FOUND TIME - Enhancing in-class learning through online content delivery

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Abstract

Prior research indicates that learner-centered teaching is associated with deep learning approaches in students. However, content delivery can be a barrier to the use of learner-centered techniques in the classroom. This study considers the use of online content delivery in making more space for learner-centered practices through a case study of a hybrid implementation in an intermediate accounting course. Student and instructor responses are presented. Implementation recommendations and the potential applicability of the hybrid approach to other courses are also included.

Keywords: hybrid, online learning, active learning, accounting education
Introduction

Today’s post-secondary students are digital natives. They have grown up with on-demand access to everything from bank accounts to movies, shopping to real-time help. And they are bringing similar expectations of on-demand availability to the campus. Students presume significant learning resources will be readily accessible on course websites, and often expect 24/7 responses to their questions.¹ In this environment, the push for on-demand access to learning options and supports is only likely to increase.

Recent economic trends are also having an impact. Public universities face funding challenges as governments seek to reduce spending growth.² Many universities have responded by reducing faculty complements and increasing class sizes. However, some funding organizations are explicitly seeking innovations that create savings, enhance the student experience, and improve learning outcomes simultaneously. Increasing class sizes alone is unlikely to achieve this goal.³

The Hybrid Approach & Found Time

One approach to enhancing the student experience and improving learning outcomes is through the use of hybrid, or blended course structures. Under a hybrid structure, some of the traditional class meetings are replaced with virtual learning sessions.⁴ When properly

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⁴ Jeffrey R. Young, “‘Hybrid' teaching seeks to end the divide between traditional and online Instruction,” Chronicle of Higher Education 48, no.28 (2002).
designed, the traditional class meetings and the virtual learning sessions are mutually beneficial, enhancing student engagement.\textsuperscript{5}

This paper describes the introduction of a hybrid structure to an intermediate accounting course, noting the various challenges and benefits of such an approach. The hybrid structure in this case involved using virtual learning sessions to replace one of three weekly traditional class meetings. The virtual sessions provided content in advance of class meetings, giving learners the flexibility and time to examine materials at their own pace and to review them. In addition, students were required to attend one small group seminar session during the term. This session was held during the timeslot originally scheduled for a traditional class meeting, but replaced by a virtual session.

The notion of “found time” was felt within this approach through the shift toward instructor/student and student/student interactions during face-to-face meetings. Previous difficulties with content delivery encroaching on more active elements of class meetings were virtually eliminated. More time was available during regular class meetings for quality interactions because students had already received the content and were prepared to delve into more complex problems and situations. The small group seminar sessions were another source of found interaction time that would not have been available under the traditional lecture approach. Participant-led, these sessions ensured that every student presented his or her ideas to others, and had an opportunity to discuss them.

The research on learner-centered teaching

The educational research community has advocated moving towards active learning and learner-centered teaching for many years.\(^6\) Active learning can be defined in multiple ways, but in its simplest form consists of students doing more than just listening to a lecture – they must read, write, discuss, and be engaged in solving.\(^7\) Higher order student learning is more likely in such an environment.

Noted expert Maryellen Weimer, in her oft-cited book, “Learner-Centered Teaching”, recommends five key changes to the practice of teaching based on her own experiences and the existing literature.\(^8\) It is the principles behind Weimer’s suggested changes that act as the foundation for the new approach taken in intermediate accounting.

Elements of Weimer’s learner-centered framework

*The balance of power*

First, Weimer proposes a more democratic and egalitarian approach. At the classroom level, she advocates soliciting student input on learning, and sharing power over key learning decisions. Power sharing may include allowing a committee of students to select the text from an approved list, or allowing students some individual choice in assignment structure. Weimer notes that students are initially taken aback by a power-sharing approach, but are ultimately more enthusiastic about the course and engaged in the course material.

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The function of content

Second is the appropriate place for content in teaching. She argues that content receives a far more prominent role in our teaching decisions than it warrants. Furthermore, an overemphasis on content paradoxically detracts from, rather than adds to, student learning.

