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When College Students Direct Their Learning: How a College Professor Redesigned an Undergraduate Course in Education to Incorporate Self-Directed Learning

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Abstract

Using a self-study methodology, this paper provides an account of a college professor's redesign of an undergraduate education course from a traditional lecture-and-discussion to a significantly more self-directed learning (SDL) model. The author recounts the rationale for the redesign and how he redesigned the course to meet these challenges. The author then gives a qualitative description of several student projects from the course, and assesses whether the redesign achieved its goals.

Keywords

Self-directed learning, course redesign, active learning

Introduction

In 2017, I redesigned the delivery of a course about education I'd taught for two and a half previous years. It was a capstone course that must be taken by all undergraduate students where students are focused on K-12 teaching as their subject focus, delivered in a US College of Education.[1] The course is typically taken in a student's senior year, preferably the semester before one does one's final internship as a student teacher. The course aims to provide instruction to teacher students on theory and empirical research regarding student learning, motivation, and assessment practices for k-12 environments.

In this paper, I offer an account (using a self-study methodology) of my experience redesigning how I structured and delivered the course to incorporate self-directed principles. I discuss why I redesigned my delivery of the course to incorporate my own changing pedagogical philosophy inspired by self-directed

[1] I will henceforth refer to the course as "EDUxxx."

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learning (henceforth, SDL), the process of this redesign, and qualitative results from various sources to preliminarily assess the effectiveness of the redesign. In doing this, I offer both a description of one way to incorporate SDL into a college classroom, as well as a detailed description of how one professor went through the process of redesigning a course that both stayed true to course learning goals while also accommodating the professor's changing philosophy of education.

Literature Review

A number of scholarly articles exist describing college-level redesign of courses. This literature both provides valuable depictions of the course redesign process for those considering redesigns, as well as providing ideas on the directions or ways in which institutions and instructors can redesign courses. Spiceland et al. (Spiceland, Spiceland, & Schaeffer, 2015) describe a course redesign within an accounting program, designed to increase student retention and performance. McLaughlin et al. (2014) describe the redesign of a first-year pharmaceuticals course into a "flipped' instructional design (where direct instruction is "offloaded" via technology to delivery to students at home, freeing class time for more interactive expansion activities). Enghauser (2012) uses a reflective approach similar to self-study and the methodology used in this paper to explain why and how she designed a college-level dance pedagogy course. Each of these articles, and others like them (Gauthier, 2016; Harden, Crocker, & Noe, 2018; Vaughan, 2010), describe the rationale for redesign, the redesign process, and discuss evidence (qualitative and quantitative) for the effectiveness of the redesign.

Several descriptions also exist in the literature of self-directed learning incorporated into college courses. According to Knowles's definition, self-directed learning—at least, as it may exist in formal institutions of learning, may be defined as "a process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing appropriate learning strategies, and evaluating learning outcomes" (Knowles, 1975, p. 18). A collection of essays edited by Knowles (1985) contain descriptions of various ways professors have embedded self-directed learning into college courses, from an upper-level science course where students decide what to learn, gather learning materials, and assess themselves (Boud & Prosser, 1984), to an environmental education course that allows students to choose what and how to learn from a list of local environmental problems (James, 1984). Rogers (1969) also provides detailed accounts of an undergraduate and graduate level psychology course that allow students significant amounts of self-direction.

Methodology

Given the reflective nature of this research, I use self-study as my methodology (LaBoskey, 2004). Through a first-person account, I describe the process of my course redesign, and give an account of my change in pedagogical philosophy (toward SDL) that led to the course redesign. As such, I will rely on my remembrance of my own thought processes that led to (and throughout) the course redesign, as well as qualitative research (such as comments on teaching evaluations and descriptions of student projects) to narrate the story of this course redesign.

Description of the Course and the Rationale for My Redesign

I began teaching the EDUxxx course in the fall of 2014; I taught it in a relatively conventional way, with lectures on pre-chosen topics (as aligned with course objectives) broken up by in-class discussions, course readings to supplement lectures, and a mixture of assessments to ensure that students retained the presented content. I began thinking about redesigning my delivery of the course during the summer of 2016, based largely on my own (gradual) shift in pedagogical philosophy toward principles of SDL (as described in subsection 2 below). During the fall of 2016 (by which time, I'd taught 11 sections of the course over five semesters), I began contemplating ways to change my delivery of the course.

