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About Us

Currents in Teaching and Learning is a peer-reviewed electronic journal that fosters exchanges among reflective teacher-scholars across the disciplines. Published twice a year, *Currents* seeks to improve teaching and learning in higher education with short reports on classroom practices as well as longer research, theoretical, or conceptual articles and explorations of issues and challenges facing teachers today. Non-specialist and jargon-free, *Currents* is addressed to both faculty and graduate students in higher education, teaching in all academic disciplines.

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EDITORIAL

"The Student Engagement Equation"

Dear readers of *Currents in Teaching and Learning*,

I am excited to introduce myself, Brittany Jeye, as the guest editor of *Currents in Teaching and Learning*. I am an assistant professor of psychology at Worcester State University. My teaching and research interests center around the cognitive neuroscience of human attention and memory. I am particularly interested in how our brain supports highly detailed, specific memories, even when they are similar to ones we have experienced before. Additionally, I have over ten years of experience in informal science education and am passionate about the scholarship of teaching and learning. I am thrilled to work on *Currents,* whose mission of improving higher education practices in the classroom closely aligns with my goal of continually striving to be a better teacher-scholar.

As I begin my time as guest editor, I am especially grateful for Benjamin Jee, my colleague and the previous editor of *Currents*, who supported me throughout the past year as I navigated joining the *Currents* team. His dedication and guidance have been instrumental in upholding the journal's standards of excellence. I am eager to build on his contributions to continue fostering a vibrant platform for impactful research.

With the new year on my mind, I sat down to reflect on the headlines in higher education over the past year. One of the many topics that piqued my interest was student engagement (or the lack thereof) in the college classroom since the pandemic. I am sure that I am not alone in noticing a change in my students' attitudes and behaviors in my courses, including fluctuating attendance and overall student disinterest. These changes in student engagement have been further highlighted in several reports released this past year, including Wiley's "State of the Student 2022", Instructure's "State of Student Success and Engagement in Higher Education," written in collaboration with Hanover Research, and the National Survey on Student Engagement (NSSE) through the Center for Postsecondary Research at Indiana University (Colby, n.d.; Indiana University Center for Postsecondary Research, n.d.; Instructure, n.d.). These reports shed light on the complex factors that influence student engagement, including mental health and accessible academic support needs, a desire for more skills-based programs, and the impact of finances on students' academic decisions. While the levels of student engagement are still below what they were pre-pandemic, the positive news is that they are slowly on the rise once again.

Additionally, the evolving digital age presents both opportunities and challenges in fostering meaningful engagement. Leveraging innovative pedagogical strategies, technology integration, and personalized learning experiences may be some of the many ways educators can captivate and empower students and further prepare them for a complex, interconnected world. Navigating this new terrain to understand student engagement and motivation will continue to be a pivotal goal for both educators and institutions alike going forward. While the present issue of *Currents* does not hold all of the answers to the questions around student engagement in the college classroom, it is my hope that you find the articles in this latest edition informative and inspiring in the new year.

One of the articles in this issue, "Rethinking Experiential Learning in the Shadow of COVID-19" by Todd Olszewski and Robert Hackey, focuses on the transformative role of experiential learning in undergraduate education, particularly through capstone internships. The authors describe how the COVID-19 pandemic posed unique challenges to student engagement, faculty involvement, and community partnerships in these experiential learning contexts. They discuss actionable strategies to create resilient internship placements that take advantage of technology and digital platforms, and that respond to the evolving needs of students.

In "How Much Assignment Choice Do Students Have? A Descriptive Study of Syllabi", Christine Harrington investigates the influence of choice on student

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motivation by analyzing psychology course syllabi. This study reveals that, while most syllabi provided assignment choices, they are predominantly centered on topic selection rather than the assignment product. This research suggests a need for greater assignment flexibility to enhance student engagement.

This theme of student engagement is further explored in "Discovering Students' Internal Thought Processes During Secondary Research: A Project on Curriculum". In this article, Lauren Hays and Lindsay McNiff examine how students make decisions around secondary research, such as in selecting, evaluating and organizing research materials. This project aimed to understand students' research methodologies and addresses the inherent challenges of understanding students' internal research processes.

Lastly, in the article titled "Teach Assess Teach (TAT) Pedagogical Model for Cognitive Change: A Cultural Historical Approach to Teaching/Learning" Joanne Hardman discusses a teaching model that uses cognitive conflict to facilitate meaningful acquisition of high-level abstract concepts in higher education. The study reveals that this teaching approach enhances interaction, accessibility, and fosters exploratory talk, indicative of reasoning, among students.

As the guest editor for *Currents*, I want to thank the authors for submitting their work to the journal. I also am extremely grateful to the reviewers, copyeditors and the journal's editorial advisory board who generously devoted their energy and expertise to *Currents*. Their names appear on the back page of this issue. Lastly, I want to acknowledge and appreciate Dr. Henry Theriault as the executive director of *Currents*, who has been instrumental in keeping the journal running smoothly behind-the-scenes and who has supported me during this transition. I am looking forward to continuing my role as guest editor for *Currents* and am excited to grow this platform for research in teaching and learning.

Sincerely,

Brittany Jeye

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TEACHING REPORT

How Much Assignment Choice Do Students Have? A Descriptive Study of Syllabi

—Christine Harrington

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Abstract

One established way to motivate students is through choice. Despite the theoretical and research evidence of the importance of choice, little is known about how many choices college students have in terms of assignments. This descriptive study was conducted to determine the frequency and nature of choice related to assignments and if the frequency of choice has changed over time. I reviewed 129 exemplary syllabi from undergraduate and graduate psychology courses that were posted on the Society for the Teaching of Psychology's (n.d.) Project Syllabus website, 63 from 1999-2005 and 66 from 2016-2022. Although most syllabi reviewed (70%) gave students some type of choice with assignments, the type of choice was mostly related to choosing a topic (56%). Choice related to assignment product (e.g., paper, presentation, multimedia project) was only evident in 25% of the reviewed syllabi. There was no relationship between choice and year. Faculty are encouraged to incorporate more assignment choices into their courses.

Keywords:

syllabus, assignment, assessment, choice, motivation

The purpose of this study was to determine the frequency of choice in assignments, what types of assignment choices students have, and if the frequency of choices has changed over time. Choice has long been associated with motivation. Patall et al. (2008) conducted a meta-analysis of 41 studies. The results of this study demonstrated that higher levels of motivation, increased effort, and improved performance were all associated with choices being given. Patall et al. (2008) noted that "all types of choice had a significant positive effect on intrinsic motivation" (p. 294).

Further, Cullen and Harris (2009) argued that giving students choices can help balance the power and control in the classroom and noted that this balance can increase student motivation. Choice can increase student ownership in their learning process, and this can lead to higher levels of effort and learning (Lee & Hannafin, 2018). There is strong theoretical and research support for infusing choice into learning experiences.

Theoretical Support for Choice

According to self-determination theory, the following three conditions for motivation exist: autonomy, competence, and relatedness (Deci & Ryan, 1985). Choice is an important way to facilitate the condition of the need for autonomy. Having choices in their coursework, and specifically with assignments, can give students a sense of autonomy and control over their learning journey.

In their culturally responsive framework, Wlodkowski and Ginsberg (1995) also emphasized the important role that choice plays in motivation. They identified the following four motivational conditions: establishing inclusion, developing attitude, enhancing meaning, and engendering competence. Choice was recognized as a key element of the second condition, developing attitude. Specifically, Wlodkowski and Ginsberg (1995)

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encouraged educators to give students choices related to both the content being learned and assessments to increase student motivation and engagement.

Research Evidence Support for Choice

Research has demonstrated that giving students choices has been associated with many positive outcomes, including higher levels of perceived autonomy and competence, increased motivation, more positive emotions, increased use of learning behaviors, and ultimately learning. Many of these benefits of choices were illustrated in a study conducted by Flunger et al. (2019). In this experimental study, students were either assigned to the experimental condition, where autonomy was fostered via choices and other methods, or to the control group where traditional teaching practices that did not offer students choice were used. Results of this study showed medium to strong positive effects of the experimental autonomy condition on variables such as perceived relevance, perceived competence, and joy. Students in the experimental condition where autonomy was facilitated were also less likely to be bored or angry. Finally, students in the autonomy condition were also more likely to monitor their levels of effort and distractibility during learning as compared to the control group (Flunger et al., 2019). These learning behaviors can potentially positively impact the learning process.

The positive outcomes of choice related to the learning process were also evident in an experimental study conducted by Jeno et al. (2019). In this study, students were assigned to a mobile version of the textbook which enabled students to make numerous choices about how they learned the content or the traditional textbook. In the mobile version condition, students were able to decide which concept they wanted to explore and were able to filter the information based on a variety of variables. Findings from this study showed that students assigned to the choice-infused mobile version of the textbook had significantly higher levels of perceived competence, autonomy, and intrinsic motivation as compared to students assigned to the traditional textbook condition (Jeno et al., 2019).

Researchers have found that students have positively reacted to having choices related to assignments. In a study where students were able to choose seven of the 15 modules they needed to complete in an online course through a branching process, 91% of the students who completed the end-of-course survey indicated that they found the ability to choose modules as an extremely or mostly positive feature of the course (Lindgren & McDaniel, 2012). Only 6% of the students surveyed reported that the branching feature that allowed students to choose modules was not a positive feature (Lindgren & McDaniel, 2012).

Qualitative data from students has also illustrated how much and why they appreciate choice in their courses. For example, one student in a study conducted by Pinchot and Paullet (2021) shared "I loved the a la carte type of assignments. Helped with learning and not being bored with the material. It also gave me a sense of control" (p. 21). A student in another study said, "Flexible choice of assignments allowed me to be more creative" (Hanewicz et al., 2017, p. 281).

Defining Choice

According to Dabrowski and Marshall (2018), assignment choice can be defined in one of three ways. First, students can be given a choice in terms of content. Second, a choice can be given in terms of product. Finally, students can also be offered a process choice.

Content Choice

A choice in content means that a student can choose readings or the topic for an assignment. Dyjur et al. (2021) found that it was motivating for both undergraduate and graduate students when they were able to choose the topic for an infographic assignment. Crookes (2007) found that students who chose their essay topic had higher grades as compared to students who did not choose their topic, but this difference was not statistically significant.

One reason that choice of content is important is that students can select a topic of interest. Flowerday and Shell (2015) demonstrated that student interest was an important variable in terms of academic success. Content choices such as allowing students to choose the type of sources or the topic for an assignment can be an excellent way to tap into student interests. Students can select a topic that aligns with their interests and goals, and this can increase student engagement (Harrington,

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2021). Hays and Mallon (2021) also emphasized how faculty can increase student choice in how they consume content through OER resources.

Product Choice

A product choice refers to allowing students to demonstrate their learning through varied ways such as a written document, presentation, infographic, multimedia project, or other means. Kester and Vie (2021) emphasized how social media assignments could be used as alternatives to traditional assignment products but noted that few of the pedagogical artifacts such as syllabi that were reviewed in their study highlighted this practice in action.

One approach to giving assignment choices is the cafeteria-style approach where students are given a menu of assignment options. Students can then decide which assignments to complete to earn their desired grade. Some researchers have reported success with cafeteria-style assignments (Pinchot & Paullet, 2021; Hanewicz et al., 2017).

The value of product assignment choice was also illustrated in an experimental study conducted by Patall et al. (2010) where students were randomly assigned to one of two assignment conditions. Students in the first condition, the experimental group, were asked to choose one of two possible homework assignments while students in the second condition did not have any choice related to the assignment. Results of this study indicated that students who had a choice about their homework assignment had higher levels of intrinsic motivation related to doing their homework, believed they were more able to successfully complete the academic task, and performed better on the task as compared to the students who were in the control group.

Fulton and Schweitzer (2011) cautioned that some assignments may better help students develop desired skills and knowledge than other assignments do. Each assignment option needs to provide evidence that students have achieved the learning outcomes of the course. Some assignment products may provide better opportunities for students to develop knowledge and skills than other products do. It is also possible that if students are given too many product choices, especially across courses in a curriculum, they may graduate without having developed essential skills that may be best developed through a certain type of assignment. Thus, when faculty are giving students product choices, it will be important for faculty to identify assignment options that equally assess the targeted learning outcomes and prepare students for advanced coursework and careers.

Process Choice

When instructors give students choices related to how the assignment will be completed, these are considered process choices. Examples of process choices include students deciding if they want to work independently or if they would prefer to work with classmates or the timing of when assignments are due. Hudd (2003) involved her sociology students in determining the types of assignments they would need to complete and reported that students responded very positively to being involved in this process. Gibson (2011) also found that students appreciated having some control over the course design, especially with assignment due dates even when it was a class versus an individual decision.

Number of Choices

An important consideration when giving students choices is the number of options. Although some researchers (Pinchot & Paullet, 2021; Hanewicz et al., 2017) have found that numerous options were advantageous, Iyengar and Lepper (2000), found that too many choices can be problematic. In an experimental study on extra credit assignment choice, they found that more students (74%) opted to complete the extra credit assignment when only given a short list of options versus a more extensive list of options (60%). Students in the condition of limited options also performed better academically in the course than students in the condition of extensive options on the assignment. Although Ackerman et al. (2014) found that students initially preferred having more choices (20) versus fewer choices (5) for assignment topics, when they had to make the choice, this was no longer the case. Too many options can be overwhelming and confusing for students.

Researchers have reported that three to five options are optimal. Patall et al. (2008), for instance, found that "choice had the greatest effect when participants

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were provided with three to five options among which to choose compared to when provided with only two options or more than five options" (p. 295). More recently, Schneider (2021) conducted two experimental studies related to student choice in the digital learning environment and also found that three to five choices were optimal, resulting in the highest levels of retention, transfer of knowledge, and autonomy. Students who were able to make three to five choices had higher levels of decisional autonomy as compared to students who had no choice or very limited choice, but students who were presented with too many choices, more than five, had higher levels of emotional stress and this decreased their affective autonomy (Schneider, 2021).