The role of instructors

Third is the role of instructors. In creating a learner-centered environment, educators may need to rethink the assumption that students will learn the material simply because they are told about it. Weimer suggests that instructors instead focus instead on creating the conditions for student learning. This can be achieved using activities and assignments as the key learning vehicles. The instructor’s role then shifts to facilitation and modeling learning skills.

The responsibility for learning

A key consequence of implementing the first three changes is that students must accept the responsibility for learning. In accepting that responsibility, students develop their individual learning styles and skills – and learning maturity.

Evaluation purpose and processes

Finally, Weimer suggests that grading practices be structured to support the development of individual learning skills. She advocates multiple, low-stakes assessment opportunities, placing a greater emphasis on formative feedback in the grading process, and increased student involvement in assessment and peer assessment.
The interaction between deep learning and learner-centeredness

Weimer’s framework ties nicely into another well-known learning challenge - that of surface vs. deep learning.\(^9\) This challenge touches on all the changes advocated by Weimer, but is most closely related to the role of instructors and the function of content. Surface learners are often focused on extrinsic motivation (such as grades) and correspondingly direct their studying toward memorizing the material they perceive is important for assessments.\(^10\) Deep learners on the other hand, engage with the course material to gain an understanding of it and to relate it to their existing knowledge.\(^11\)

Instructors can play a role in encouraging deep learning. Trigwell found that student-centered instructors concern themselves with student learning activities – their classes include time for student interaction in discussion and problem-solving, and develop a two-way conversational atmosphere.\(^12\) This finding is in keeping with an earlier study by Kember and Gow, which found that instructors who used a “learning facilitation” approach were more closely associated with students who exhibited deep learning study approaches.\(^13\) More recent work by Lindblom-Ylanne indicates that the reverse is also true: a lack of active learning approaches can actually suppress deep learning skills.\(^14\) She quotes an interviewee who described the way she had to learn and study as very difficult: “We learn by heart,

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\(^13\) Kember and Gow, “ Orientations to teaching.”
\(^14\) Lindlown-Ylanne, “Students’ approaches to learning.”
studying is very school-like. There aren’t any discussions about interesting subjects after lectures.” This student ultimately moved to a less effective learning approach in her studies: “You’re better to adapt to the system’s goals, ie. Pass the exams and other things.”

Does online learning enhance deep learning?

Research results thus far are mixed, but many report a positive relationship between online/hybrid courses and learning outcomes.15 Interestingly, the improved learning outcomes are thought to result not from the technology itself, but rather from the instructional approaches utilized in hybrid/online courses as opposed to traditional courses.16 Still, to the extent that technology facilitates easy access to multiple instructional methods, it may offer learning advantages that cannot be achieved solely through classroom instruction.17 These findings are consistent with Weimer’s learner-centered framework, and the importance of instructional approaches.18

The online element of the hybrid structure inherently addresses some of Weimer’s balance of power and responsibility for learning concerns. Instead of being constrained by a temporally rigid class schedule, students gain on-demand access to the learning supports that are replacing class meetings.19 They no longer have to be in the classroom at the specified time to complete the learning activities – they can tackle the activities whenever it suits their individual schedules, and can repeat them as often as they wish. However, with this access

18 Weimer, Learner-Centered Teaching.
19 Weimer, Learner-Centered Teaching.
comes the responsibility to self-regulate – to ensure that the learning activities are indeed completed. Self-regulation in learning has been shown to be correlated with a deep learning approach, while external regulation is more closely associated with a surface learning approach.\textsuperscript{20} Indeed, flexibility in access is particularly valuable when it supports the development or maintenance of learning routines.\textsuperscript{21}

