-level. One instructor (#19) describes how the course refinement leads to changes in the ways students feel cared for:

> Yeah, again I think it gives the students an opportunity to debrief and get those collective thoughts that they may have by then, like, let them out . . . I think the students feel more, being taken care of kind of thing.

According to this participant, feeling valued—even within a single course due to the course refinement—may positively impact a student's experience at the institution.

When instructors' learnings from one course are transferred to another course or department, it may also benefit the institution. For example, one participant (Instructor 7) noted that they implemented the pedagogical changes because of their course refinement and "carry [them] through to every course now. I'm cognizant of it now, because I've seen the students mention it [in other courses]."

We also found evidence of changes in instructors' beliefs following the course refinement process, specifically around how students can effect change at an institutional-level. One instructor (#12) said, "I think the impact in terms of the students knowing that through their perspective, they can be empowered to have suggestions that could be implemented . . . to improve their learning." This sense of student empowerment and agency can translate across different contexts in the institution to influence change in other areas.

Higher education sector-level change

While the scope of our research focused on course refinements taking place within our institution, the changes may have impacted the higher education sector as a whole. We asked interview participants what the teaching and learning centre could do to ensure and/or enhance long-term impacts of the course refinement process on instructors' teaching. One of our participants (Instructor 7) suggested the following:

> Maybe taking responses from this survey, I'm not sure how you're using it. But maybe you could write a little book that says, [for example,] in seminar courses here's some common themes that we've heard from successful courses, or ideas that faculty have found successful, or have implemented with success. And share those, because if someone had said to me before I ran the course, "you should talk about rich questions before you start a seminar." I would have done that. So maybe publish a little "tip book"—these are the top 20 or 50 [tips].

If we were to take this suggestion from the participant and create a "teaching tip book" based on lessons learned from midterm student feedback, it would almost certainly be made publicly available on our institutional website (as are all other resources created at our teaching and learning centre), possibly even as an open-access resource anyone in the higher-education sector could adapt.

Interestingly, this suggestion has the potential to span all three thematic categories in our analysis. First, a publication like this can lead to immediate changes to teaching approaches for anyone who reads it and implements one or more changes. If these initiatives are successful and instructors incorporate these ideas in their teaching and pedagogy over time, it contributes to sustained change to practice. Through these sustained changes, it has the potential to lead to changes in instructors' beliefs, not only about teaching approaches but also about the value of collecting student feedback, since all "tips" in such a publication would have originally stemmed from student feedback and suggestions.

Society and culture-level change

Our data did not reveal any direct connections between course refinements and potential societal or cultural changes. However, we explore speculative links at this level of the ecological model in the discussion below.

DISCUSSION

Data from our study confirm that many changes and intentional decisions were sustained for at least a year by instructors. We also noted a connection between instructors' beliefs and lasting impact on one's teaching practices. Interestingly, some changes impacted levels of the social ecological framework beyond the individual instructor. From our perspective, these novel findings are important contributions. Both are further unpacked below, followed by the limitations of the study.

Immediate and sustained change

Course refinements, by nature, are a rather resource-intensive process. As described in Taylor et al. (2020), each refinement requires three meetings (typically attended by two educational development staff plus the course instructor), and some additional administrative time to coordinate, meet, analyze the feedback, and write the report. However, these resources may be an "investment" if it supports teaching-related change over time. Our findings clearly indicate that midterm student feedback is valued by instructors, leads to pedagogical changes within the same term that the students provide feedback, and may improve the student learning experience. This aligns with other studies reporting positive impacts from midterm student feedback, including results from Cook-Sather (2009), McDonnell and Dodd (2017), and Veeck et al. (2016).

Data from the current study support that course refinements do, indeed, lead to change that continues to be implemented in subsequent iterations of the course. This corresponds with previous research indicating that midterm course evaluations have the potential to enhance the learning environment across an entire institution (Sozer, Zeybekoglu, and Kaya 2019, 1014). Further, instructors in this study commented that insights learned from midterm student feedback can also lead to changes in other courses—even in courses where a course refinement did not take place—indicating that instructors can transfer their knowledge from one teaching context to another. As a practical implication of these findings, we have begun to limit the frequency with which an instructor can request a course refinement for a particular course at McMaster University to once every three years. This allows the teaching and learning centre to better allocate resources and to reach more individuals across our campus.

Along with this study, other emerging research has acknowledged the impact that midterm student feedback can have, not only within a course, but also on centres for teaching and learning (including consultants who work within), departments, and institutions (Hurney et al. 2023, 99). This led us to consider how course refinements sit within the ecological system framework.

Ecological systems and course refinements

By utilizing an ecological systems framework, we were able to centre the voices of the individual instructors and map the impact of the course refinement process to the surrounding levels of impact within higher education (see Figure 1). Interpreting our data through this framework revealed much broader findings than we ever imagined. Our initial, naïve assumption was that course refinements worked almost exclusively within the confines of a course, impacting instructors' teaching practices and the students' learning experiences. We had not fully considered the impact course refinements could have beyond a course, across our institution, and (perhaps) beyond.

Despite the limiting assumptions that we, the authors, initially had, our data aligned with Shelton's (2018) ecological model. Both feature contextual levels for the individual, the department (including management, colleagues, and students), the institution, and the higher education sector. Hurney et al. (2023) corroborate this, indicating that their midterm student feedback process resulted

in more conversations about teaching and learning on their campus, as well as increased instructor engagement with the teaching and learning centre immediately following the midterm student feedback process.