Purpose of Current Study

Despite the long-established relationship between choice and motivation, the extent to which students are given choice with their assignments in their courses has not yet been studied. I was interested in knowing how frequently students had choices in terms of their assignments, the types of choices given, and whether there were changes across time regarding assignment choice. This descriptive research study was conducted to answer the following research questions:

1. How much choice do students have with assignments in courses?
2. What type of choice do students have in terms of assignments in courses?
3. Has choice in assignments changed over time in courses?

Method

This study was submitted to the Institutional Review Board (IRB) and was deemed exempt. I decided to review psychology syllabi submitted and published by Project Syllabus, a resource provided by the Society for the Teaching of Psychology (n.d.) because the syllabi met three of the four criteria for document selection outlined by Flick (2018): authenticity, credibility, and meaning. The syllabi posted on the Project Syllabus website were from actual psychology classes (authenticity), were vetted via a peer-reviewed process and deemed worthy of being published on the website (credibility), and provided the information I needed to answer the research questions (meaning). In addition, the Project Syllabus documents were also publicly available and organized by year, which was important for one of my research questions. The only criterion shared by Flick (2018) that was not met was representativeness. As the syllabi on this website are considered exemplars, the syllabi reviewed in this study are likely not representative of all psychology syllabi and because they were only from psychology classes, they were also not likely representative of other disciplines. This is a limitation of the study.

I used a syllabus data set from another study I conducted which included a total of 129 syllabi, 63 from 1999-2005 and 66 from 2016-2022, representing syllabi posted during the first seven years and the seven most recent years of Project Syllabus (Harrington, 2023). The focus of the previous study was an overall assessment of whether the nature of assignments changed over time while the focus of this study was specifically focused on assignment choice. Most of the syllabi were for undergraduate courses (n = 116), while 13 were for graduate courses.

After all syllabi were downloaded and organized by date, I then began the document analysis process. I used the same method that I used in the previous study, following Bowen's three-step document analysis process: skimming, reading, and interpretation. According to Bowen (2009), "the analytic procedure entails finding, selecting, appraising (making sense of), and synthesizing data contained in documents" (p. 28). After skimming all the syllabi, I then engaged in a two-pronged approach to reading. First, I carefully read each one, coding for choice. I used deductive codes comprised of the three types of assignment choices described by Dabrowski and Marshall (2018): content, product, and process. When a choice was given to students, I documented the nature of this choice in a codebook. In cases where students were given more than one type of choice, I indicated each type of choice in the appropriate columns of the codebook. Then, I used the CTRL+F tool with the following words: opt, choice, choose, and select. This second approach served to confirm all aspects of choice related to assignments were identified and documented

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How Much Assignment Choice *continued*

Results

Results related to each of the three research questions are provided. First, the frequency of assignment choice is shared. Then, the type of assignment choice is described. Finally, I share if there were differences between the number of choices students were given in the 1995-2005 and 2016-2022 syllabi.

Research Question 1: How much choice do students have with assignments in psychology courses?

Most of the syllabi included some form of choice related to assignments. Specifically, there was evidence of some type of assignment choice in 90 of the 129 syllabi (70%). Conversely, approximately 30% of the syllabi had no evidence of student choice.

Research Question 2: What type of choice do students have in terms of assignments in psychology courses?

The most prevalent type of assignment choice was a choice related to content. Specifically, 72 of the 129 syllabi (56%) indicated that students had a choice related to the content of the assignment. In most cases (N = 63), students were able to choose the topic for a paper, presentation, or another assignment. The syllabi indicating that students could choose the topic for the assignment often did not provide any parameters around this choice, but in a few cases (N = 4), students were presented with a list of topic options from which to choose. For example, in one class, students had to choose a chapter to present and, in another class, students had to select an article from a list to summarize and analyze. The list was not always shared in the syllabus, but students were informed that they would be provided with a list of topic options for the assignment.

The other type of content choice that was observed in the syllabi was that students had the option to choose readings or data sources. This was the case in nine of the syllabi. For example, in one class, students were invited to choose who to interview for the project. In another example, students were explicitly encouraged to choose articles or other sources that they would use for the assignment.

Approximately 25% (N = 32) of the 129 syllabi gave students a choice of assignment product. For example, students could choose a type of paper to write or select a format such as a presentation, website, podcast, or paper. Often, students were given two choices in terms of the assignment product. For example, in one class, students could opt to either write a paper or give a presentation. In another psychology course, students were given the option of an interview assignment or a reflection paper. In some cases, students had several options from which to choose. In one psychology class, for instance, students could have chosen to do an article review, attend a conference and write a summary of this experience, conduct a presentation, or engage in a self-evaluation process. In another class, students were able to choose a poem, painting, story, or study format for their project. Students in another class could have chosen to do a paper, presentation, or podcast. One additional example was that students could report what they learned using video, audio, paper, or comic book format. In some classes, students were asked to choose several assignment options from a menu of choices. This approach is typically referred to as the cafeteria-style approach. This cafeteria-style approach to assignment choice was only observed in four of the syllabi.

Process choices were much rarer with only 6% of the syllabi having this type of choice. The three types of process choices observed were individual versus group completion of assignments, selecting the due date, and having a rewrite option. Only four of the 129 syllabi explicitly communicated that students could complete the assignment individually or in a group. Only two courses provided students with the opportunity to choose the due date of the assignment and only two courses gave students the option to rewrite and resubmit assignments. See Table 1 for frequency data on choice.

How Much Assignment Choice *continued*

Table 1

Psychology Syllabi Assignment Choice Frequency and Type

Year	Total Number of Syllabi	Any Choice	Content-Topic or Sources to be Used	Product-Assignment Type	Process-Individual or Group	Process-Due Date	Process-Rewrite Option
1999-2005							
Frequency	63	46	34	16	2	2	2
Percentage		73%	54%	25%	3%	3%	3%
2016-2022							
Frequency	66	44	38	16	2	0	0
Percentage		67%	58%	24%	3%	0%	0%
All Syllabi							
Frequency	129	90	72	32	4	2	2
Percentage		70%	56%	25%	3%	2%	2%

Research Question 3: Has choice in assignments changed over time in psychology courses?

A chi-square test of independence was conducted to examine whether there was a relation between choice and year. Results indicated there was no significant relationship between choice and year, $X^2 = .616$ (1, N = 129), p = .433, V = .062. Thus, there was no significant difference in the frequency of assignment choice in the 1999-2005 syllabi and 2016-2022 syllabi.

Discussion

The purpose of this study was to explore how frequently students were given choices about assignments in courses and whether the amount of choice changed over time. Although approximately 70% of the syllabi did have some evidence of assignment choice, in most cases (56%) the choice was limited to students being able to make a content choice such as selecting the topic for an assignment. Given that the syllabi reviewed were considered exemplars in the field of psychology, these percentages are likely higher than what would be found in a more generalizable sample.

Other types of choice were not as prevalent. Product choice options, for example, were found in only 25% of the syllabi. In these cases, students were able to choose the academic product they would create to demonstrate what they learned. For example, in some of these courses, students could have opted to write a paper, give a presentation, create a podcast, or use some other means to demonstrate their learning. Only 6% of the syllabi had process choices such as whether the assignment would be completed individually or in a group or being able to choose the assignment due date.

Most of the literature to date has focused primarily on the benefits or challenges associated with choice and not on how frequently students are given choices about assignments. It is therefore difficult to know if the findings of this study are consistent with teaching practices in other disciplines and across educational sectors and settings. Richmond et al. (2019) reported that syllabi are becoming more learner-centered but did not report on choice with assignments. Only one previous study focused on assignment choice frequency, and it was conducted in a middle school setting. Dabrowski and Marshall (2019) reviewed 6,800 middle school assignments and found that students had little choice. The findings of the current study along with the findings of Dabrowski and Marshall (2019) suggest that educators across sectors have only provided limited assignment product and process assignment choices to students.

There was no relationship between choice and year. Syllabi from 2016-2022 did not have more choice options than the 1999-2005 syllabi. This finding is somewhat surprising given the increased emphasis on engaging students through choice in recent years.

How Much Assignment Choice *continued*

Numerous books touting choice as a motivational tool such as *Student engagement techniques: A handbook for college faculty*, authored by Barkley (2008), *Powerful techniques for teaching adults* by Brookfield (2013), and *Designing a motivational syllabus: Creating a learning path for student engagement* authored by Harrington & Thomas (2018) have been published during this time. There have also been many more research studies in recent years focusing on choice as a motivator. Based on a search using PsychINFO with the search terms "choice" and "assignments" or "projects", there were 556 results when the dates were limited to 2016-2022, which is almost double the 284 results that were evident when date limits were set to 1999-2005. Given the increased scholarship around choice, it is surprising that students have not been given more choices related to their assignments.

Limitations

This was a descriptive study that utilized exemplary psychology syllabi posted on the Project Syllabus Society for the Teaching of Psychology (n.d.) website. The syllabi found on this website are not representative of all psychology syllabi. Psychology faculty submitting their syllabi for peer review may be more likely to infuse choices into assignments and articulate these choices on their syllabus. Thus, the data presented here may be an overrepresentation of how frequently students are given assignment choices.

Another limitation is that the study was conducted using syllabi from only one discipline, psychology. This limits the generalizability of the findings. The frequency and nature of choice may vary across disciplines.

This study was also limited to one data source, syllabi. It is possible that faculty may have given students assignment choices verbally, but these choices were not communicated in the syllabi. Only choices explicitly shared in the syllabus were included and it may be that the findings did not fully capture all choices given to students.

Because students were not surveyed, student perception of the choices provided to them is not known. It is not clear if the types of choices provided, for example, aligned with their interests. This is another limitation of the study.

Implications for Practice

As prior research has demonstrated that choice is a way to foster a student's need for autonomy and the findings from the current study have shown that there is much room for growth in this area, psychology and instructors of other disciplines are urged to motivate and engage their students by building content, product, and process choices into assignments. Teaching and Learning Center directors could emphasize the important role of choice in student motivation and learning when designing professional development programming and could offer individual consultation services to faculty who wish to explore ways to infuse more choice into their courses. This individualized support may be especially important to ensure that all assignment options assess the learning outcomes in equitable ways. Encouraging faculty to infuse more choice into their courses and supporting them as they strive to do so effectively can potentially have an impact on student motivation and learning.

Directions for Future Research

Future descriptive research could be conducted on typical versus exemplary syllabi to better understand how frequently students are given assignment choices and what types of choices are given. In addition, future researchers could explore if the frequency and nature of choices differ across disciplines or class sizes. Another line of research could focus on evaluating the student perception of content, product, and process choices to determine what types of choices are most desired by students and most influence their perceived autonomy and levels of motivation. Finally, it could be useful to explore the role of professional development in increasing the number of choices faculty give to students in terms of assignments. Specifically, researchers could explore if the number of choices increased after conducting a professional development workshop highlighting the benefits of choice.

How Much Assignment Choice *continued*

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TEACHING REPORT

Discovering Students' Internal Thought Processes During Secondary Research: A Project on Curriculum

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Abstract

Secondary research is a common instructional activity in undergraduate and graduate programs. Faculty want students to be able to read existing literature and make decisions based on the findings. As an instructor, it can be challenging to understand how students engage in secondary research and why they make decisions during the secondary research process, because much of the research process often occurs internally within students. Faculty see drafts and the final product, but often do not have insight into how students select, evaluate, and organize research. Due to this, the authors developed a project to determine if students achieved the learning outcomes for a course where secondary research was the primary assignment. The project also informed the instructor what changes may need to be made to the course.

Keywords:

secondary research, curriculum revisions, students' internal thoughts, literature review

Introduction

Secondary research, such as compiling sources in preparation for a literature review, is a common assignment requirement for undergraduate and graduate students. Instructors want students to be able to read existing literature, synthesize it, and make decisions about their own work based on their findings (Cisco, 2014). As an instructor, it can be challenging to understand how students engage in secondary research and why they make decisions during the secondary research process, because much of the research process occurs outside of class time and decision-making is largely internal. Faculty see drafts and the final product, but often do not have insight into how students select, evaluate, and organize research.

The research process is complex and involves more than simply compiling information. Kuhlthau's (1988) groundbreaking work with student researchers demonstrated that there is an emotional component to research, and that thoughts, actions, and feelings evolve through different stages of the research process and impact a researcher's experience. The concept of sense-making, which has been applied to the research process through ideas developed over decades by Dervin (1998) and various co-authors, considers that lack of knowledge drove an information search, applying the "metaphor of human beings traveling through timespace, coming out of situations with history and partial instruction, arriving at new situations, facing gaps, building bridges across those gaps, evaluating outcomes and moving on" (p. 39). In the context of higher education, the Association of College and Research Libraries' *Framework for Information Literacy in Higher Education* (2015) identifies key ideas students grapple with when searching for, encountering,

and using information, as well as affective components (known as "dispositions") and practices demonstrated by students on their research journeys.

Educational technology students may face specific challenges when it comes to secondary research. Cook and Klipfel (2015) draw on cognitive science principles to consider how students learn about research and information literacy concepts, and advise instructors to associate abstract ideas of research and information literacy with real-life problems to communicate relevance and increase the likelihood the student will remember what they have learned and apply it in a later context. In other words, understanding why one does research and how it impacts their life or their practice, may impact a student's interest and competence in research. While commonly applied research methods, such as action research projects are embedded in their real-world context, secondary research is a step removed (Bailie, 2004). Educational technology students have diverse backgrounds. Some come from education and are familiar with the literature commonly published in this field. Others arrive from different disciplines and may be less accustomed to engaging with the standard education technology research literature.