Risks associated with online learning approaches

One of the key risks with the introduction of an online learning component is the potential shrinkage of the instructor’s role in modeling learning skills and in professionally socializing students.\textsuperscript{22} In fact, some researchers assert that the mentorship, cultural influence, and feedback that result from the student/instructor relationship are critical to student learning. They caution that technology should be used to strengthen, not weaken that relationship.\textsuperscript{23} The hybrid model appears to alleviate concerns about devaluing the relationship, and is consequently less controversial than fully online courses.\textsuperscript{24} Furthermore, the positive relationship between hybrid courses and learning outcomes was found to be stronger for hybrid courses than fully online ones in one recent study, suggesting that preservation of the instructor/student face-to-face relationship may have been a factor.\textsuperscript{25}

\begin{itemize}
\item Sari Lindblom-Ylanne, and Kristi Lonka. “Individual ways of interacting with the learning environment – are they related to study success?” \textit{Learning and Instruction} 9, no. 1(1999), 1-18.
\item John M. Pettitt, \textit{Power Relationships in Two Web-Based Courses} (Raleigh, NC: Adult and Community College Education, North Carolina State University, 2002).
\item Annette Greer and Vivian W. Mott, “Learner-centered teaching and the use of technology,” \textit{International Journal of Web-Based Learning and Teaching Technologies} 4, no.4 (2009), 1-16.
\item Greer and Mott, “Learner-centered teaching.”
\item Young, “Hybrid’ teaching seeks.”
\item Chen, Yates, Early, and Moulton, “An Analysis of the Failure.”
\end{itemize}
A Case Study: Introducing a hybrid structure to an Intermediate Accounting Course

Context

Intermediate financial accounting at the University of Guelph is taught in two parts at the end of second year, and the beginning of third year. Most enrollments are accounting majors, for whom the courses are mandatory. Section sizes average 80-90 students, though there is some attrition by the end of term.

As is often the case in higher education, the impetus for change in the Intermediate Accounting II course was externally driven. The course had grown significantly over the previous offering, and had to be scheduled into a different format. Instead of two weekly 80-minute meetings, the schedule changed to three 50-minute meetings, in a very early timeslot. It was this change that drove consideration of a different approach for the Fall 2011 offering.

The intended objectives of the revised approach were developed using Weimer’s learner-centered teaching principles. Applied to this course, the specific objectives were as follows:

- **Mitigate the student engagement challenges created by the new class schedule.** The aim was to achieve more success in transferring the responsibility for learning to students (as suggested by Weimer), especially given the scheduling challenges. Our departmental experience has been that students prefer not to register for early morning classes. Anecdotal evidence suggests that attendance levels are consistently lower in early classes, all else equal.

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• *Increase the focus on active learning within face-to-face meetings.* Weimer’s principles strongly advocate active learning strategies. My own experience in the classroom has reinforced their importance.

*The Hybrid Structure*

The approach chosen to fulfil these objectives was the hybrid structure, as described previously. The key change was to replace some of the in-class learning time with online or virtual lectures as follows:

- The full in-class meetings continued twice weekly (instead of three times) with a heavier emphasis on active learning tasks.
- The third weekly in-class meetings (Friday mornings) continued, but in a different format. They were reconstituted as small seminar classes of 9-12 students. Students self-registered online for their one mandatory seminar class during the term.
- For the large majority of students in a given week, the Friday morning class session was virtual. Lectures were posted on Thursday evenings covering the upcoming week’s topics.

The virtual lectures were dedicated to content delivery. This purpose was considered best suited to the online environment because of the lack of interactivity required. Students need to engage the material individually, and virtual lectures gave them the freedom to view (and review) the material on their own schedule before it was discussed in class.
Face-to-face meetings in contrast, were constructed to emphasize active learning. Full in-class meetings were focused on instructor-facilitated learning activities while the seminar classes were entirely student-led.

**Online lectures**

Online (virtual) lectures consisted of PowerPoint slides narrated by the instructor. The PowerPoint presentations could be viewed on the course website, or downloaded to an iPod. Class time (the meetings replaced by seminars) was set aside for viewing, though students were free to view the videos at any time throughout the term.

In order to incent and reinforce engagement with the online material before class, students were required to complete a corresponding online assignment, consisting of three or four foundational exercises. These assignments were available for completion until shortly before the next full in-class meeting, and were straightforward for those who had done the readings or viewed the virtual lectures. An allocation of 10% of the course grade was made for these assignments.