There were two primary reasons for the pedagogical shifts in my thinking that led to the course redesign.

1. **A suspicion that my delivery of the course was not meeting the diverse needs of diverse learners.** I arrived at this suspicion through informal observation and discussion with students and evaluation of student comments on course evaluations. All of these suggested to me that the course was not meeting the diverse needs of the learners in the course. This, I think, was not the fault of the course content itself, but the unique position the course occupies in the program. EDUxxx is a course that all students with majors and concentrations that lead to K-12 teaching certification must take during or close to their senior year. To give an idea of the diversity of backgrounds and students this often leads to, below is a breakdown of the academic specializations of students in the four sections of the course I taught during a single semester.

Student	Section w	Section x	Section y	Section z
Art Education	0	2	0	0
Birth-Kindergarten Teacher Education	1	1	0	0
Business and Marketing Education	0	1	0	0
Elementary Education	2	17	27	10
English Education	2	0	0	0
Hispanic Studies Education	0	0	0	1
History Education	5	5	0	3
Mathematics Education	0	0	2	0
Middle Grades Education	0	0	0	1
Music Education	6	0	0	5
Physical Education	6	0	0	0
School Health Education	1	0	0	0

Science Education	0	0	1	1
Special Education (General or Adapted Curriculum)	0	0	0	5
Teacher Certification[2]	0	0	0	2
TOTAL	23	26	30	28

My own observation led me to conclude that, owing to these students varying concentrations and backgrounds, very few items or learning goals in the syllabus were experienced as important or worthwhile to all students. For instance, I would often find students in some concentrations more engaged in certain topics than those in others. An example of this was my struggle to instruct students about matters of assessment in ways that would be relevant to different specializations (from pre-k to middle grades to high school environments).

Several comments on course evaluations (prior to the course redesign) indicated that students often found the course content either repetitive to what they had learned in other courses or not relevant to their own student and learning needs. Below are some examples:

> [Question: What would you change or improve about this course?]
> "Some material was repetitive over the Education student" (Fall 2014).
> "Make more relatable to secondary education (Fall 2015).
> "Some topics, like assessment and learning, had already been covered in previous EDUC classes. I would have liked an extension on the subjects"(Spring 2016).
>
> [Q: Additional Comments]
> "Only tend[s] to elementary ed students" (Course evaluation, Fall 2015).
> "I do feel like it is repetitive from classes we have taken in the past; this class just relates all of that past material to education. (Spring 2016).

[2] "Teacher Certification" indicates that the teacher is already working under conditional licensure and needs to complete courses to obtain official state licensure.

The difficulty I faced as I thought about comments like these is that I could think of no satisfactory way to select and deliver content in a way that wasn't repetitive or irrelevant to some while being significant to others. If, for instance, assessment of student learning is done differently in elementary and secondary contexts or between subject areas (e.g., math, music, physical education), any syllabus of material taught to this diverse array of students would feel exclusionary, addressing the needs of some better than the needs of others.

2. **Research indicated the effectiveness of autonomy and self-direction in education**. Another reason I decided to restructure the course was that my own research of existing literature increasingly led me to the conclusion that providing students with more autonomy and control over their education was a good pedagogical principle.

Several things led me to this conclusion. First, my interest in different models of education delivery led me to a documentary film called *Most Likely to Succeed* (Whiteley, 2015) about (among other schools) High Tech High, a charter school that affords students a significant amount of freedom in how to do the large projects that constitute its general curriculum. Around the same time, I came across a book (Levin & Engel, 2016) about a program (within a public high school) called the Independent Project (henceforth, IP) , where students do, among other things, self-chosen weekly learning projects around their own interests. Robinson (2015) provided additional examples of (K-12) schools that often gave students a similar degree of autonomy with similarly impressive results. Autonomy and student choice, it seemed, were a key component in increasing student motivation and quality of work at these schools.