In this paper, we present a project we developed to investigate whether educational technology students working toward an Educational Specialist degree achieved the learning outcomes for a research-based course and to determine what changes may need to be made to the course to better support students doing secondary research. We aimed to gather details on how students in this class found, selected, evaluated, read, and made decisions based on the secondary sources used to inform their three-chapter paper.

Literature Review

Studies exploring student researchers in the field of education have focused mainly on primary research projects, including action research, for students to understand and experience firsthand the link between research and teaching (Bailie, 2004). Many researchers have reflected on the important influence of research on teaching practice (Price, 2001; Warren et al., 2008) and the importance of communicating this connection to students (Bailie, 2009; Johnes, 2006). Bailie (2004) found that even after participating in a research study and reflecting on their role as researchers, educational technology graduate students did not make a connection between their research and their teaching practice. Bailie (2009) later noted that frequent instructor/student meetings helped with student confidence with research but did not find that students had a better understanding of the connection between their research and teaching. While these discussions have focused on student research studies and action research, they highlight the importance of students grasping the connection between teaching and research and the ways in which they struggle to make those connections.

Other studies have investigated education students' experiences with searching and research sources. Blummer et al. (2012) used a phenomenological approach to explore the research experiences of education graduate students and found a prevailing sense of confusion among their student participants and a lack of confidence about where to search for information. While students reported high usage of both internet search engines and library databases, only 12% indicated a high level of comfort with library databases (Blummer et al., 2012). These researchers also identified *citation chaining* as a common practice among education graduate students. *Citation chaining*, a practice also noted by Green (2010), is a technique where researchers review an article's bibliography for other relevant sources (backward citation chaining) and also use available tools such as citation indexes like *Web of Science* or *Scopus,* library search platforms, research databases, or Google Scholar to find more recent publications that have cited the article (forward citation chaining). Green and Macauley (2007) found that doctoral education students engage with information in a way that is tied to their previous experience and knowledge. For example, they appreciate the value of grey literature, and often notice the gap between educational theory presented in published literature and the reality of their practice, a distinction that some found to be pronounced when reviewing the literature. In a scoping review examining the difficulties faced by beginner educational researchers when doing literature reviews, Chen et al. (2016) noted that methodological elements such as finding quality sources, extracting and interpreting key findings, and organizing their findings around themes are some of the challenges faced by educational researchers engaging in secondary research. They contended that literature reviewing is

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best taught using a process-oriented approach to help students overcome conceptual challenges.

Carter (2007) described "research from sources" (p. 398) as one of four metagenres, which he posits as the more generic procedural knowledge that exists in academia but which transcends specific programs or disciplines. Blythe et al. (2016) explored this idea in the context of academic writing and research, where they contended that students searching for secondary sources for writing assignments were engaging in the metagenre of research from sources (Carter, 2007), and that better awareness of this work as a metagenre can help students make connections and facilitate transfer between early undergraduate writing tasks and later writing tasks.

The skills of graduate students more broadly have been explored from both information literacy and information behavior perspectives. Catalano's 2010 survey of 172 graduate students found that students were able to discern sources reliability but found locating appropriate articles to be a challenge. In a think-aloud study on how engineering graduates select relevant literature, Cheng and Tsai (2017) found that students skimmed the title, abstract, and relevant article sections and assessed sources for relevance, recency, credibility, and authority. George et al. (2006) interviewed 100 graduate students across disciplines and found that citation chaining was a popular method, as was information gathering using Google. They also found that students were disorganized while information seeking but were organized in other aspects of their information behavior, such as scheduling meetings with advisors and using citation chaining to track down more resources. Similarly, Du and Evans (2011) found that graduate students preferred to explore their topics using a search engine, and that fewer than half used library databases, while only 18% began their search in a library database. Walter and Stouck (2020) found that library databases were the most commonly used source by the graduate students they surveyed, and that managing large amounts of information was a key challenge articulated in their focus groups. They discovered that students were using a wide variety of strategies and approaches to locate research, including setting alerts, constructing complex search strategies, following key journals, consulting reference lists, and gathering recommendations from colleagues and professors. Green (2010) found that doctoral students followed citations to determine which resources were most valuable.

The literature review and other secondary research assignments may be asking students to find, evaluate, and present information before they have the tools to do so. Importantly, Walter and Stouck (2020) theorized that students who write literature reviews without synthesis or appraisal may not have a robust understanding of how sources interact with one another. Willingham's (2007) seminal discussion of critical thinking identified content knowledge as a prerequisite to effective critical thinking. Although problem solving and critical thinking have been shown to be difficult to apply across situations, content knowledge can increase an individual's ability to recognize the deep structure of a problem, draw on working memory, and apply thinking strategies such as detecting hidden assumptions (Willingham, 2019, p. 10). Without content knowledge, hidden assumptions are more difficult to detect. The same could be said for source evaluation, and this has been observed as a paradoxical expectation to have of students, or non-experts, when assessing the accuracy of a given piece of information (Wilkinson, 2017).

Researchers have proposed a variety of pedagogical suggestions that instructors could consider when teaching students about secondary research and literature reviewing, and most of these solutions center around illuminating the process of literature searching and reflection. For example, Gray (2021) offers a "Secondary Research Recommendation Analysis" assignment to replace a traditional literature review, in which students pose a problem, search the literature to answer the problem, and produce a short report with three recommendations derived from the literature, thus supporting the concept that teaching should be process-focused in order to make the research process more visible to students (Chen et al., 2016; Feak & Swales, 2009). Indeed, Badenhorst (2019) articulated intertextuality (the connection between texts) as a concept whose explication could help with teaching literature reviews. Kwan (2008) concluded that an integrated approach to reading, writing, and researching can be taught to doctoral students to help them see the parallel development of these practices and how they influence each other. After determining that students had difficulty integrating sources into their papers, Hart and Annear (2020) recommended building in a source

analysis assignment that would give students a chance to reflect on the sources they had found to address their question. Likewise, Jackson (2021) recommended scaffolding with smaller assignments.

Methods

Teaching Context

Research Problems in Instructional Technology is a course that the lead author inherited from a previous instructor. She taught the course four times as it was originally designed before deciding to undertake this scholarship of teaching and learning (SoTL) project to make improvements to the course.

Students working towards an Education Specialist degree (Ed.S.) in Educational Technology must take the course Research Problems in Instructional Technology. This course is a fully online asynchronous graduate level research course. The primary assignment requires students to conduct secondary research and write a three-chapter paper: introduction, literature review, and conclusion. Students work on the three-chapter paper for the entirety of the 16-week course. During the first week, students are asked to identify potential topics. Then, in the second week, students select a topic and write research questions. Writing research questions is not a new task for students as they have all taken Introduction to Research Methods prior to this course. Example research questions are in Table 1.

After the second week, students are given two weeks to complete Chapter 1, followed by two weeks for Chapter 2, and two additional weeks for Chapter 3. Then, from weeks eight to sixteen, students undertake two rounds of revisions before submitting their final paper in week 16.

Content is primarily delivered through course readings and feedback from the instructor. Throughout the course, the instructor works closely with each student, but students also receive feedback on their secondary research from a peer review group and an external reviewer. The external reviewer must have completed a thesis or dissertation or have written an article for publication.

Project Description and Questions

The learning outcomes for the course were:

1. Retrieve research-based information relevant to the topic of choice.
2. Evaluate, analyze, and synthesize relevant literature and report it in a specified style and format.

Table 1: Student Research Questions

Student	Example Research Questions
1	• How does the digital divide impact the opportunities for K-8 students?
2	• Have elementary students demonstrated academic growth in virtual learning environments? • Do early elementary students show similar growth or knowledge gain as upper elementary students? • Does the use of technology increase student engagement? • Are social development needs being addressed in the virtual learning environment?
3	• How can incorporating multimodal composition enhance writing instruction? • How can multimodal composition engage reluctant writers as well as challenge gifted writers? • How does multimodal composition prepare student writers for real-world writing and reading scenarios?
4	• What are the most effective professional development practices for helping teachers who are hesitant to integrate technology?

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3. Apply writing and bibliographic styles prescribed in the Publication Manual of the American Psychological Association.
4. Construct a scholarly paper consistent with departmental and university guidelines including the components of a traditional research paper.
5. Articulate the research process.

With these outcomes in mind, the research questions for this project were:

1. How do students find research to answer their questions?
2. Why do they select the resources they use in their paper?
3. What factors do they use when evaluating resources?
4. How do students approach reading research articles?
5. How do students make decisions based on secondary research?

The course outcomes aligned with the research questions (See Table 2).

Participants and Data Collection

This project took place at a public regional comprehensive university in the Midwest of the United States. Students in the course were working on earning an Education Specialist degree (Ed.S.) in Educational Technology. All students were K-12 teachers with varying years of experience. There were 14 students in the class.

Students were made aware of the project on the first day of the course and could opt-in to the study until the third week of the course. More specifically, at the beginning of the course, students were notified about this project first via a course announcement from the professor and then through email. A web-based informed consent form was shared with the students in the course announcement and emails. The co-researcher, who worked at a different institution, collected the informed consents and the survey results. The instructor of the course did not know who opted in, nor did the instructor review any of the survey results until after final grades for the course were submitted.

Data were gathered through the distribution of three surveys. The survey platform Opinio was used to gather the data. The three surveys were sent to students at strategic times during the 16 weeks of the course. Each survey included multiple-choice and short answer

Table 2: Alignment of Course Learning Outcomes and Research Questions

Course Learning Outcomes	Research Questions
Retrieve research-based information relevant to the topic of choice	• How do students find research to answer their questions? • Why do they select the resources they use in their paper?
Evaluate, analyze, and synthesize relevant literature and report it in a specified style and format	• How do students approach reading research articles? • What factors do they use when evaluating resources?
Construct a scholarly paper consistent with departmental and university guidelines including the components of a traditional research paper	• How do students make decisions based on secondary research?
Articulate the research process	• How do students make decisions based on secondary research?

questions. The first survey was sent during Week 6, the second survey was sent during Week 11, and the third survey was sent during Week 16 (see Appendix A).

When the first survey was sent during Week 6, students had been assigned to submit their topic and research questions, an annotated bibliography of five sources, and an outline. When the second survey was sent during Week 11, students had been assigned to write Chapter 1 that included the statement of the problem, the research questions, limitations and delimitations, definition of terms, the information search strategy, and a conclusion.

Additionally, by Week 11 students had submitted a second draft of Chapter 1. Students were also asked to submit their first drafts of the literature review (Chapter 2) and conclusions (Chapter 3). The third survey was sent during the last week– Week 16– of the course. Between the second survey in Week 11 and the third survey in Week 16, students had submitted preliminary pages for their paper (title page, a rough draft of an abstract), revised versions of Chapters 2 and 3, and their final paper (chapters 1, 2, and 3).

Seven students completed the first survey, six students completed the second survey, and five students completed the third survey. The third survey did have partial responses from a sixth participant. Therefore, a total of seven students participated in the survey.

Data Analysis

The co-author collected all the data and shared it with the lead author (the instructor of the course) after final grades for the course were submitted. The project used an explanatory sequential mixed methods approach where the quantitative data was analyzed first followed by the qualitative data. The qualitative data helped explain the quantitative data (Ivankova et al., 2006). Frequencies from the quantitative questions were identified. Using manifest coding, content analysis was conducted to look for themes and concepts in the qualitative data (Bergin, 2018). The qualitative data was used to confirm the data seen in the quantitative results.

Ethics

The research was approved by the institutional review board of the university where the class was taught (Protocol# 1758) and received a Board of Record Review Acknowledgement from the co-researcher's institution.

Limitations

All students in the course had previously taken a course by the instructor and were familiar with her teaching style. Additionally, the instructor had taught the course in previous semesters and came from a background in academic librarianship prior to teaching in the field of educational technology.

Only half of the fourteen students in the class agreed to participate in the study. One student did not complete the second survey and a second student did not complete the third survey. Additionally, not all students who completed the survey responded to the short answer questions. The small sample limits the results. Finally, this research took place in a class where students had varying backgrounds of experience with research. All students in the course were pursuing an Education Specialist (Ed.S.) degree in Educational Technology and all had master's degrees. However, the students' master's degrees varied, with some completing a thesis as part of their program and others not.

Despite the limitations, the authors feel that the project has value due to the pathways the findings suggest for further research as well as the recommendations for course revisions which may be useful for faculty who teach secondary research.

Findings

Question 1

How do students find research to answer their questions?

Most students used university provided databases, followed by Google Scholar. This was consistent throughout the course and found on all three surveys. By the end of class, some students used the internet (n=5), asked the instructor for assistance (n=3), worked with a librarian (n=2), and discussed research with others (n=3).

On the open-ended questions, students wrote about how they used limiters to find relevant research. One student specified, "When searching for articles that fit a topic, the amount of articles that come up but only a few of those actually work for the topic. I could put in

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a search term and have 1000 results but after narrowing down filters and skimming through titles I may only find a minimum of 3 that work for what I want."

A second student wrote, "I used advanced searches a lot so that I could get more results. I then would use filters to narrow down the time period of publication and make sure to use peer reviewed articles. Then I would read the titles and the brief sentences under each title to see if the article would fit my topic. I would also look at the subject headings under the titles to help me in selecting articles and to have more ideas on search terms."

Question 2

Why do they select the resources they use in their paper?

All students on all the surveys indicated that they felt the resources they selected for their paper were relevant to their topic. However, students also said that the articles they originally thought might be useful ended up not being relevant. One student wrote, "I ended up narrowing down my work a bit. It became quite confusing and long." Another student echoed this when they wrote, "I did start with articles that I didn›t use. I decided that they were covering information that I did not need to use in my final paper. They seemed appropriate at first and then I went in a different direction."