**Full in-class meetings**

The full in-class meetings built on the material introduced in the virtual lectures. In-class meetings typically began with a take-up and discussion of one of the online assignment problems followed by one or two multiple choice concept-checking questions. We then proceeded to a related, but more difficult application problem, and finally to the related problem with the highest level of complexity and ambiguity. This process was repeated once or twice to illustrate the key concepts in each topic area.
Student participation was effected in various formats. Multiple choice problems generally were taken up with the whole class, while the more complex problems were typically broken into smaller steps and attempted at the individual or small group level before being taken up with the class.

Seminar classes

Seminar classes proceeded every Friday throughout the term, with a different collection of students each week. Students self-registered for a convenient date in groups of three. Each group would arrive prepared to present a response to an assigned case that all students in that seminar group had read. The cases and student responses were then discussed and critiqued in class. Students were evaluated individually on their presentation skills and the quality of their discussion. Each group also submitted a written case reports which was evaluated at the group level. The report and presentation together constituted 10% of the final grade.

Application of Weimer’s Five Principles

With Weimer’s five principles as the foundation underlying the changes made in intermediate accounting, the next section describes how the move to a hybrid structure addressed the principle-level changes advocated by Weimer.
The Balance of Power & the Responsibility for Learning

The hybrid structure provided students with additional flexibility and control over their initial encounter with the knowledge base. While textbooks have always provided students a certain amount of flexibility in this regard, my experience has been that few students engage with textbook material in advance of class.

Student response: Anecdotal feedback from students indicates that the additional flexibility was embraced. A selection of comments from course evaluations follows:

“…the addition of recorded video lectures was a great addition to the course, they were especially helpful in studying for midterms and finals”

“I also really liked the online lectures because I could listen to them on the weekend, read the chapter, complete the quiz and then do practice problems during the week in class”

These comments also link to Weimer’s responsibility for learning concept, and findings that correlate self regulated learning routines with deep learning, because students had to create their own routines for covering the online material.27 The online lectures were available from the beginning to the end of the course, and no marks were offered for having viewed them. However, the related online assignments did provide students with an incentive to keep up with the materials being covered in the full class meetings.

Student response: Student usage of the virtual lectures was not universal, but was significant as a majority of the class viewed each virtual lecture. According to data collected on the course website, the viewing proportion started at approximately 89%, and quickly stabilized

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to about two thirds as the term progressed. Online lecture use indicators by topic are shown in Figure 1.

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<td>112</td>
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<td>% enrollment</td>
<td>89%</td>
<td>72%</td>
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<td>00:38:55</td>
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* average time shown for course website views only; iPod downloads were brief

Student response to the online assignments was stronger, and is likely related to the incentive marks associated with this component. Nevertheless, 14 students (9%) elected not to participate in the online assignments. For the participating students, both the average number of assignments completed and the average mark on the assignments were very high, as illustrated in Figure 2. These rates may indicate that learning routines were indeed being established.

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<td># online assignments offered</td>
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<tr>
<td>Average # online assignments completed</td>
<td>8.9</td>
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<tr>
<td>Average grade across all online assignments</td>
<td>86%</td>
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The Function of Content
The delivery of content to students is a routine matter that was well-suited to the online delivery approach. This point of view is shared by many faculty, who typically report that class discussions and group activities are better handled in person.28

Further, the message implicit in the online delivery model is consistent with Weimer’s principles – content delivery is de-emphasized as it doesn’t warrant usage of valuable face-to-face time.

One manifestation of this phenomenon related to the in-class lecture slides. Under the traditional approach, lecture slides are important sources of content and students are very interested in having copies available before class begins. The concern with this approach is that students may develop a habit of “preparing for lectures” by printing the lecture slides and then attending as passive participants. Under the hybrid approach however, in-class lecture slides were used simply to display the assigned problems in the order intended for the class. As such, they were not posted in advance of class and students did not request them. This was another tangible indication of the shift toward application of content in class.