Other research I was doing to prepare for classes I was teaching (including for EDUxxx) also emphasized autonomy's power as a learning tool. As one focus of EDUxxx is research on motivation and the conditions for its flourishing, I'd often prepare lectures on various components of motivation according to current theory and research. In preparing these lectures, I found an impressive amount of research validating autonomy's positive effect on the learning process (Dickinson, 1995; Grolnick & Ryan, 1987; León, Núñez, & Liew, 2015; Niemiec & Ryan, 2009; Passe, 1996; Shernoff, Csikszentmihalyi, Shneider, & Shernoff, 2003). These articles led me to literature exploring (and advocating) the philosophy of SDL more generally (Holt, 1965/1995, 1967/2017; Knowles, 1975; Rogers, 1969; Thomas & Brown, 2011).

In particular, I noticed that, as different as these ideas and schools were, all (and specifically High Tech High and the Independent Project) contained three key similarities that I might build my course redesign around:

1. **Autonomy for students**: While the schools differed in how they provided autonomy, both schools seemed to enhance student motivation and learning by giving students significantly more freedom than they usually enjoy. High Tech High told students what projects they were to work on, but gave significant choice in how students worked on the projects and learned what was needed to do each project. The Independent Project told students only what domain (e.g., languages, natural science) their weekly research had to be on, but gave students the freedom to learn what they wanted within those disciplines.

2. **Non-Traditional/ Authentic Assessments:** Interestingly, both schools utilized an "exhibition" model of assessment. Once projects were done, they were exhibited either in a public exhibition (High Tech High) or to one's peer group (Independent Project). Presumably, this was both to allow students to get feedback in a more authentic way than a teacher-graded assessment and to motivate students. (Educational reformer Theodore Sizer (1997) similarly advocated for the use of student exhibitions as an important assessment tool.)

3. **Social Interaction:** Both schools allowed for significant social interaction during the completion of projects. Students were allowed to utilize peers as resources, share information, and socialize during the completion of projects.

Through reading and interpreting this research, I began to form a theoretical framework for the type of learning I wanted to promote and how I might promote it, as well as how the conventional constraints of classrooms—from imposed curriculum to traditional assessments—might get in the way of these goals. My embrace of self-directed learning did not stem, as it did for Shor (1996), from an existing stance of critical pedagogy, nor, as it did for Martin Duberman (1969), from anarchist or libertarian political convictions. While I did not know these authors at the time, I was formulating an approach in a way similar to how John Holt (1965/1995) and Susan Blum (2016) came to similar conclusions: like them, I was working in a formal educational institution yet beginning to see the ways in which the type of enthusiastic or deep learning I wanted for (and from) students necessitated a very different approach from the one found in conventional schools. Like Holt and Blum, I started to realize the myriad ways that conventional school constraints like curriculum imposed on learners and learning extrinsically motivated by grades inadvertently thwarted the type of learning I envisioned for students. Montessori—whose words I would only read well after this redesign—accurately summarized my burgeoning realization:

> The child really learns only when he can exercise his own energies according to the mental procedures of [spontaneous] nature, and this sometimes works very differently from what is ordinarily supposed. This is why it fails and is hidden when faced with the procedures adopted in ordinary schools (Montessori, 1955/2007, p. 38).

Like Holt, Montessori, and Blum, I was beginning to see that the type of learning I wanted to achieve in this course would demand undoing or significantly reconfiguring the conventional syllabus. Rather than imposing my desired curriculum on students, students needed to be in charge of deciding what and how they learned (while remaining broadly within the course parameters). Rather than turning in projects to me for a teacher-assigned grade, students would exhibit projects to, and receive feedback from, their peers (and I). Rather than my role as one of dispenser of information on which students would take notes and be tested, my role was to design and facilitate an environment where students can direct their own learning and help each other, where information flows not simply from myself to students, but in a truly decentralized way.

Description of the Course Redesign

My redesign of EDUxxx occurred primarily during the fall and winter of 2016. During the fall semester, I'd organize ideas and often run those ideas by my then-current sections of EDUxxx to get student feedback that would help me analyse the feasibility of my ideas from a student perspective.

