Involve Me and I Learn: Providing Substantial Learning Choices in Higher Education

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Abstract

Making one's own learning choices is central to self-directed learning, yet the opportunity to choose learning activities is rarely given to students in formal educational settings. The case study reported in this paper is a description of student experiences and perceptions in a software tools graduate level class that offered substantial learning choices. Findings indicate that students did not expect to be given a learning choice but had positive reactions. They chose what to learn based on future usefulness, familiarity and personal interest. Students also experienced an overall learning process that progressed from isolation to community and from subject matter orientation to goal orientation.

Keywords: learner choice; learning process; self-directed learning; self-direction; software tools

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A key component of self-directed learning is taking ownership and responsibility for one's own learning. Making one's own learning choices is one way that a learner can assume this ownership and responsibility (Brockett & Hiemstra, 1991). Providing students some control over learning situations may be required to foster certain self-directed learning skills. Researchers have even speculated that self-direction and self-regulation skills may be more important than subject matter retention and recall (Hiemstra, 1994). The purpose of the current study is to describe student perceptions of learner choice within a graduate level software tools class.

Few studies provide a detailed description of student perceptions and experiences in self-directed learning situations and this is likely because formal education institutions, departments and teachers tend to exercise a high degree of control over learning. A teacher-directed approach is justifiable in many situations because of the need for students to learn certain subject matter items and perform to a specified level (Garrison, Fall97). Also a high degree of teacher direction may be needed when students are not equipped with sufficient study habits or prior knowledge to self-direct their own learning (Bolhuis, 2003; Grow, 1991). However, there are settings in which providing substantial learning choices is appropriate, especially if students have sufficient prior knowledge and self-directed learning skills. Researchers have advocated providing learners control over learning situations because it gives students practice in self-directing and self-regulating learning (e.g. Bolhuis, 2003; Cotterall & Murray, 2009; Eshel & Kohavi, 2003; Meichenbaum & Biemiller, 1998).

Self-Directed Learning in Higher Education

Self-Directed learning has recently become more popular in higher education (Bolhuis, 2003; Guglielmino, 2008). The complexity of career practices has increased and career mobility

is more common (U. S. Bureau of Labor Statistics, 2008), underscoring the need for graduates to continually learn and update personal skills (Arthur & Rousseau, 1996; Brown, 2000; Sterns & Dorsett, 1994). At the same time, the amount of information and access to this information through personal means continues to rapidly increase (Lyman & Varian, 2003).

Prior studies of student perceptions of self-directed learning approaches in higher education settings indicate that students may experience difficulties getting used to such approaches but may generally feel positive about being able to control aspects of the learning situation. Raidal and Volet (2009) found that both non-traditional and traditional students had higher preferences for solo and teacher directed learning than self-directed and social learning. The authors speculate that the reason for this finding is student prior experience in teacher-directed classrooms. Ellis (2007) allowed students to select learning projects and conduct self-assessment opportunities in a graduate level software engineering course and found that student's maturity level seemed to affect comfort level for engaging in self-directed learning activities.

In addition, Aly, Willems, Carels and Elen (2003) found that both undergraduate and graduate students liked a self-paced and self-evaluation based online course in orthodontics because it gave students a sense of control and choice over their learning. However, Ausburn (2002) reported that both adult and traditional students experienced a feeling of shock at learning in a self-directed manner and needed to adjust to the experience. In this study, traditional students had difficulties staying focused in the absence of set lectures and tests, while adult students did not experience such difficulties.

Method

The current study was guided by one major research question, what are student reactions to a class which offers substantial learning choices? Sub-questions for this study included: (a)

what resources did students use to help them in this process; (b) what values did students base their decisions on, and; (c) what did the learning process look like for students in this context. This study draws upon qualitative case study methods (Creswell, 2006). Institutional review board (IRB) permissions were obtained and followed and semi-structured interviews were the source of study data.

Setting

This study took place within a class in a Master's program in instructional design and development in a large university in the southeast United States. A unique aspect of this program is its use of a studio-based curriculum for teaching technology integration and multimedia development (Clinton & Rieber, 2010). The studio curriculum is comprised of three main classes, the first – *design and development tools* – introduces a software tool to students and then requires students to create an individual project using this software tool. The second is similar, students are required to learn an additional software tool and create a project, however, in this class students must complete an individual project for a real client. The Third class involves group work and project management more heavily as students are required to carry out a much larger client-designated project in groups. The first of the studio classes, *design and development tools*, is the class in which this study took place. *Design and development tools* has two main course objectives, to master a collection of software tools and to reflect and write on the nature of design. Students spend the first half of the semester learning to use a software tool and then spend the second half of the semester building an individual project using this tool.