**Student response:** Anecdotal student feedback was consistent with the deemphasis of content. The course evaluation comment below alludes to this - the focus is on understanding the in-class learning activities (problems), with the content taking on a supporting role.

“Delivery of Friday lectures for theory are (sic) excellent – provide the knowledge needed to understand the problems walked-through in class. As well, provides clarity and a resource of information outside of class.”

**The Role of the Instructor**

28 Young, “‘Hybrid’ teaching.”
It was the role of the instructor that was most noticeably transformed by online content delivery. However, it was not the online component itself that made the difference, but rather the space created by the absence of content delivery in the classroom. It was this newly created space within the classes that generated the sensation of “found time” referred to in the title.

The full in-class meeting structure was no longer bound by a series of lectures slides that were interspersed with learning activities; rather, it was almost exclusively focused on learning activities. With the basic content already introduced online, and reinforced through the online assignments, students arrived better prepared to engage with the material, and carried expectations that they’d be in a “working” class as opposed to a passive one.

These differences made the instructor’s role as a facilitator more feasible. Classes were still primarily instructor-led, but students were actively solving problems throughout the class, in a choreographed pattern of increasing difficulty. Sufficient time was available for students to work through parts of the problems and to discuss the difficulties they encountered before the full class take-up began. There was also time to shift back and forth between detailed calculations, and consideration of the “big picture”.

The seminar classes also carried the sensation of found time, as they enabled individual interaction between the instructor and each student in a way not typically possible in a large lecture hall. These sessions had a very different atmosphere than those of the full in-class meetings. Less formal and essentially student-run, they consisted of case response presentations by each group, followed by discussion amongst the full group. With only 9-12 students, the seminar classes were more intimate, making them less intimidating to student presenters and discussants.
The facilitation role was well suited to the structure of the seminar classes. Differences in presented case responses led naturally to conversations about assigning relative importance to case issues, and to analytical approaches for addressing ambiguous issues. Most facilitation was directed at including those who were hesitant to speak, or moving the conversation toward the analytical process and alternatives, rather than a single correct answer.

Individual student/instructor relationships were strengthened through the seminar classes. They were particularly valuable in establishing relationships with students who typically don’t participate during class, or don’t attend at all. Because the space for seminar classes was created by the online lectures, the mantra to ensure that technology is used to enhance, not inhibit, the instructor/student relationship was fulfilled.29

_Evaluation purpose and processes_

The hybrid approach did not have a direct link to Weimer’s final proposed change. Students did however benefit from increased feedback during both the larger full in-class sessions and the more intimate seminar classes.30

29 Greer and Norman, *Blended Learning*.
30 Weimer, *Learner-Centered Teaching*. 
Reflections on implementing a hybrid approach

Implementation Challenges

The hybrid implementation was problem free for the most part, but there were a few challenges:

- **Student participation in learning activities**: Although the class was noticeably more engaged during the full in-class sessions compared with traditional lectures, not all students appeared to be participating actively. Further, there was a segment of the enrollment that chose not to attend the full in-class sessions, and certainly did not benefit from the in-class learning activities. The hybrid approach therefore resulted in improvement, but not perfection.

- **Upfront investment in virtual lecture preparation**: With the hybrid approach, an additional step is involved: the creation of virtual lecture materials. For intermediate accounting, the virtual lectures were essentially a condensed version of the content-based lectures that would have been delivered under a traditional approach. Because they were recorded as monologues, a smooth delivery was important. In my experience, a detailed written script for each slide was required to achieve a smooth delivery. Script writing and recording added 2-3 hours of preparation time for each topic.

- **Restructuring of the lecture to incorporate additional learning activities**: The relocation of content to virtual lectures mandates a larger selection of in-class learning activities. As a result, upfront effort is also needed to select and organize
these additional learning activities. This effort added necessitated 1-2 hours of additional preparation per lecture.