I decided that the core of my redesign would centre around a mechanism being used by the Independent Project: the weekly questions. Levin describes the process as follows:

> They would start each week coming up with their own natural and social science questions. The other students, and any available teachers with expertise in the sciences, would critique the question and help make it a better question, thereby helping all of us to improve on the art of asking a good question. Then the students would spend the week answering their questions—doing research and experiments, reading, and talking to experts (both inside and outside the school), and on Friday they would teach their answers to the group. Again, the other students and teachers would give critical feedback on the way the students went about getting their answers, the quality of the answers they presented, and how well they taught their answers to the group. (Levin & Engel, 2016, p. 43)

With feedback from my then-current students, I "translated" this idea into a college setting. During the course of the semester, students would engage in three

consecutive three-week-long projects of their choosing or design.[3] Students could choose from one of several project ideas I would create to be aligned with course learning goals (such things as "Writing a Unit Plan" or "Creating Formative and Summative Assessments") or design their own project as long as they could convince me it was appropriately aligned with course learning goals.

Since these projects would take a total of nine weeks (three per project), I needed to figure out how best to fill the remaining several weeks of the course. Since the primary models of self-directed learning in classrooms I was using as guides (IP and High Tech High) included an important social element, I decided that the first few weeks of the course might best be constructed around Socratic seminar, a method where students discuss in groups a pre-chosen texts (Byrne, 2011; Copeland, 2005) that, for our purposes, would focus on the course themes of the learning process, student motivation, and assessment of learning. This, I hoped, might also enhance social interaction between students before embarking on self-directed projects.

With all of that determined, the weekly course schedule would look something like this (changing, of course, depending on the scheduling parameters of each semester):

Week 1: Introduction and Socratic Seminar
Week 2 and 3: Socratic Seminar on Selected Texts
Week 4 through 6: Project 1
Week 7: Socratic Seminar
Week 8 through 10: Project 2
Week 11: Work on Departmentally-Required Project
Week 12 Through 14: Project 3

During class sessions themselves, my role would change from being the primary deliverer of content to being a facilitator (similar to what Rogers describes in Rogers, 1969, Chapter 4) who maintains the course structure that students work within (Socratic seminar, projects with peer exhibition), as well as to consult with

[3] The three-week duration was chosen to emulate the number of days the Independent Project allows for each weekly project. Since the course I was redesigning typically meets twice weekly, this would allow six class periods for work on one project, which the students and I believed most closely approximated the four days Independent Project students worked on weekly questions before exhibition day. We decided that doing a two-week project (four class days) was too short to allow students to really "get into" a project, but four weeks (eight class periods) would be too long for one project.

students during classes where projects are worked on to help them think through projects and provide whatever resources might be helpful.

Assessments and Grading

So that students were regularly documenting their progress on projects, I decided to have students turn in the following items during the course of each project. During the first day of the project, students would turn in (by day's end) *a project proposal*, where they outline what they intend to do, how it aligns with a course goal, their motivation for wanting to learn/do this particular thing, and some detail about resources they plan to use for research. The second week, they would turn in a *progress report* detailing their progress and any changes to the scope of their project they have made. (They also have the opportunity to let me know of anything not going as anticipated.) The third week, students would complete and exhibit the results of their projects online.

Since weekly projects at the Independent Project culminate in an exhibition to peers (and High Tech High made similar use of project exhibitions as assessments), I planned to use exhibitions as my assessment device for student projects. How to do it proved a tricky question. The Independent Project devoted half a school day to students exhibiting their work to each other. The Education courses at my institution have class sessions that are typically 75 minutes each, and contain double or triple the number of students as the IP.

Owing to time constraints within the course, I decided that rather than exhibiting projects in class, student projects would be exhibited online to our course management system (Blackboard) as a discussion forum post. Prior to posting the project exhibitions, I would group students into feedback groups of no more than four students (grouped based on similarity of project). Once students exhibited projects online, each feedback group member would look at the projects of the other feedback group members, taking note of any positive or critically constructive feedback they'd like to give each project.

Feedback, I decided, would be anonymous. Students would evaluate each other's projects, and leave their feedback comments (as well as a grade they believe each of their peers' projects deserves) on a survey that I could then turn into a spreadsheet. I would then remove the names of all evaluators, and post the spreadsheet online so that each student could see the feedback their evaluators left (without seeing the names of who left which feedback). Each project's grade would be a combination of what I and the feedback-givers believe each project deserves.