The second criterion students used was the currency of the article. On the first survey, six out of seven students indicated that they reviewed the date of publication for articles and selected newer content (n=6). On the second survey, that number dropped to five out of six students, but by the third survey six students again indicated that they reviewed the date of publication when selecting resources for their paper.

Additional reasons indicated by students on Survey 2 were context (n=5) and that the article was easy to read (n=1).

Additional reasons indicated by students on Survey 3 were that they selected resources that were similar in context to their own setting (n=6), they selected resources that were easy to read (n=1), and other (n=1).

Question 3

What factors do they use when evaluating resources?

Throughout the 16 weeks of the course, the factors students listed for evaluating sources changed (see Table 3).

Table 3: Factors used when evaluating sources by week 6 of the course

Factors Used When Evaluating Sources	Survey 1	Survey 2	Survey 3
Relevancy	4	3	1
Currency	3	4	3
Peer-reviewed	3	5	3
Reputable author	2	0	0
Easy to read	1	0	0
Methodology	0	1	0
Author's credentials	0	1	0

Similarly, the factors for evaluating sources that students selected from a given list changed throughout the 16 weeks of the course (see Table 4).

Table 4: Factors selected when evaluating sources

Factors Selected for Evaluating Sources	Survey 1	Survey 2	Survey 3
Author's credentials	4	3	4
Date of publication	6	6	6
Where the article was published	6	3	3
Your perception of the accuracy of the information	5	5	5

Discovering Students' Internal Thought Processes *continued*

Students also wrote about looking for research that was very specific to their topic. One student said, "I used articles that represented the demographics of my research and directly supported my topic to answer my research questions." However, other students were not as focused and wrote, "I used anything that focused on my topic or a significant aspect of my topic."

Question 4

How do students approach reading research articles?

In all three surveys, students were asked to explain their approach to reading research articles. Their responses can be seen in Table 5.

Table 5: Approaches students use when reading research article

Approach to Reading Research Articles	Survey 1	Survey 2	Survey 3
Take notes as they read	4	2	0
Start by reading the abstract	3	0	3
Rereading the article	3	0	3
Highlighting	2	0	0
Highlight and annotate	0	0	1
Skimmed articles first and then reread	0	4	2
Use a spreadsheet to keep track of key ideas in articles	0	0	1

The student responses to the open-ended questions confirmed what was seen in the quantitative data. Examples of what students wrote were:

"First, I read the abstract to see if there is relevant information. Then, I skim through the article to make sure that the information is useful. Lastly, I read through the article while taking notes that are relevant to my research."

"I start with the abstract. Then, I skim the headings and look over any other text features. Next, I would read the introduction and then the conclusion and discussion. If it still proved relevant, I would then read the article from beginning to end."

Question 5

How do students make decisions based on secondary research?

In the final survey that students completed in week 16 of the course, students were asked to describe how they drew conclusions from the secondary research. In that survey, five students said they read the research.

Students were asked in both the first and second surveys if they already had answers to their research questions. In the first survey, one student said yes, and four students said, "not yet." In the second survey, three students said that yes, they had answers to their research questions, while three students said more research was still needed. By the third survey, reading the research caused one student to rethink their initially anticipated responses to the research questions. They specifically wrote, "I keep thinking of it as my questions changing, but my answers caused me to change the questions." Three students said that their answers to their research questions did not change during the course, and one student said they were unable to fully answer their research questions because the literature did not exist.

Discussion and Recommendations

The study's findings confirm concerns the instructor had about the class' structure and format. Further, the findings are similar to Blummer et al. (2012) and Chen et al. (2016) which showed that students struggled to find quality sources and extract and interpret key findings. As mentioned previously, the small sample size is a limitation, but the findings fit what was observed from other students in the class, and the instructor felt the findings were representative.

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In the surveys, students primarily focused on currency and peer-review when evaluating sources. The instructor provided a lesson on peer-review and emphasized its importance in research; therefore, students' emphasis on peer-review makes sense. However, students were not told to only use peer-reviewed sources and were also encouraged to use books and other sources as appropriate. Further, a specific date range for sources was not required and students often took it upon themselves to limit sources to specified dates. This limiting may be from previous paper requirements given by other instructors. In this course, the instructor discussed the importance of current data and the value of historical data. It was also emphasized in the course that the research questions should guide the selection of sources.

Between each survey, students worked on various parts of their papers and received feedback from their external reviewer, their instructor, and their peers. Much of the feedback from the instructor centered on source selection and how to interpret and apply the findings in their selected sources. This feedback is likely the reason students changed their responses between surveys. It was important to see how students' thinking evolved throughout the semester. Yet, more research needs to be done to understand the exact reasons students changed their responses on the surveys.

Students were asked a few short answer questions about how they decided what articles they wanted to use in their paper. The researchers found it interesting that students seemed to interpret this as an evaluative question and answered it similarly to the other question about source evaluation. This differs from what Cheng and Tsai (2017) found. They found that students placed a greater focus on what they did, such as reading the abstract and reading keywords rather than evaluating for currency and peer review. Students focused on sources they determined to be related to their topic and then focused on evaluative criteria. It appears that students were concentrating on more superficial qualities for analyzing sources, such as peer review and currency, rather than considering the articles' methods or conclusions. This is also an area for future research.

In the surveys, students discussed the importance of relevant content in source selection. However, students did not describe what they meant by relevance in their short answer responses. This is a concept that is likely hard to describe, but it should be noted that students appeared to need guidance in how to define and determine relevance. Additionally, the instructor and co-investigator found it surprising that students did not mention key authors or citation chaining as part of their secondary research process. This may be attributable to the fact that the students were new to the field, but many graduate students use citation chaining as part of their research process (George et al., 2006).

Students used a variety of methods to read articles, such as multiple read-throughs, note-taking, selective reading strategies, and using spreadsheets. This was an area of strength in the class. However, the instructor still wants to encourage students to use a reference manager (e.g., EndNote, Zotero, etc.) in future courses to help them stay organized, though she will not require it because students were able to organize and read articles without the use of such applications.

Overall, students did not leave the course with the desired level of understanding of how to read educational research. Instead, many students continued to engage in similar strategies they had used prior to the course and did not alter their secondary research strategies. Despite this, some students acknowledged mental shifts in their approach to secondary research and they were able to explain how they let the research determine the answers to their questions.

Based on the findings of these three surveys, the course instructor is planning to implement changes in three primary areas: the search process, peer work, and reflection.

The search process

Students were able to locate relevant articles and evaluate them, but they engaged with them on a superficial level. Additionally, students did not seem to have a deep understanding of the research process. To specifically address this, the instructor plans to:

- Suggest students to use a reference manager.
- Ask students to identify key authors in their topic area.
- Add a lesson on citation chaining.

- Bring in a librarian as a guest speaker to help students identify sources earlier in the course.
- Rework the final assignment from a paper to a scoping review or literature review.

Peer work

The instructor plans to provide more opportunities for students to correspond with peers. While students engage in peer review groups throughout the research process, the groups frequently provide editorial feedback and do not discuss the secondary research process.

- Add a discussion on what makes an article relevant to a research topic.
- Engage in a course discussion about evaluating sources and how to determine if a source is relevant to a topic in order to think more deeply about the sources they use.
- Include peer discussion about research findings.

Reflection

While the instructor felt it is important to address some areas where students did not engage well with the search process, the primary concern from the data is that students lack deeper understanding of the research process. Additional time for reflection may help them to assess these different stages, in addition to:

- Adding resources on how to read educational research.
- Share Kulthau's (2004) Information Search Process with students and ask students to journal about the research process throughout the course.

The instructor anticipates the changes to the course will increase student learning by giving students more direction about how to engage in secondary research. By giving more direction, students will then be able to discuss with peers and reflect on the secondary research process in ways that they were unable to do because of their lack of knowledge.

Despite the many changes, the instructor will continue to use the entire semester for the project. In the third survey, one student mentioned that it was the first time they were not stressed or overwhelmed, which suggested that a semester-long project can be a positive experience for students.

Conclusion

While this project is limited in scope, the findings and recommendations may be useful to a broader audience because previous research has shown that students struggle to connect research with practice (Bailie, 2004, 2009; Blummer et al., 2012; Chen et al., 2016). Additionally, many graduate education programs include secondary research or action research (Badenhorst, 2019; Blummer et al., 2012; Walter & Stouck, 2020). Therefore, students across higher education institutions may be struggling in similar ways. Finally, other instructors may find it useful to read about how another instructor decided to adjust their course based on student data.

Overall, changes did need to be made to the course, but the findings also showed how students do adjust their secondary research practices throughout a course. Students learned what works and does not work for them. However, it was clear that more guidance was needed to help students recognize their strengths in secondary research as well as provide support to help students navigate secondary research in robust and thorough ways.

Once the changes are made, a follow-up study could be conducted to see how the modifications impact student learning. Additionally, interviews could be conducted with students to dig deeper into their thought processes while they identify research to include in their papers in order to help the instructor understand additional support to provide students to help them grow in their secondary research skills.

Discovering Students' Internal Thought Processes *continued*

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Discovering Students' Internal Thought Processes *continued*

Appendix A

Survey 1

What has been surprising to you about the process of secondary research?

Select all of the ways you found research for your paper:

- UCM databases
- Google Scholar
- Internet search (e.g. Google search)
- Worked with a librarian
- Asked the instructor for assistance
- Discussed research with others
- Other: List

Describe how you decided what articles you wanted to use in your paper.

Select all the reasons you chose the resources you did for your paper:

- Relevancy to topic
- Current date/Timeliness of content
- Context of article was similar to the context I am writing about
- Article was easy to read
- Other: List

List the factors you use when evaluating resources.

Select all the factors you used for evaluating resources:

- Author's credentials
- Date of publication
- Where the article was published
- Your perception of the accuracy of the information

Describe your process for reading research articles.

Describe how reading articles influenced the sections in your outline.

What is your research question for your paper?

Do you have an answer to your research question? If yes, what is it?

Survey 2

What was the most challenging part of writing the first draft of your paper?

Select all of the ways you found research for your paper:

- UCM databases
- Google Scholar
- Internet search (e.g. Google search)
- Worked with a librarian
- Asked the instructor for assistance
- Discussed research with others
- Other: List

Describe how you decided what articles you wanted to use in your paper.

Select all the reasons you chose the resources you did for your paper:

- Relevancy to topic
- Current date/Timeliness of content
- Context of article was similar to the context I am writing about

Discovering Students' Internal Thought Processes *continued*

- Article was easy to read
- Other: List

List the factors you use when evaluating resources.

Select all the factors you used for evaluating resources:

- Author's credentials
- Date of publication
- Where the article was published
- Your perception of the accuracy of the information

Describe your process for reading research articles.

Describe how you decided where each article fit in your paper.

What is your research question for your paper?

Do you have an answer to your research question? If yes, what is it?

Survey 3

What did you learn in this class about secondary research?

Select all of the ways you found research for your paper:

- UCM databases
- Google Scholar
- Internet search (e.g. Google search)
- Worked with a librarian
- Asked the instructor for assistance
- Discussed research with others
- Other: List

Describe how you decided what articles you wanted to use in your paper.

Did you start with articles that you ended up not including in your final paper? If yes, why did you not include the articles in your final paper?

Select all the reasons you chose the resources you did for your paper:

- Relevancy to topic
- Current date/Timeliness of content
- Context of article was similar to the context I am writing about
- Article was easy to read
- Other: List

List the factors you use when evaluating resources.

Select all the factors you used for evaluating resources:

- Author's credentials
- Date of publication
- Where the article was published
- Your perception of the accuracy of the information

Describe your process for reading research articles.

Describe how you decided where each article fit in your paper.

How did the editing process of refining your paper after feedback from the instructor influence what articles you incorporated into your paper?

How does your current process for reading research articles, and making sense of the content, differ from what you did at the beginning of the course?

What is your research question for your paper?

Discovering Students' Internal Thought Processes *continued*

Did your research question change over the course of your research? If so, why?

Describe how you drew your conclusions in your research paper.

Did the answer(s) to your research question change throughout your research?

If you were to do this project again what would you do differently?

TEACHING REPORT

Teach Assess Teach (TAT) Pedagogical Model for Cognitive Change: A Cultural Historical Approach to Teaching/Learning

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Abstract

Learning in higher education settings requires that students can acquire high level abstract concepts in meaningful ways. This paper proposes a model of teaching that relies on causing cognitive conflict in educational setting to engage students' learning. Drawing on the work of Vygotsky, Feuerstein, and Piaget, the model developed in this paper illustrates how pedagogy can be used to facilitate students' acquisition of abstract concepts. The paper introduces the background to the model before presenting a single case study of its use in a large university in South Africa. Forty-eight students registered for an honors course in education participated in this study. Findings indicated that students reported that this model of teaching opens interaction and makes work more easily accessible, and, further, analysis of student talk indicates the presence of exploratory talk, which is illustrative of reasoning.

Keywords

learning, higher education, cultural historical theory, pedagogy, cognitive development

South African school-aged children continue to lag significantly behind their peers on international benchmarking tests of literacy, science, and mathematics (for examples see, The International Mathematics and Science Study (TIMSS) test results and the Progress in International Reading Literacy Study (PIRLS) results; Maroco, 2021). The PIRLS findings are especially frightening as they indicate that 78% of South African children cannot read for meaning in grade 4 (Howie et al., 2017). As reading to learn forms the basis of education from grade 4 onwards, this is a startling finding. In South Africa, while there is a body of knowledge indicating that teachers' lack content knowledge in teaching (Spaull, 2022; Venkat & Spaull, 2015), there is also a growing body of knowledge indicating that, pedagogically, teachers tend to adopt a rote approach to teaching, with the teacher seen as knower and the child viewed as a passive vessel into which knowledge is poured (Hoadley, 2017). The teacher's ability in this context to teach, then, is an issue of both lack of content knowledge as well as a reliance on archaic praxis that has been shown to have no developmental impact on students.