In our study, we did not find data that aligned with the society and culture-level as presented in Shelton's (2018) ecological model. Considering that our original research questions sought to investigate individual instructors' experiences with midterm student feedback, some concrete examples of change at other ecological levels could have been missed. However, when we consider how midterm student feedback might affect society and culture, we can provide some thoughts.

One way course refinements could inspire changes in society or culture is via the skills and attitudes modeled by the instructors for their students, i.e. the future workforce. Students who witness instructors inviting feedback and constructive criticism might be more open to feedback and constructive criticism when they enter a profession, perhaps even taking the step to initiate that feedback process for themselves.

Moreover, as part of the midterm feedback process, students see instructors making changes in response to student comments and suggestions. When students have an iterative quality improvement process modeled for them, this can have a long-term impact on their perspective of continuous improvement, either in their personal or professional lives (Polick, Cullen, and Buskist 2010).

The value of multiple voices in midterm student feedback

We consistently heard from participants that they valued the opportunity to hear student voices, perspectives, and ideas from current students through the course refinement process. In addition to this, instructors also expressed appreciation for discussing course refinement feedback with an educational developer from the teaching and learning centre. Participants valued the expert voice on pedagogy, instructional skills, classroom engagement, and assessment techniques.

Having the perspectives of students, the educational developers, and instructor brings three unique and diverse viewpoints together to create a holistic teaching and learning environment (Fitzgerald, Meth, and Neilan 2019, 135). Importantly, this combination of voices likely achieves a more comprehensive and nuanced understanding of opportunities for improvement than one perspective on its own. This is similar to ideas presented previously by Goff and Knorr (2018) which encourage co-development of curriculum among students, faculty members, and educational developers. Providing a service which enables this three-way collaboration, such as the course refinement process, can facilitate fruitful and meaningful impacts to teaching and learning in higher education.

RECOMMENDATIONS

Based on the positive impacts reported in this study, we highly recommend that teaching and learning centres offer opportunities for instructors to receive midterm student feedback. Recognizing that the resourcing required to facilitate a process like course refinements could pose a barrier to some institutions, we suggest that alternative, streamlined processes may also be effective. For example, an anonymous form or survey could be designed that instructors can adapt and facilitate on their own with students. The instructor could then analyze the data, reflect on the results, and make changes (or not) based on the feedback. Optionally, the instructor could request a consultation with an educational developer to debrief and discuss ideas for enhancement.

Though more resource intensive, teaching and learning centres may also consider offering meetings with instructors approximately one year following the collection of their midterm student

feedback. Many participants in our study indicated that reflecting on their course refinement experience a year later and thinking about the changes they made to their teaching practice was developmental in its own right. Making longer-term follow-up part of the process increases the potential for this reflective development.

LIMITATIONS AND FUTURE DIRECTIONS

As with all research, our study has limitations to consider. For one, participants self-selected to participate in a course refinement, and these individuals then became the purposeful sample of invited participants to this study due to their common experience of the course refinement. This self-selection to participate and subsequent purposeful sampling of these non-representative individuals may have led to a sampling bias (Bryman, Teevan, and Bell 2009, 187–88; Creswell 2012, 206). Similarly, qualitative data collection is subject to the experimenter effect. This can occur in participant interviews if small unconscious cues by the researchers alter or influence the participants' responses (Rosenthal 1976, 38–9). While every attempt was made to minimize this effect—through mechanisms such as using an interview script, question guide, and a consensus coding approach—it cannot be completely eliminated.

Another limitation is that we did not build the interview guideline around the ecological systems framework. Rather, after noticing many responses including reflection beyond the individual, we used this framework to explore and categorize our data as it related to the breadth of the impact of course refinements during analysis. This meant that study participants were not provided with explicit opportunities to share evidence of change at different ecological model levels in their interviews. Regardless, issues and ideas noted by study participants during our interviews covered many levels of a post-secondary ecological model. Knowing what we have learned about these broader impacts, future research should be intentional in asking instructors—and perhaps students—who have participated in course refinements or other midterm feedback processes for examples of impact beyond the original course.

Finally, intentionally applying the ecological systems framework or similar frameworks may be useful when examining other educational development services, such as professional development programs in teaching, individual teaching consultations, departmental retreats on teaching and learning topics, and so on.

CONCLUSION

This study demonstrates that collecting midterm student feedback can result in immediate benefits for students during the remainder of a given course and can promote lasting and sustained changes in instructors' teaching practices. These findings join a growing body of research looking to characterize sustained change in instructors through various educational development practices such as postgraduate certificate programs (Ensor 2004, 229), online learning communities (Dancy et al. 2019, 1), and formally recognized teaching mentorship programs (Turner et al. 2015, 660). In our context, changes are sustained especially when any modified teaching practices align with an instructor's own beliefs about teaching. Importantly, investing resources into midterm feedback processes has benefits that extend beyond the boundaries of the reviewed course and can have effects departmentally and institutionally. Future research should continue to explore the impact of midterm feedback processes inter-institutionally, societally, and culturally.

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ETHICS

Research was approved through the McMaster University ethical review processes.

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