Subsequently, I saw a need to change this model slightly after the Spring 2017 semester. During the first semester administering the redesigned course, students suggested (in course evaluations and whole class discussion at the semester's end) that they'd prefer to receive and give feedback in in-person groups, though also recognized the difficulty of giving and receiving in-person feedback when all parties

know it will affect the recipient's grade. Indeed, Guardado & Shi (2007 as well as Papinczak, Young, & Groves (2007) indicate that students often do feel anxiety in giving and receiving peer feedback. It is reasonable to assume that this anxiety may negatively affect the overall quality of the given feedback and its reception, especially if all parties know that the feedback given will affect the recipient's grade.

Given this, I changed the feedback and grading process for projects as follows. Instead of giving and receiving feedback in an online survey, I would set aside the class period after students exhibit their work online, having students get into their peer feedback groups to talk about each other's projects. Instead of having peer evaluators also grade each other's projects, I would have each student grade their own project based (in part) on the feedback received. Once students talked with their feedback group, each student would subsequently write a "summary report" where they discuss their assessment of their project in light of their peers' feedback. Within that report, they would assign themselves the grade they believe they deserve (again, based in part on their peers' feedback). In this way, peer feedback might influence the project grade, but the feedback process would not be encumbered by coming with a grade attached.

Below is the calendar of how each project would go, and what students would need to submit to me during each week (reflecting both the Spring and Fall 2017 iterations).

Monday/Tuesday	Wednesday/Thursday
Project Proposal	
	Progress Report
	Exhibition Online
~~Spring 2017: Anonymous Feedback Due~> Fall 2017: Meet in Feedback Groups	Fall 2017: Project Summary Report Due

Results and Discussion: Diversity of Student Projects

I first delivered the redesigned course during the spring of 2017 (two sections), and fall of 2017 (four sections). Below, I will present qualitative data describing various projects students worked on during the course to illustrate the diversity of chosen projects and how students found projects adapted to their (expressed) learning

needs. This list of student projects is not exhaustive, but represents well the diversity of projects students were able to work on within this SDL approach.

As hoped for, student projects were quite diverse and accorded with students' differing backgrounds and concentration areas. Below are descriptions of several projects students have done during their time in the course.

- Two physical education students created an annotated bibliography (12 sources) of research aimed at motivating students to dress and participate during physical education classes. This was exhibited as a paper.
- A music education student generated a similar annotated bibliography exploring literature on how to motivate boys (in middle and high school) to participate in choral activities. This was exhibited as a paper.

- One group of three elementary education students (focusing on grades 3-5) worked collectively to create a problem-based learning unit (a format they report being quite unfamiliar with) to teach fourth graders about the branches of government. The unit included a unit outline, all materials to be used in the unit, an assessment at the end of the unit (including several instructional videos to be used by students), and a culminating assessment with rubric. This was presented as a unit plan with accompanying instructional videos and handouts.

- Five students (between my four spring 2017 sections) separately pursued individual projects based on a project idea I'd formulated around formative and summative assessments. (Two of these students were elementary education students, one was an art education student, one was a middle grades student with a math and science focus, and one was an English education student focused on grades 9-12). Each student separately chose set of curricular standards they anticipate teaching in the future and designed ten formative and two summative assessments that could be used to assess student understanding of those standards. These students exhibited their work in different ways. Two created websites to exhibit their separate assessments, one created an electronic newsletter with their assessments embedded, and two others simply presented their separate assessments as documents.

- A group of three music education students worked together on a project to create grading rubrics that could be used with students to assess tone on six different instruments. (The reason they reported interest in this topic is that they had found no existing rubrics, and were intrigued by translating the "subjective" factor of tone into "objective" criteria on grading rubrics.) They exhibited these rubrics via a group-created website.

- An art education student created a unit of second grade drawing lessons that incorporate relevant Common Core State Standards from math and language. The student exhibited the project as a collection of documents.

- An English education student was intrigued by the idea of Socratic seminar and how it could be practiced in a high-school English course. The student read a book by a high-school teacher who utilizes Socratic seminar (Copeland, 2005) and reported on the student's findings and thoughts. The student produced a Prezi presentation to exhibit their findings.