• **Online video software - production:** The online video software was quite user friendly, but there were a few false starts that necessitated the re-recording of several sessions. These problems were addressed using online product tutorial support. Because the software was purchased a month in advance of the beginning of term, these were not critical problems. However, having sufficient lead time available was an important mitigant.

• **Online video software – usage:** Near the beginning of term, several students complained of the videos stopping unexpectedly while they were in process, or loading very slowly. These issues were addressed by other students, who had experienced similar problems and had addressed them. After the first several weeks, there were no further complaints.

*Lessons Learned*

The following comments flow from the hybrid experience in intermediate accounting, combined with recommendations from the literature:

• **Previous experience is not required:** The hybrid approach was successful despite a lack of previous experience. The most novel component of the hybrid adoption in this case, was the production of virtual lectures. Despite initial difficulties, the software was user friendly, inexpensive (<$200 CAD), and available for use on a laptop. The video software package used in this case was Camtasia Studio 7 by TechSmith. This software was selected because of its do-it-yourself nature. No
specialized equipment or studio time was required. All the virtual lectures were recorded at the office during the day, while sitting at my desk.

- **Consult a blended course design guide:** The Garrison and Vaughan book includes a series of step-by-step guides as appendices that lead a prospective blended course designer through a complete and thoughtful transition process.31

- **Maintain clear links between the online and in-class components of the course:** One way to forge links is by being personally involved in the recording of online content delivery. As Pettitt reported, audio and video of the instructor provides students with the opportunity to listen for examples, emphasis, and to observe personality.32 This connection was affirmed by course evaluation comments:

  “Great use of technology. Lectures on IPod format were great. Also, very nice that [instructor] did all the recordings herself, if it was done with the standard monotone male voice instead…no doubt I wouldn’t have learned as much.”

In future offerings, links will be strengthened by highlighting connections between the online material with the learning activities and problems we will cover in class (and vice versa).

- **Observe effective design principles for online learning materials:** Good screen design allows learners to focus attention on relevant information and avoid distractions. This is particularly important for instructors who have previously delivered content in class, where they have been able to supplement the content slides with gestures and responses to student questions. Mayer’s (2001) Design Principles

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32 Pettitt, *Power Relationship.*
(in Clark et al., 2008) provide a comprehensive set of best practices. In future offerings, the online learning materials will be reviewed with these principles in mind.

- **Provide incentives for students to develop online learning routines:** This may not be necessary for upper level students who already have strong study habits and are able to self-regulate. For intermediate accounting however, the marks allocated to online assignments reinforced the importance of reviewing content before class, and provided a weekly deadline for students to work toward.

**Applicability**

The following questions may help identify courses that could benefit from a hybrid approach:

- Does the course have significant content coverage requirements, whether due to professional accreditation standards or the prerequisite role of the course?
- Does the instructor find that classes are short of time for active learning activities?
- Do basic quiz materials exist that could be used to reinforce content delivered online?
- Are large class sizes hindering the instructor’s ability to develop a relationship with each student?
- Has the instructor taught the course before?

Positive responses to these questions suggest that the course has the potential for hybrid implementation similar to that used in the case of Intermediate Accounting II.

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Conclusion

The shift to a hybrid approach in intermediate accounting is part of a larger trend toward online learning in post secondary education. There are multiple drivers of this trend:

- Digitally native students are looking for more control and increased access to learning supports.
- Funding-constrained administrators are looking for ways to leverage existing facility resources and generate cost savings.
- The ubiquity of computer ownership and internet connections provides the platform for increased use of online learning.

The hybrid experience in intermediate accounting demonstrates that online learning can be used effectively to enhance in-class learning. The hybrid structure also allowed for student-led, small group seminar sessions in a course with an enrolment of 80-90. Despite reduced face-to-face contact time, the hybrid approach strengthened overall instructor/student relationships, and facilitated an increase in learner-centered teaching. The apparent contradiction of reduced face time was offset by the improved quality of in-person contact time. In addition, pre-exposure online to key concepts facilitated deep learning through active learning and reinforcement in class. Finally, in-class sessions were characterized by better-prepared students, and more time spent on active learning tasks.

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