Addressing the under-preparedness of teachers to teach effectively is crucial in starting to remedy the education crisis in South Africa. Of course, the educational crisis seen in South Africa is by no means unique to this context, as data suggests that educational crises are presented around the globe including in the USA, UK and Australia. To this end, the current paper presents a model of pedagogy that adopts a teach-assess-teach (TAT) approach to teaching and learning. This model draws theoretically on the work of Vygotsky (1978; 1986) and the Neo-Vygotskians and follows the logic of the Teach-Test-Teach programme carried out at Natal University in the 1990's.

Teach Assess Teach *continued*

Situated in dialectical, rather than binary logic, the model attempts to illustrate how we can teach so that students learn and learn so that students teach. The questions addressed in this paper are:

1. What does pedagogy that leads to cognitive change look like?
2. What are students' perceptions of this type of pedagogy?
3. Does this type of pedagogy elicit talk in a lecture that is indicative of reasoning?

To answer these questions, the theory upon which this model is premised is outlined below.

Theoretical Underpinnings

In Western psychology, it was Piaget (1976) who first provided detailed data from observations of his own children, illustrating that children actively construct knowledge, and that development happens in stages with each stage producing qualitatively different 'heads' (Block, 1982; Clark, 2018; Inhelder & Piaget, 1959). Perhaps Piaget's greatest achievement, however, lies in theorizing how one develops cognitively through a process of disequilibrium, initiated by cognitive conflict. Piaget indicates that children are born with two innate cognitive functions: assimilation and accommodation (Antar, 2022; Block, 1982). Assimilation refers to understanding novel information in terms of pre-existing cognitive structures while accommodation requires the shift of cognitive structures to accommodate for knowledge that conflicts with what is already known. In the notion of conflict, we find a mechanism for cognitive change in disequilibrium. Essential to all cognitive change is conflict: the disjuncture between what one knows and what one needs to learn. How this learning happens, however, is described differently by different psychologists. For Piaget (1976), for example, the child is driven (we might say motivated) to overcome disequilibrium through actively seeking resources. These could be books, another person, or the internet. The resultant development leads to the child learning. This concept of cognitive conflict is discussed later in relation to the model developed in the paper as it is the moment of conflict that opens a space for learning.

Contra Piaget, Vygotsky (1978; 1986) contends that development does not lead to learning, rather, learning leads to development. While both Piaget and Vygotsky are developmental theorists who focus on how a child grows into an adult, it is worth noting that their theories of how development occurs (whether through equilibration for Piaget or mediation in the Zone of Proximal Development (ZPD) for Vygotsky) apply to adults as well as children. Central to Vygotsky's conceptual work is the notion that mediation–the guidance of a culturally more competent 'other'–is necessary for learning. This brings us to the role of the teacher as mediator. Vygotsky asserts that mediation happens in a unique social space that opens when a more competent other guides a novice into new ways of knowing (1986). He calls this space the Zone of Proximal Development (ZPD). Essentially this is the space in which development happens through guided instruction (Chaiklin, 2003). It is here, in this space, that the mediator and the student co-construct meaning through the linking of unfamiliar concept (abstract concepts) and familiar (everyday) concepts (Glassman, Lin & Ha, 2022). Furthermore, Vygotsky distinguishes between what he calls scientific (abstract) concepts and everyday concepts (Hedegaard, 1998). While the everyday is contextually embedded and spontaneously acquired, the scientific concept must necessarily be taught as it has no empirical referent. Although distinct, these concepts rely on each other to operate fully. For a student to understand a scientific concept, they must be able to link it to their everyday concept to make sense of what the abstraction is. The meaning of the abstract, scientific concept is generally agreed upon within the discipline it comes from. It has a certain epistemic weight (see Muller, 2014) but is not imbued with sense; it is the everyday concept that achieves this. Teaching, then, requires the linking of both the scientific and everyday concepts. How exactly this is achieved is not operationalized. Hedegaard's (1998; 2020) notion of the double-move in pedagogy provides a practical way to link the everyday and the scientific.

The Double-Move in Pedagogy

In her explication of the double-move in pedagogy, Hedegaard (1998) describes how one links abstract concepts (scientific concepts) to the child's everyday lived experience (everyday concepts) by ascending from the abstract to the concrete (Hedegaard, 2020). One begins teaching then, with an abstract concept which one then relates to a child's lived experience and everyday problems that they encounter. What is of particular interest about

the double-move, if one views pedagogy as transformative, is that this is a mechanism whereby the child is altered by being equipped with concepts that they can use to transform their world. This is a profoundly novel way of viewing pedagogy as going beyond the individual child and is deeply Vygotskian in its appreciation that socially-situated interactions are the aetiology of higher cognitive functioning. While Hedegaard's work (1998) illustrates how the double-move can transform pedagogy, it provides no concrete pedagogical mechanisms with which to achieve it at the level of the classroom. It is here that the work of Feuerstein et al. (1981) on Mediated Learning Experiences (MLE) provides a fecund space for developing a practical method to teach using the double-method.

Mediated Learning Experience

Anticipating neuroplasticity before it was established definitively in neuroscience, Feuerstein et al. (1981) argued that cognition was modifiable provided a person has access to mediated learning experiences (MLE). Feuerstein outlines twelve parameters for MLE; the first three are universal and it is these three, that provide a basis for developing a mechanism for linking the scientific and every day in the classroom. These are: *mediation of intentionality and reciprocity*, *mediation of meaning*, and *mediation of transcendence*. Mediation of intentionality underpins the teacher's desire to teach. It focuses the students on the object of learning. This is linked to reciprocity, which refers to the students' desire to learn and their receptiveness to the teacher's input. In this reciprocal learning/teaching space, meaning is constructed by students and teachers. In a classroom, reciprocity would be fostered through the teacher encouraging students to use their own voice and bring authentic problems to the class to solve. Together, intentionality and reciprocity create a space for meaning-making, another universal characteristic of MLE.

Echoing Hedegaard's (1998) notion of dialogical pedagogy as relating to authentic social contexts, the mediation of meaning requires that tasks are related to the child's lived experience. The teacher achieves this by openly sharing their aims with the class and eliciting students' understandings of the topics under discussion. Here, the teacher makes explicit what underlies their pedagogy, and students are encouraged to ask *why* and *how* questions. This requires that the teacher can interrogate their own assumptions about what they are teaching. The final universal characteristic of MLE is the mediation of transcendence, where the child can bridge ideas across contexts. These three universal aspects of MLE can be used easily by a teacher in a classroom to develop meaningful interactions that lead to knowledge that transcends the immediate classroom. Taken together with the foundations of Vygotsky's educational theory that learning precedes development and occurs in the ZPD, Feuerstein et al.'s (1981) MLE provides concrete pedagogical steps that can be taken to motivate students to develop creatively within a classroom. These theoretical strands are the foundations of the model developed in this paper. The final theoretical question to deal with is: what is or should be taught in schools and universities in the 21st century? What kind of abstract concepts will be useful to students?

Background to the Model

The pedagogical model proposed in this article draws some impetus form the Teach-Test-Teach program (TTT) run out of the then University of Natal, Durban (Craig, 1996). The TTT program was set up as an alternate route for previously disadvantaged students to access university. It was not, therefore, intended as an overarching pedagogical model, which is the project of this paper. Having said this, however, the TTT program provides a firm foundation for developing a pedagogy for cognitive change (learning) in its focus on cognitive conflict and overcoming this, using materials aimed at developing students' abilities to reflect metacognitively as well as epistemically on the tasks presented (Craig, 1996). The ability to reflect on one's own cognition and develop the capacity to manipulate the epistemic rules that underpin academic (higher cognitive) type tasks, requires for Craig (1996) that a student can:

- Establish distance between themselves and the task; that is step back from their own experiences and beliefs to address a novel task.
- Argue for a specific position, illustrating the logic that underpins the argument,
- Provide evidence (generally empirical as opposed to belief-based) for the claims they make from textbooks or research papers,

- Appreciate "the force of conventions" (p.52): this is, appreciate what counts as valid evidence to support one's argument and,

- Follow the rules that underpin the solution to the specific problem given.

This requires that an educator is also able to reflect on their own teaching, in such a manner that the principles outlined above are acquired by the student. This, of course, requires more than simply telling a student that they must, for example, distance themselves from a task. It requires that the student acts to overcome their lack of knowledge in relation to a certain task: that is, the task presents the students with something that is unknown and that requires *action* to overcome the sense of dis-ease one experiences when faced with the unknown. This cognitive conflict needs to be built into the materials that one uses when teaching. It is through encountering something unfamiliar, something that they cannot do on their own, that the student is motivated to act to solve the problem at hand.

A final lesson derived from the TTT program lies in its use of testing as a tool to teach, rather than as an end point to gain a specific mark. Testing is only useful when it picks up what a student does not know and therefore, informs the educator about what the student needs to know. Craig (1996) indicates that "testing becomes perverted when the 'marks' obtained are unthinkingly regarded as descriptive of the learner or their innate, given abilities" (p. 54). Indeed, modern neuroscience has shown us that our executive functions, those higher order thinking skills, are determined not through innate ability but, rather, develop throughout childhood with the environment playing a significant role in this development. This is not the place to argue about the efficacy of assessment; however, assessment that is merely summative, and which looks solely at what a student can achieve at a specific point in time, lacks any ability to speak to what potential that student must learn (Vygotsky, 1986).

The TAT Model: Weaving the Threads Together

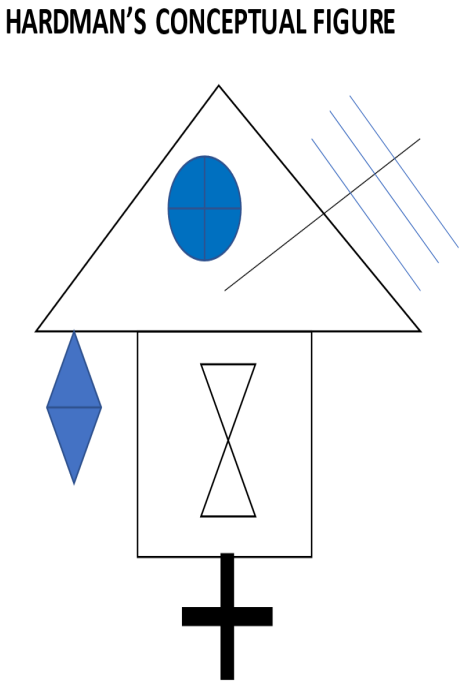
What then, does this model look like in a real classroom? First, the model requires that the student is introduced to the subject content concepts that are going to be taught and learned in the lesson. In the case study presented in this paper, students are being introduced to the Piagetian concepts of the functions of intelligence: assimilation and accommodation. To gain students' attention, the lecturer (the author) introduced these concepts with the use of a YouTube video of an infant who is presented with a rattle for the first time. The infant is aware that they can grasp objects in the world (assimilation) but when they grasp the rattle, it does something that other objects have not done so far, it makes a noise (accommodation). Students generally enjoy watching YouTube videos and this video causes some laughter. However, the concepts of assimilation and accommodation are very easily misunderstood because they have referents in the English language that have completely different meanings to those which Piaget attributes to them. The next step, then, in this model, is to present students with an unfamiliar task that causes cognitive conflict. That is, the student is faced with a task that they are unable to achieve without assistance. The unfamiliarity of the task means that they automatically become distanced from it and cannot bring their personal beliefs to bear on solving the problem at hand. The educator, then, must help the student to overcome their dis-ease by providing them with resources they can use to address this problem.

In the empirical data presented later in this paper, students are presented with an extract from Piaget's writing on assimilation and accommodation that is quite opaque. Students are then required to generate questions in response to the excerpt they have read. These questions represent the 'assessment' portion of this lecture, where the students' questions indicate what they know about the excerpt and what they need to know to understand it fully. These questions then, inform the next portion of teaching where the scientific concepts of assimilation and accommodation are elaborated and linked to their everyday concepts. To generate a level of metacognitive reflection on their own thought processes, after teaching the concepts of assimilation and accommodation for a second time, students are provided with a task that is designed to make them aware of how they solve problems. This is illustrated in Figure 1 below.

Teach Assess Teach *continued*

Figure 1

Conceptual figure



Students are given 90 seconds to look at the figure presented above. They are then required to reproduce it from memory on a piece of paper in 90 seconds. Once they have drawn their rendition of the figure, what they have drawn is compared with the actual figure in a bid to ascertain what concepts they utilized to solve this memory task. A normal human brain can hold around seven items in short term memory at one time, making it impossible to remember every feature of this diagram merely using memory (Manoochehri, 2021; Van den Berg et al, 2012). What is needed, are cognitive tools to assist us to solve this task effectively and efficiently. The students are required to tell the lecturer what cognitive tools they used to solve this task. The most obvious tool used is shapes. Clearly this diagram consists of various shapes and to reproduce this diagram, you need to know, conceptually, what a shape is. But there is more that is needed to remember this accurately; one needs a concept of number. How many shapes are there? How many lines? Mathematical concepts like 'parallel lines' are also useful when reproducing this figure. However, one does not simply use abstract concepts as tools to remember this figure, one also uses everyday concepts. For example, the picture looks like a house. The diamond hanging off the triangle looks like an outside light one might have on a house. Remembering the cross requires that one draws on cultural knowledge, as this symbol is extremely well-known not just to Christians but to a much wider audience. The meaning of this cross, however, for the person doing the remembering will depend on their cultural context. Finally, one needs to have the concept of 'color' to reproduce the blue triangle and blue circle. Figure 1, then, illustrates how one mobilizes concepts acquired throughout development as tools to aid in memorizing a diagram, through the process of mediation. These concepts have become so ingrained as part of who we are that, often, students are unable to say how they remember the diagram or what concepts they use to do so. By getting them to externalize their thinking, this task aims to begin the process of metacognitive reflection.