In addition to the diversity of projects chosen and students' ability of adapting projects to their needs, some students decided to focus all three projects on one area they reported weakness or sustained interest in. Below are some examples:

- A dance education student decided to create a dance unit plan for Project 1, but realized shortly into the project that there were significant gaps in their knowledge about the elements of unit planning. Project 1 was modified to be a research project on best practices for writing unit plans. Project 2 became the writing of a dance unit plan. Project 3 focused on writing the lessons for the unit plan and producing all ancillary materials.
- A science education student identified lesson planning as an area of weakness early in the course. Project 1 was a research project exploring and analysing several possible formats for planning a science lesson. Project 2 involved planning one lesson (and all ancillary materials, like worksheets and assessments) in one of these formats. Project 3 selected a different lesson plan format (one that a district the student wanted to work in was transitioning into), and translating a lesson the student witnessed their practicum teacher teach into this unfamiliar format.

- A science education student focused all three projects on an idea the student found intriguing from a Socratic seminar reading: team-based assessment (the idea of having students take assessments wholly or partly in groups). For Project 1, the student researched existing literature on team-based assessment. For Project 2 (with permission from the student's clinical practicum teacher), the student revised and administered a previous year's assessment to current practicum students. For Project 3, the student analysed the results as well as revised a second previous year's assessment based on what the student had learned from Project 2. The student exhibited all of these projects as APA-formatted research papers.

I go into these results at length because the diversity of projects chosen itself illustrates to me some success in meeting my initial goal of allowing students to tailor their own learning to their individual needs. The fact that different students chose to spend different amounts of time on different things (e.g., some students did one project on unit or lesson planning, where others did three) indicates to me that different students may require different amounts of time to remedy different weaknesses.

The diversity of student projects also indicates that students are able to adapt their projects to fit their individual situations (e.g., students, grade levels they aspire to teach, etc.), something I arguably could not do with a more standardized curriculum. Students in various students were largely able to do projects that were specifically relevant to their area (e.g., elementary education students were able to do projects on learning centres, which would be irrelevant to middle grades or those focused on high school).

Another interesting and unanticipated finding was the diversity of exhibition methods students employed to demonstrate their learning, from audio-embedded presentations to student-created websites and research papers. This suggests not only that students may have markedly different preferences for what they need to learn (and the process of how to go about learning it) but also that students may have a marked preference for different ways to represent their learning.

Results and Discussion: The Effects of Choice on Students' Reported Motivation

One thing that motivated this course redesign was negative feedback from student evaluations confirming my impression that the content being covered was not diverse or flexible enough to cover the learning needs of such a diverse group of students. Particularly as my own secondary research indicated the powerful effect of autonomy and choice on student learning and motivation, I was eager to leverage these powerful ideas in my own EDUxxx classroom.

Over the Spring and Fall 2017 semester, I taught five sections of the redesigned course. Student response data from course evaluations in those two semesters indicate that the redesign largely achieved both goals—allowing more flexibility so that students adapt their learning to what is most relevant to them (within the broad goals of the course), and in so doing, allowing students to find more relevance and value in what they learn. In response to the question, "What do you feel are the strengths of this course?," here is a sampling of student responses:

> "Projects allow creativity and put students in charge of their own learning, students can choose from a variety of project ideas" (Spring, 2017).

> "The information is relevant to better serve me as a teacher" Spring, 2017)
> "This course really allows the students to learn what they are interested in. I learned much more about education by exploring concepts my own way than I would have if I had been directly instructed" (Fall, 2017).
> "I love the freedom of this course. I never felt like I was learning something I was uninterested in, because we were able to pick what we wanted to learn" (Fall, 2017).
> "[I appreciated the] the independence, and ability to explore subject matters that we feel we need to work on. It allows us to not review material that we already know" (Fall, 2017)
> "I never felt like I was learning something I was uninterested in, because we were able to pick what we wanted to learn" (Fall, 2017).

As predicted by the data on autonomy's role in learning and motivation (Deci, Ryan, & Williams, 1996; Grolnick & Ryan, 1987; León et al., 2015), students do seem to experience autonomy and freedom in the course as enhancements to motivation and desire to learn. Of course, one cannot generalize about student motivation from these course evaluation comments. It is possible that students are misreporting their experiences with motivation in the course. However, these comments combined with the list of often quite ambitious projects above (and my own general sense from seeing students' efforts throughout the course) lead me to think with a high degree of confidence that self-direction positively impacted student motivation and engagement.

There were, however, some negative comments regarding the structure of the course and how students believed it impacted their learning.

> "I was unsure what my professors role was?" (Spring, 2017).
> "I really don't understand how the structure of this course was supposed to teach students about motivation, learning, and assessment in their future students. Maybe include more connections to this" (Fall, 2017).
> "What was this course about? It wasn't really clear. Didn't really learn anything specifically. But, I did enjoy being able to decide what I wanted to study for each project. That was the best thing about this course. The professor was really passionate about explaining how we are motivated to learn, but I really did get a point to this course" (Fall, 2017).
> "I need more direction. I understand the open concept of the course but its too broad I think. Also, I am not really sure what I learned in the way of teaching children in this course. We learned but I dont [*sic*.] really know what" (Fall, 2017)

These negative comments indicate that some students prefer more extrinsically-imposed structure to guide their learning. It is interesting to note that these negative comments are similar to student comments reported in the undergraduate psychology course using SDL principles described in Rogers (1969). For instance, in response to an undergraduate psychology class taught on self-directed principles, one student reportedly provided the following feedback: "I feel that the instructor should set the goals of the course. He knows the material and what should be learned by the student" (Rogers, 1969, p. 48). Another student reportedly complained that "I pay high tuition to listen to listen to an expert who is well trained in his field…" (Rogers, 1969, p. 48)

Rogers, perhaps somewhat dismissively, suggests of such comments that "the attitude expressed is undoubtedly very common in the great mechanical contraption which we mistakenly label 'education.'" (Rogers, 1969, p. 48). With Rogers, it is tempting to see these comments as borne from the idea imparted by "conventional" approaches to teaching and learning: that perhaps the students' prior education led them to expect that learning must come from didactic teaching. Since my course contained little didactic teaching, this may have led them to confusion about the learning they were to do. It may, of course, also be that some students simply prefer to learn in a didactic fashion, where the instructor (as expert) selects and imparts to the student what the student is to learn.

Prior to the redesign, there were several reasons (including course evaluation comments) leading me to concern over whether my structured curriculum was relevant and meaningful to diverse students. After the redesign, at least some student course evaluation comments indicate that the comparative *lack* of structured curriculum is causing students to perceive that effective learning.

Overall, I believe the post-redesign negative comments are less troubling than the pre-redesign comments. This is because the redesign itself has created a more flexible curricular design that allows students to learn in a way that best suits them, even those who desire more extrinsic structure. It may be that these students' needs can be addressed by the creation of several instructor-created highly-structured project designs, such as moving through a set of instructional modules that replicate more traditional instruction. It could simply be a matter of finding ways to help students who would like more guidance in structuring their projects. However, these concerns seem more addressable than concerns regarding a more precisely set curriculum not meeting the needs or goals of diverse learners.

Conclusion

I was motivated to undertake this course redesign for two primary reasons. First, I was concerned that one general-purpose curriculum could not adequately address the diverse learning needs of education students in diverse concentrations (who had diverse background knowledge). Secondly, my own secondary research on learning

and motivation was convincing me that student choice and autonomy afforded a way to increase student motivation and perceived relevance of learning activities.

Based on my own observation of student work in class, an inventory of student projects, and examination of student responses on course evaluations, I think there is good reason to believe that the course redesign has achieved these goals. The self-directed nature of the projects has allowed students to pursue a very diverse set of projects suited to their own learning needs. Not only are the projects themselves diverse, but the amount of time different students choose to spend on a topic area is equally diverse: some students may do three different project on three different topics related to the course goals, where other students choose to stay on one topic for the duration of their three projects. All of this indicates to me that different students truly do have different learning needs, a diversity that I've become more convinced a general-purpose curriculum can adequately address.

Secondly, student comments in course evaluations and my own observation of student work has convinced me that in general, giving students significant autonomy over their learning (what to learn, how to learn it, how to demonstrate that learning) has increased student motivation. This is in line with some of the research on autonomy's role in motivation that originally convinced me to undertake the course redesign.

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