After this, students are required to generate a personal example, from their own lives, of assimilation and accommodation; again, this reinforces the link between the scientific and the everyday concepts students have and represents an authentic task that is based on their lived experiences. This 'assessment' is used to inform the following lecture. Throughout the teaching, scaffolds are

Teach Assess Teach *continued*

used to elaborate the meaning of what is being taught to enable students to use this knowledge beyond the confines of the lecture hall. Figure 2 below is a graphic representation of the pedagogical model discussed above.

Figure 2 illustrates how a lesson begins by causing cognitive conflict, that is, students are introduced to novel knowledge that they are unable to grasp at this moment, forcing disequilibrium which in turn creates motivation to seek to regain equilibrium. Students are then taught the concepts they need to acquire by using mediated learning experiences such as intentionality and reciprocity and the mediation of meaning, to link the abstraction being taught to their everyday lives. Assessment follows, which informs the rest of the teaching cycle. Assessment can be informal such as a question-and-answer session or it can be a more formal pen-and-paper test. After assessment, once the gaps in students' knowledge have emerged, teaching begins again, targeted at these gaps. Pacing is tailored to the students' developmental level and evaluative criteria. This requires that, when engaging with students, one always wants to ask them how and why they solve any given problem. Feedback, then, is not about simply indicating if an answer is right or wrong, rather it is about externalising the process of problem-solving to indicate how one comes at a correct answer.

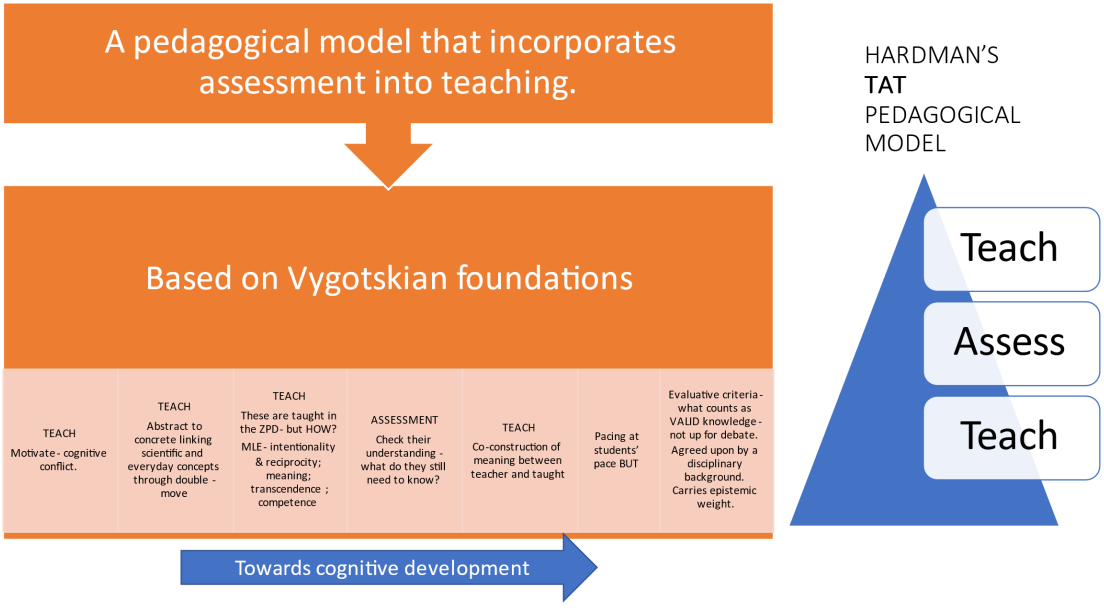
The question now becomes, to what extent does this pedagogical model aid students in acquiring abstract concepts? What follows below is a case study carried out in an education honors class at a large university in South Africa.

Materials and Methods

A qualitative design was chosen to understand how this pedagogical model works in a teaching space (Creswell & Creswell, 2018; Yin, 2016). 'How' questions are generally located in a qualitative design as they seek to unpack and explore a phenomenon as it unfolds in time. The study lent itself to a case-study design as it investigates an intervention and how it plays out in a specific context. Case-study designs allow for the collection of rich data that can speak to the questions being asked (Yin, 2016). Although there was an interest in whether this pedagogical model impacted classroom talk, a quantitative question, this study is not located within a quantitative design but rather, within a qualitative design that uses quantitative

Figure 2

Graphic representation of pedagogical model



and qualitative methods of data collection and analysis. That is, while located in a qualitative paradigm, the study makes use of mixed methods in data collection.

Data Collection

Various data were collected for this study. Video data form the largest portion of the data collected. Six hours of video data were collected and transcribed by a professional transcription service. The transcriptions were checked by the researcher in relation to the video data from the lectures. After the 15-hour module had been completed, students were given an evaluation to fill in that asked the following questions:

1. What do you feel works best about this teaching style?
2. What can be improved?

Sampling

Sampling was purposive as students take this course as an elective and one may assume that those choosing to take this course have an interest in cognitive development and learning (Creswell & Creswell, 2018).

Participants and Context

Fifty-two students registered for an honors course in education at a South African university participated in this study. Thirty students were female and twenty-two were male. The average age of students in this study was 36 years of age, with a range from 24 years of age to 56 years. Forty-eight students were in-service teachers, and the remaining four students were not teachers. Thirty of the in-service teachers were primary school teachers and 18 were high school teachers. The four students who were not teachers were not employed and were studying full time towards an honor's degree. Of these four students, three were male and one was female. The lecturer (who is also the researcher) is a white female who has been teaching in the academy for just over two decades.

This study took place at a university in the Western Cape province of South Africa. This is a well-established university with a student body of just over 26,000 students and a staff complement close to 5,000, inclusive of administrative and academic staff. Students attending this institution pay relatively high fees unless they are on bursaries or scholarships. Demographically, 25% of students at this institution are Black African, 22% are white and the remainder classify themselves as of a different race group or are international students.

Triangulation and Researcher Reflexivity

All research, whether quantitative or qualitative, is informed by the researcher's values, beliefs, and biases. This can be militated by what Elliott et al. (1999; 2021) call 'owning one's perspective' by outlining your assumptions from the beginning of your research. The research is firmly located in a cultural-historical framework and, epistemologically, this means that knowledge is understood as developing primarily through dialogical interaction where meaning is constructed between interlocutors. In a bid for transparency, students were presented not only with the data but also with the researcher's interpretation of the data, ensuring a form of triangulation. Further data triangulation was obtained through collecting various types of data ranging from evaluations, video data and written data. Finally, to ensure investigator triangulation, the assistance of a colleague was used to confirm that interpretations of the data were not idiosyncratic. As both lecturer and researcher in this project, the use of an external investigator to corroborate by findings was essential to this project. Ethics approval was granted by my institutions Research Ethics committee under reference number: EDNREC20211105

Analysis

Two types of analysis were carried out on the data: the evaluations were analysed for themes and the lecture talk was analyzed using NVivo Version 14.23.0 (qualitative data analysis computer software). Analysis of the evaluations began with looking for any common ideas or patterns in the evaluations. The researcher read through all the evaluations, looking for similarities and differences in responses. A second researcher also went through the evaluations and identified patterns in the data.

Specifically, the lecture talk was analysed for the frequency of those words that Mercer (2012) indicates are indicative of reasoning because they open truly dialogical interaction, namely:

Teach Assess Teach *continued*

1. **Why** questions. This kind of question requires an explanation and if therefore open, potentially leading to communicative interaction.
2. **What else** statements and questions. When someone asks 'what else' they are also opening a potential discussion rather than closing discussion.
3. **How** questions also potentially open communication by calling on the speaker to explain the processes used in problem solving.
4. **Explain** statements lent themselves to opening communication by requiring the speaker to explain their thinking.
5. **Give a reason** statement. These statements, like explain statements, require that the speaker externalise their thinking processes in problem solving.
6. **Because, if, I think, would and could:** These terms are drawn directly from the work of Mercer (2012) which he uses to assess primary students' reasoning (Hennessey et al., 2020)

Findings and Discussion

Student Perceptions of the Pedagogy

Increased Interaction

This theme indicated that this pedagogical model allowed for more interaction between the students and between the students and the lecturer. For example:

LJ, female primary school teacher; 32 years old. … *It was more interactive and I liked the energy.*

AC, male high school teacher, 36 years old. *Students were encouraged to give their opinion. I learnt a lot from others relaying stories regarding their personal experiences.*

DB, female primary school teacher, 25 years old. *Our lecturer making everything so interesting that I actually don't go on my phone. It was so interactive and fun.*

What one can see from the excerpts above is that students found the teaching style allowed for more interaction and, in some cases, more discussion. It is also worth noting that students indicated that they learned not only from the lecturer but also from each other's experiences. This is particularly interesting as a finding because research indicates that the best kind of learning, that which leads to cognitive development, is found in dialogical interactions (Hennessy et al, 2020; Mercer, 2012; Vygotsky, 1986). In fact, in a Vygotskian sense, the only way to develop cognitively is to interact with someone who is culturally more competent in relation to the novel knowledge. The indication from students that this pedagogical method allows for increased interaction (and even in some instances, motivation) is a positive finding in terms of using this model for teaching/learning.

A second theme to emerge from the evaluation was the fact that the content was more accessibly presented using this pedagogical model.

Accessible Content

TG, male high school teacher; 42 years old. *I have learnt about Piaget before in undergrad psychology but this way of teaching it was so much better. It just made things much easier to understand. I felt like it was more hands on or something like that, more relevant.*

TS, female primary school teacher, 35 years old. *Everything was explained to the core and I could easily understand all the theories and where they apply*

What can be seen from the above evaluation extracts is that students found that work was better explained and that this made it easier for students to understand the concepts that they were required to engage with. Twenty-seven of the 48 students who completed the evaluations indicated that this type of pedagogy made the work more accessible and helped them to understand what was required of them in an academic setting ("told you exactly what was expected of you"). This ability to know the expectations within an academic setting provides a basis for metacognitive engagement with academia as suggested by Craig (1996).

When asked to indicate what aspects of the teaching they did not like, the answers were either "none" or related to the academic level of the journal articles students are required to read. So, for example, TJ , below, indicates that there were too many readings and SS found these readings hard to access. Only 6 of the 48 students indicated that they found any difficulty with the pedagogy and, again, this tended to be related entirely to the nature of the course readings.

Teach Assess Teach *continued*

TJ, female, primary school teacher, 38 years old. *There were too many readings, I read them all and they were quite overwhelming, to then try to ascertain how they were relevant to the actual lectures*

SS, male high school teacher, 30 years old. *Given my academic background, I found a lot of the readings to be quite difficult to understand and relate to.*

Type of Talk

A search for words that Mercer (2012) has indicated are indicative of exploratory talk and hence, reasoning resulted in identifying 3,583 utterances. These were subjected to an analysis looking for frequency counts of specific words present in relation to student talk. Table 1 below illustrates the nature of the talk in the lectures.

Table 1: Student use of words indicative of reasoning

Total talk recorded	3583	
Lecturer talk **Total**	2401	67% of overall talk
Student talk **Talk**	1182	33% of overall talk
Analysis of students' use of terms associated with reasoning. (n = 1182)		
Why?	97	8%
What else?	11	1%
Explain?	21	9%
How?	43	12%
Give a reason	10	1%
If	46	4%
Because	92	7%
I think	109	9%
Would	21	5%

In Table 1, 67% of all talk in the six hours of teaching was occupied by the lecturer while 33% of talk was student talk. What is of interest to this paper, however, is that 57% of student talk consisted of exploratory talk which is indicative of reasoning (Mercer, 2012). This is an interesting result that demands further comparative research. While quantitative counts tell us something about the patterns of speech in the lecture, they do not indicate how this might look in an actual lecture context. Below in Extract 1, an exchange between three female primary school teachers enrolled for this course, who are solving a specific psychological problem, is presented. The class has been split into groups of three and each group has a mini tape recorder taping them. The problem the women are trying to solve provides an example of Piagetian notions of accommodation and assimilation from their own experiences.

Extract 1: Oh, I get it!

The group have been trying to develop an example of assimilation and accommodation from their own experiences. They have been discussing an example the lecturer gave about how a child develops schemas of different kinds of tables through transacting with the world by assimilating what is known to existing structures and accommodating these structures when the novel knowledge conflicts with what is already know, thereby developing novel structures.

1. Thando: Eh, um. So an example?
2. Jane: She says it must be from us, hey.
3. Our own example.
4. Thando: But I don't know about, what is accommodation?
5. I don't think I understand this like, uh. Ja.
6. Sive: Well, it's with assimilation, they happen together, remember?
7. Thando: So, assimilation is (*reads from the PowerPoint)* "understanding novel information in terms of what the child already knows".
8. Uh, so it's understanding by using what you already know.
9. Jane: Ja. Because accommodation is when the new knowledge clashes with what you already know.
10. When you uhm, if you can't make sense of the new by what you already know.

Teach Assess Teach *continued*

11. Thando: Mmm so it's, uh, you get rid of what you know and then develop a new schema?
12. Jane: I think if you accommodate, you don't get rid of schemas.
13. Sive: It's a clash, it's like, ok, I can't make sense of this using what I already know.
14. You know, now I must change.
15. Thando: get rid..
16. Sive: No not get rid, no getting rid.
17. You develop more schemas.
18. Thando: I think it's getting rid of the old and replacing with a new.
19. That's what I think
20. Sive: uh but see here.
21. Look, because if you get rid, it's uhm, it's. (inaudible) But if you add.
22. Ok, let me explain.
23. I used to live out there by Grabouw, you know?
24. And you can see the sea from Sir Lowry's pass ja?
25. Jane; *nods. Thando is looking at Sive.*
26. But where I lived on the farm, uhm you couldn't see the sea.
27. But you could see that dam there.
28. So, when you see the sea for the first time it's like "Eish! I know what water is.
29. I can assimilate that ok, this is water because it is blue, it is wet whatever.
30. But I have never seen such a big water before.
31. So I have this idea of water of the dam uh at the farm
32. Ok. I have that.
33. Thando: Ok
34. Sive: This is assimilation, right?
35. I use what I already know to understand this new big water.
36. But this big water, uhm, I never saw this before.
37. So now there is a problem, a clash with what I already know.
38. And this is accommodation.
39. It's when I can't understand this thing in terms of what I already know
40. But I don't get rid of the idea of a dam, I add to that.
41. Jane: Hey, that's a great example.
42. Thando: oooh. I get it.
43. I thought you got rid (unclear) but (unclear) adding.

One of the key characteristics of exploratory talk lies in the externalisation of reasoning. There is a negotiation towards the construction of agreed upon knowledge. In Extract 1 one can see several markers for reasoning such as 'if' and 'because'. In line 4 Thando indicates that she does not know what accommodation is. Jane and Sive begin to discuss their understanding of assimilation and accommodation with her. In lines 11 and 15, Thando indicates a misunderstanding of accommodation as requiring the elimination of existing schemas. In lines 12 and 16, Jane and Sive indicate that this is not what they understand, and Sive then begins to negotiate a shared meaning of accommodation using a personal example. In line 42, Thando indicates that she now understands what the concept means. Through this dialogical interaction, then, the meaning of accommodation has been constructed between these three women. Incidentally, the example they give is the task that they have been set: to provide a personal example of the abstraction of assimilation and accommodation. This is an interesting example because it harnesses Sive's lived experience and links this to the abstraction of the concepts of accommodation and assimilation.

The findings presented above indicate that students enjoy this pedagogical method but also, that the nature of the talk in the lecture hall provides evidence of exploratory talk, which Mercer (2015) indicates in indicative of critical thinking. There is a general paucity of published literature regarding how much talk time students in higher education settings generate in a lecture. However, there is a large body of research indicating that across various subjects and faculties, 'chalk and talk' (often accompanied with PowerPoint presentations) appears to be the most common form of lecturing even in the 21st century (Seth et al., 2010; Watts, & Schaur, 2011). Although this is not the place to argue the benefits or deficits of a 'chalk and talk' pedagogy,

the literature is clear that this kind of pedagogy relies on a view of a student as a passive learner rather than an active cognizing agent (Hardman, 2021; Siriopoulos, & Pomonis, 2006). The fact that the students in this paper occupied a relatively large amount of talk time indicates perhaps, that this pedagogical method is indeed able to promote interaction and, more specifically, dialogical interaction.

Conclusion

This paper set out to develop a theoretical foundation for a cultural historical pedagogical model for teaching/learning. This model, the teach-assess-teach (TAT) model highlights the use of assessment as a mechanism for accessing students' Zone of Proximal Development in their understanding of concepts. Based on the understanding that all learning requires a level of cognitive conflict, the paper empirically illustrates how this model plays out in lectures. A case study of 48 education honors students indicates that students' perceptions of this model are that it increases interaction and makes the high-level concepts more accessible. Increased interaction, especially as it relates to dialogical interaction, has been shown to be effective for conceptual acquisition (Mercer, 2005). This is an interesting finding that suggests that this pedagogical model potentially opens dialogue in a lecture, which is traditionally didactic. Analysis of students' talk in the transcribed data provide evidence that students use terms that Mercer (2012) has shown are indicative of reasoning. We may conclude, then, for this specific case study that the pedagogical model developed in this paper is a useful teaching/learning tool. The extent to which this differs from other lectures will have to be investigated in more depth in the future.

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Teach Assess Teach *continued*

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ESSAYS

Rethinking Experiential Learning in the Shadow of COVID-19

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Abstract

Experiential learning opportunities such as capstone internships are integral to the professional development of undergraduate students across many different academic disciplines. The COVID-19 pandemic presented unique challenges for students, faculty, and community partners engaged in experiential learning. COVID-19 upended longstanding approaches to developing, maintaining, and evaluating internship placements. As we argue, faculty must be adaptable, proactive, and supportive when administering effective field experience programs. In a changing environment where many interns now work in hybrid or remote settings, new digital communications platforms (e.g., Microsoft Teams, Slack, and Zoom) can enable faculty to reimagine relationships with community partners and help students to develop new skills needed in the contemporary workplace. Drawing upon our experience over the past three years, we identify several important lessons learned from managing our department's field experience program. These lessons provide instructors with actionable suggestions for how to build robust, resilient, and responsive internship opportunities for students in a changing environment.

Keywords:

remote learning, online internships, hybrid work, COVID-19, experiential learning, professional development

The COVID-19 pandemic presented unique challenges for academic programs that require students to complete off-campus internships to satisfy graduation requirements. Over the past three years, we transformed our department's required field experience course in response to an ever-changing environment. In the process, we developed new approaches to prepare students for a changing job market and workplace. Drawing upon our own experience facilitating field placements during the pandemic, we argue that faculty must be adaptable, proactive, and supportive when administering effective field experience programs.

Many students will begin their careers online, as job interviews and onboarding for new employees are now conducted remotely at many companies and organizations (Hankel, 2022; Maurer, 2021). In addition, "the ability to learn and work from wherever one is most fulfilled will soon become the norm" (Gitlab, 2022). Faculty who are teaching required field experience courses are well-positioned to help students prepare for this new work environment. In the present moment, the ability to curate one's online presence, work independently in a remote environment, manage projects, and present and host professional meetings via collaborative software platforms are now core competencies. As Nietzel (2020) noted, "a virtual internship today might be a pretty good preparation for the remote work of tomorrow."

High-impact practices such as community-engaged learning and capstone internships offer students the opportunity to improve their critical analysis skills and accentuate their professional development (Galbraith & Mondal, 2020; Kuh, 2008; Otto & Dunens, 2021). Our department has required students to complete a capstone

Rethinking Experiential Learning *continued*

field experience seminar for more than three decades. As instructors in a preprofessional department of health sciences at a liberal arts college, we place undergraduate students with a wide variety of community partners, including health advocacy groups, health insurers, hospitals, law firms, physician offices, public health agencies, regulatory agencies, and other non-profit organizations each semester. Our field experience seminars function as a professional development workshop for seniors. Course readings and assignments offer students opportunities to reflect upon and critically analyze their placement organizations' mission, culture, and external environments. Two department faculty share teaching responsibilities for this required capstone course, which enrolls more than thirty students each semester.

Like most colleges and universities across the country, our college pivoted to remote learning in March 2020 in response to the COVID-19 pandemic. This sudden shift to online learning delivered both an emotional and practical blow to our students. Overnight, most students' field placements were cancelled outright as organizations struggled to adapt to a changed world. For many supervisors, managing internships was either impractical or no longer permitted, particularly in health care organizations that limited outside visitors and cancelled elective procedures to care for critically ill patients. Students took little comfort that their peers across the country also experienced the same sudden loss (Kercsmar & Clancy, 2021; Linkov et al, 2021; Nietzel, 2020; Shine & Heath, 2021). As faculty, we sought to reassure our students during this transition. We scrambled to develop contingency plans for off campus placements that were either in limbo or suspended permanently. We immediately reached out to our placement sites to inform them about the college's decision to move to remote instruction and to explore options for our students to continue their internship placements. We asked our students to take care of themselves and surveyed all students to gauge how we could best support them as we moved to remote learning. As we wrote to our students, "The key to moving forward with HPM 450 will be for each of us to remain flexible and patient with each other—we're living through an overwhelming and scary moment. What we can do, though, is to support each other from afar as best we can."

For the remainder of the Spring 2020 term, we modified our course syllabi to adapt to a changed world. Our students were now scattered around the country in disparate learning environments. Some had limited access to reliable wi-fi, while others enjoyed high-speed connections. Many found themselves living and working in their childhood bedrooms, surrounded by family who also needed to access work or school online. In short, our previous class expectations and requirements shifted to reflect a changed world. Since most of our students were no longer near their placement sites, completing 120 hours in person was a practical impossibility, even if organizations were inclined to allow students onsite. In lieu of the standard 120-hour onsite requirement for placements, we allowed students to supplement their previously logged hours with other professional enrichment activities.

Our seminars continued to meet weekly via Zoom to catch up, discuss readings, share experiences, and provide mutual support. We dedicated time at the outset of every class for students to share their frustrations, coping strategies, and victories with each other. We also added a new topic on resilience - a vital theme in the context of COVID-19. Students prepared personal professional development plans over the remaining weeks of the semester. For our second-semester seniors, this was an opportunity to conduct a personal inventory of their strengths and challenges as they prepared to enter a job market in transition. Our assignments encouraged students to consider opportunities for personal growth during the transition to a new learning environment.

In the past, we required students to assess the impact of disruptive innovations or changes in government policy on their organizations. COVID-19, however, provided an unprecedented opportunity to examine how individuals and organizations respond to external shocks. For example, assignments required students to discuss their placement experience before and after the transition to remote work and to reflect upon what COVID-19 meant for their own careers in health care. Students used their organization's response to COVID-19 as a lens to discuss its mission, culture, and external environment. In particular, did the pandemic bring supervisors and teams closer together to forge an even stronger sense of identity and improve collaboration? Or were their supervisors and co-workers left feeling disconnected, isolated, or

overwhelmed? We asked students to consider the future prospects for their placement organizations and how they could leverage their strengths to take advantage of new opportunities or respond to emerging threats.

As the Spring 2020 semester drew to a close, we realized that the pandemic had exposed glaring disparities within our department's internship program. While some field supervisors displayed remarkable flexibility under adversity and adapted placements with hybrid or remote work opportunities to reflect the new environment created by the pandemic, others suspended placements indefinitely. In previous semesters, we expected students to engage their supervisors and co-workers in informal discussions of organizational mission, teamwork, and their organization's ecosystem at their placement sites. During a pandemic, when employees' own lives were tossed upside down as they scrambled to adapt to remote work, schooling children at home, and the overwhelming stress of a statewide lockdown, such conversations were either impractical or impossible. We finished the Spring 2020 semester chastened and concerned about the future of our program's required internship experience. Our attention immediately shifted to the foreseeable future – how could we build a sustainable internship program?

With support from our department chair and dean, we moved all internships to a remote environment for the 2020-21 academic year. Our decision to switch to online placements reflected growing concerns about equity, a recognition that our students needed to develop new skills to prepare them for a changing job market, practical considerations about the availability of in-person opportunities, and safety concerns. In particular, our department expressed concerns about placing interns in high-risk environments such as hospitals and long-term care settings that could increase the risk of our students contracting COVID-19. In addition, we were also wary about students exposing vulnerable patients, staff, and supervisors to COVID from our campus environment. These concerns were realized after our campus became an epicenter for COVID-19 transmission in our state in September 2020; within the span of two weeks, we recorded 400 students in quarantine or isolation. In response, the provost announced the campus-wide suspension of all in-person fieldwork activities.

One of the most significant placement-related challenges during the 2021-2022 academic year was an unprecedented increase in supervisor turnover. Before the pandemic, we had experienced occasional turnover among supervisors at placement sites. Regardless of the placement setting—industry, government, or health care facilities—we developed relationships with site supervisors that typically continued for several years. Turnover among middle managers and other potential supervisors increased dramatically in 2020 and 2021 (Berlin, Lapointe, & Murphy, 2021; Ellerbeck, 2022). In some cases, multiple supervisors resigned or were reassigned to new roles mid-semester. For students, these transitions necessitated a scramble to identify new preceptors who could step to supervise their work and document their placement obligations. Students had a front row seat to witness the chaotic, stressful, and often tenuous nature of the pandemic workplace. The increased churn among preceptors now seems to be part of the "new normal" of managing field placements.

Mission Impossible? Rebuilding a Sustainable Field Experience Program

As the two instructors for our department's field experience, we realized that a more sustainable and resilient internship model was needed. Even though the number of new COVID cases in our states declined in the late spring and early summer of 2020, the future of in-person placements remained uncertain at best, and impossible in our worst-case scenario. We hoped to avoid a repeat of the jarring experience our students endured in Spring 2020 when placements ended abruptly. Like other instructors across the country (Perea-Ryan, 2022; Shrestha & Rogers, 2021), we wondered how to maintain meaningful experiential learning opportunities for our students. We began to plan for a flexible, resilient, and sustainable approach to experiential learning going forward.

Rethinking experiential learning provided us an opportunity to critically reflect on course design and develop new learning outcomes. As Ash and Clayton (2009) noted, "the designer of applied learning opportunities is best understood as a reflective practitioner herself—one who engages in the same critical reflection that she expects from her students— thereby improving her thinking and action relative to the work of generating, deepening, and documenting student learning in applied

learning" (p. 28). Although we have always asked students to reflect upon their internship experiences in seminar, our traditional emphasis on organizational dynamics shifted to more concerted attention on personal growth and professional development since 2020. By having students make concrete connections between their internship experiences and themes drawn from our course readings, we drew upon the notion of critical reflection as "a capacity to be developed and a vehicle for learning and growth," as described by Norris and colleagues (2017, p. 168). This derived from the refinement of a preexisting learning objective for the course: that "students will synthesize lessons and insights derived from their HPM coursework and apply to their virtual placements." Encouraging students to share these reflections with classmates during seminar discussions further tied reflection to learning outcomes in that students were "generating their own learning" while also drawing upon lessons learned from their peers' respective challenges or struggles in the field (Ash & Clayton, 2009, p. 45). Fostering a supportive seminar atmosphere encouraged the fulfillment of a new learning objective: that "Students will have the opportunity to model professional behaviors and practice their own professional identity." Kolb's (1984) touchstones of experience and conceptualization carried into students' weekly writing assignments and seminar conversations.

Just as we asked students to reflect critically on their aspirations and professional development through written assignments and seminar conversations, we engaged in sustained, collaborative reflection with each other to rethink our own roles in networking with potential internship providers and in teaching workplace skills. What follows are five lessons learned from our experiences over the past two academic years. Our first three lessons complement each other, as they reflect parallel efforts of relationship-building in response to disrupted power dynamics among faculty, students, and community organizations. These lessons frame the instructor as an advocate for students and liaison to community organizations.

#1: Alumni are a critical resource for field experience programs

Adapting to a new post-COVID environment where increased turnover in placement organizations requires ongoing attention when building relationships with external partners, developing new placements, and making mid-course adjustments when supervisors leave or assume new responsibilities. Critical reflection encouraged us to establish new partnerships through our alumni network. Faculty who teach required internship courses should also draw upon existing relationships, particularly with alumni, to establish new opportunities for current students. Faced with the daunting prospect of identifying dozens of new field placements for the Fall 2020 semester, we turned to our program's alumni. We had used LinkedIn as way to connect current students with graduates of our undergraduate program before 2020, but before the COVID-19 pandemic our use of the platform was episodic and informal. In the time of COVID-19, LinkedIn became an essential networking tool to connect students with program alumni working in fields they were interested in or to help students locate summer internships. With few local options for field placements, we cast a wider net by reaching out to former students in middle management positions or supervisory roles to establish new virtual placement opportunities. We reached out with the following request to prospective supervisors using LinkedIn's messaging tool:

> These are challenging circumstances for interns, and we are eager to work with our community partners to develop mutually beneficial opportunities. We have several students who've expressed a strong interest in hospital placements. In particular, we'd welcome the chance to explore project-based internship experiences that could be completed in a remote setting. In the current environment, many organizations may have important tasks that could be appropriate for students to work on. We'd invite you to think about projects that may be on your 'back burner' where a student could make a meaningful contribution to the work of your organization. A well-defined project can be a win/win for both students and the placement organization - we'd hopefully help you with your to do list, and also give students a chance to develop vital project management and communication skills while working remotely as part of a team. If I've piqued your interest, we'd love to chat in the coming weeks by phone or Zoom.

Our outreach efforts quickly bore fruit. Several program alumni and other area health care practitioners

expressed interest in hosting students through virtual placements, while many others agreed to serve as mock interviewers. We refocused our internship experience from an emphasis on logging hours to managing a project with clearly defined deliverables. We emphasized meaningful work, not just accumulating hours, as the principal focus of our internship experience. This new format provided students and placement sites with a mutually beneficial experience. Our alumni engagement efforts also yielded benefits for students and for our department, as we identified potential guest speakers and individuals to network and mentor current students with specific needs.

Drawing alumni into our field program highlighted that the faculty-student relationship need not end at commencement. By engaging alumni as mentors and supervisors, we reinforced a sense of community within the department and our desire to follow students' professional futures. Integrating alumni mentors into our field program introduced a "capping and bridging" learning experience that Vieregger and Bryant (2020) have described as "a relatively untapped opportunity to increase student satisfaction—and thus recruitment and retention efforts, as well as improving future job prospects for graduates" (p. 341). Moreover, interviews with alumni signaled how our departmental curriculum might be applied in the workplace (Larsson et al., 2022).

#2: Focus on building relationships

COVID led us to be much more intentional about our internship matching process. Although we were able to develop some new placement opportunities many site supervisors had limited bandwidth for interviewing and mentoring undergraduate interns in the midst of a global pandemic. In response, we jump-started our internship placement process – we reached out to students soon after course registration was complete (roughly three months before the start of the new semester). We distributed a detailed internship interest survey to all students, asking them to identify preferred placement locations, existing skills and competencies, and career interests and goals. After submitting their survey responses, each student met with faculty member about potential placements. In the past, we might have been able to arrange interviews with 2-3 different placement sites for each student. In the COVID-19 era extensive choice among various placement sites was no longer feasible. By gathering more data from supervisors and students, we identified the best organizational "fit" for each student. This narrow, targeted process served two important purposes. First, students avoided multiple "dead ends" in their search process. Second, we insulated site supervisors from fielding multiple interview requests that they could not accommodate at their organizations. By the end of the academic year, we had no early placement terminations: no sites discharged students during an internship for lack of fit or poor performance.

When we met with students, we encouraged them to seek internship opportunities independently if our department offerings did not align with their professional interests and goals. We pledged to work with students to ensure that any placements they might find fulfilled course criteria. Student autonomy in the search process for placements came with some constraints during the pandemic. Students relied primarily on contacts shared by the course instructors, who in turn relied on departmental relationships and alumni goodwill to establish new placement opportunities.

Getting to know students sooner during the placement planning stages enabled us to engage in deeper conversations with supervisors about student interests when proposing then developing new tailored opportunities for students. This preparatory work drew upon developmental advising strategies as meaningful and holistic approaches to encouraging open conversation about students' professional development and personal growth (Creamer & Creamer, 1994). Extending this impulse to assignments and seminar discussions meant encouraging students to reflect upon their positionality within the health care system and connect their formation of professional identity to lessons learned from our course readings. This semester-long approach compelled students to engage in critical reflection as outlined by Mitchell (2008) that "encourages contemplation on both personal and institutional contributions to social problems and measures that may lead to social change" (p. 54).

#3: Be persistent and be patient

Placement development is an ongoing process. Whether responding to churn or creating opportunities in new organizations or industry sectors, instructors should consider the impact that establishing new

Rethinking Experiential Learning *continued*

placements will have on their workload. This is especially true for faculty in departments or programs that lack a staff dedicated to coordinating field placements. The need to develop new placements quickly created a variety of logistical challenges. Faculty needed to develop new affiliation agreements with each potential placement site for review by our college's legal counsel and relevant decision makers at each of our new organizational partners. In some cases, organizations provided their own agreement templates. For others, we provided organizations with language and templates to adapt to their own circumstances. Developing new learning agreements afforded us an opportunity to clarify expectations, learning goals, and responsibilities for all parties. The time from receipt to execution of these agreements typically spanned 5 to 10 business days. This delay, in turn, shaped when students could start their placements or begin the onboarding process.

Our embrace of remote placements created new opportunities for professional networking and provided students with invaluable real-world experiences and mentoring. Since 2020, we have continued to develop new remote placements that extend our reach beyond Rhode Island. Students obtained remote internships with the New Jersey office of a major pharmaceutical company, a hospital-affiliated hospice facility in New Jersey, and a population health analytics firm in New York, among others. Our partnership with the population health analytics firm included the student receiving an encrypted laptop so she could access protected data for her project. Similarly, the length and complexity of the onboarding process varied widely from one organization to another, depending on whether students needed to obtain background checks, confirm vaccination records, or complete online training modules before starting their placements.

Our final two lessons reflect intentional efforts to align our applied learning pedagogy with an emboldened emphasis on equity and student mental health. As the pandemic progressed, Catherine Denial's notion of a 'pedagogy of kindness' resonated with many college instructors (Denial, 2019). This push to rethink student-faculty interactions focused on the ways in which rigid institutional policies can and have negatively impacted students' learning experiences and sense of belonging. For us, this meant reconsidering how to serve as compassionate and understanding partners in our students' professional development and personal growth.

#4: In a new environment, equity is more important than ever

Faculty must strive to ensure that all students have equal access to *all* placement opportunities. Before the pandemic, all of our field placement sites were located in the greater Providence metropolitan area, with the exception of one or two opportunities for students in the Boston area. In-person placements required students to drive or take public transit to reach their internship sites. Access to transportation underscored inequities among our students, many of whom were unable to bring a car to campus. Furthermore, our pivot to remote learning exposed a huge gulf among our students; some were able to continue with remote placements, while others could not. This experience spurred us to think more broadly about how to ensure that ALL students were able to have equally impactful and rewarding internship experiences. Remote placements could be anywhere – allowing students to network in areas where they'd like to be post-graduation or explore fields that weren't available locally.

Moving forward, we adopted a more holistic approach to the placement matching process. Instructors need to account for a broader array of variables to better support an increasingly diversified student population (Goldberger et al, 2021; Shapiro et al, 2021). In particular, it is imperative to account for differences in financial resources, transportation constraints, scheduling limitations, and even post-graduation location preferences in tailoring placements for students. We also struggled to create opportunities for students who might otherwise need to work to support themselves. While some placement sites paid students a stipend, most did not. When we were unable to develop a paid placement opportunity for a student, we worked closely with the program coordinator for our college's community service institute to identify opportunities for students with federal work study awards. By doing so, we were able to coordinate placements with non-profit organizations for which students could be paid for their work with community work study funding. Scholars have argued convincingly that instructors should view community work study as a high-impact practice that can reduce financial barriers to student success (Studer, 2019).

#5: Faculty need to help students focus on their mental health and well-being

Critical reflection helped us deepen our understanding of the context of work, inequalities in our student population, and the emotional toll of uncertainty on the students. In addition to rethinking how we placed students and developed new placement opportunities for students, we restructured the seminar associated with our field placement program. Our experience learning how to help students learn how to navigate the COVID-19 pandemic from 2020-2022 spurred us to incorporate new and more robust units into our syllabi on adjusting to hybrid workplaces, becoming effective project managers, and developing resiliency and better mental health habits. The pandemic reinforced the importance of student mental health. Allowing students time to share placement-related challenges with their classmates during seminar meetings meant that students had space to use negative emotion to explore their professional development. As Su and Chung (2015) have observed, "educators can offer opportunities for students to share both similar and various emotions generated during learning activities" to elicit self-aware professional development (p. 296).

A focus on resilience in experiential education provides students in pre-professional programs opportunities to reflect upon their experiences as interns while also supporting their mental health and professional growth. Faculty must help students to identify strategies to manage stress and develop professional norms needed to thrive in a variety of work environments – whether in-person, hybrid, or remote. Field experience seminars must raise students' awareness of the challenges they will encounter in remote or hybrid settings, particularly as mentoring and training opportunities move online in many organizations. This is particularly important since sixty percent of Gen Z respondents (between the ages of 18 and 25) described themselves as "merely surviving or flat out struggling right now" (Microsoft, 2021). In the wake of a global pandemic, making resilience – personal, professional, and organizational –a defining theme of required experiential learning courses offers a tangible way to support student learning and professional socialization.

Preparing students for a "new normal"

The workplace students will enter after graduation is changing, and college and university internship programs must adapt and change as well. Students must develop new skills and technologies to prepare for work in flexible work environments (Collins, 2021). Critical reflection helped us generate new learning outcomes for the course and recognize new ways for students to document their learning. By reframing our course objectives, we emphasized the application of knowledge and skills for students to learn how to become competent, resilient professionals.

Faculty must focus on helping students to develop and polish skills that will give them a leg up in their internships and in their job search (Howard et al, 2021). In the new environment, obtaining Excel certification, developing skills in hosting online meetings via Zoom or Teams, polishing project management skills, and presenting their work to far-flung colleagues are vital for student success. Previously, these skills were often implicit, but now we have embedded them into our restructured course.

COVID-19 also spurred us to reinvent our existing approach to conducting mock interviews for students. In the past, we invited area health professionals to campus to conduct in-person mock interviews with students. Since most students would likely be interviewing for first jobs over Zoom or other videoconferencing platforms, we made two significant adjustments to our mock interview process. We pivoted to virtual interviews so each student could acquire critical practice honing their digital etiquette and presence. In addition, we tapped into our alumni network on LinkedIn to match every student with an interviewer who complemented their professional and career goals. As professional mentors, alumni provided a mock job description from their organization for the mock interview experience and reviewed student resumes. In preparation for the mock interview, students participated in an in-class resume review workshop with their classmates and received constructive feedback from faculty on their resume and LinkedIn profile. Faculty also reviewed students' introductory email drafts and provided feedback on their professional correspondence. Students learned to create personalized Zoom links to share with their professional

Rethinking Experiential Learning *continued*

mentors when scheduling their virtual interview. Each interview ran for approximately 25-30 minutes, followed by a 15–20-minute debriefing session.

Rethinking experiential learning opportunities for students in the wake of the COVID-19 pandemic afforded us an opportunity to better prepare students for the "new normal" from a professional perspective (Hora et al, 2021). Going forward, we are focused on ensuring comparability between in-person and remote placements. Each modality has both strengths and weaknesses. Students with in-person placements may benefit from spontaneous interactions and networking in ways that students with fully remote placements cannot. Students with fully remote placements, however, may develop a deeper facility for multiple technological platforms in ways that students with fully in-person placements do not.

Everyone experienced and lived through the pandemic in their own way—each of us reckoned with a variety of personal, familial, educational, and financial obligations. Capstone internship experiences are a vital professional socialization opportunity for students that will become even more important over time. Over the past four years we learned that to administer an effective field experience program, faculty must be adaptable, proactive, and supportive. Adaptability during a pandemic is essential, and it will remain so afterwards. In an evolving economy that is increasingly defined by hybrid and remote work, faculty who teach internship courses should embrace opportunities to meld traditional educational content with new professional competencies that will help students adapt to a changing workplace.

Rethinking Experiential Learning *continued*

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