Software tools commonly chosen in this class include Dreamweaver, Fireworks, Flash, Photoshop and Moodle. The learning of this software tool constitutes a substantial portion of the semester and is supported by a combination of other-directed and self-directed learning

experiences in the form of workshops, books, websites and instructor consultations etc. Workshops in this setting are designed as short introductions to limited aspects of the software tool. These workshops were generally demonstrations in which an instructor offered procedural information on how to perform certain tasks in the tool. Students were at computers with access to the software tool, and often followed along with the demonstration. These workshops were only introductory and were never intended to provide comprehensive coverage of the tool; rather they provided an entry point in which students could continue to learn about the tool. At about the midpoint in the semester in the design and development tools class, students begin work on a class project and use the newly-learned software tool to create it. The second half of the semester is characterized by student's self-directed efforts to build this class project.

Participants

Students in the studio classes come from a variety of backgrounds with emphases including elementary, secondary or higher education, business, and government. The participants in this study included five students who were selected from a small class of about 12 students (see table 1). These participants were purposefully selected over other potential willing participants based on observations that they made a conscious choice of what to learn. Participation in this study was voluntary, according to IRB guidelines. Four of the participants were female and one was male. In this study, pseudonyms are used in place of real participant names.

Table 1

Research Study Participants

Name	**Industry Focus**	**Software tool choice**
Janice	Government	Dreamweaver and Photoshop
Megan	Higher Education	Dreamweaver and Photoshop
Lisa	Higher Education	Flash
John	Business	Flash
Natasha	Primary Education	Dreamweaver and Photoshop

Instrumentation and Procedures

This study used repeated interviews (about 1 hour in length) which were conducted with participants at the mid-point of the semester (when students had almost finished the workshops and self-directed tool learning activities) and at the end of the semester. Questions focused on students' feelings about the opportunity to make a learning choice and how students made these choices. Questions also focused on participants' self-directed learning processes. After the interviews were completed, recordings of the interviews were transcribed, coded and analyzed for patterns and themes using constant comparison analysis techniques (Bernard & Ryan, 2010; Miles & Huberman, 1994). Qualitative analysis software (weft QDA) was used to group related comments about participants' software learning choices and experiences. In this process, themes from student responses were developed and compared. These areas of perception were then analyzed to determine how participants felt and experienced learning their software tool. After the analysis, participants in this study were asked to read the data and supporting quotations to verify that their thoughts were accurately represented (Lincoln & Guba, 1985).

Results

Three main theme areas of participant perceptions emerged from the data: Making the learning choice; learning resources; and the learning process. These areas will frame the results discussion.

Making the Learning Choice

At the very beginning of the design and development tools class, students chose what software tool to learn. Learning choices were made based on a variety of internal values and external resources (see figure 1). Overall participants had positive feelings about being allowed to choose what to learn but most had not expected to be able to choose.

The positive feelings about being given a learning choice stemmed from participants feelings of control over the learning situation. Some participants mentioned that they had a specific learning choice they wanted to make and were motivated to learn that specific software tool. Others did not have much prior knowledge of the software tools, but were still happy to be able to choose. Natasha expressed her feelings about being able to make a choice, “I feel pretty good with […] the fact that I did choose even though it was kind of a blind choice, I still feel pretty good that I had the opportunity [to] make a decision at all in what I learned.”

While choosing what to learn was seen by participants as a positive aspect of the class, most participants felt that the opportunity to choose was unusual and unexpected. The main factors that helped participants to feel comfortable with making a substantial learning choice were prior knowledge of the subject area and prior experience in making learning choices. John indicated that his prior knowledge of the subject area allowed him to feel comfortable with making a learning choice, “I liked [the opportunity to make a learning choice] particularly because I have a background in graphic arts, so I much prefer being able to pick what I wanted to

do than to be […] told what to do…what a person's background is has a bearing on that." Lisa cited her prior experience in making learning choices indicating that she was used to doing so because of classes she had taken at another institution in which she was also given the opportunity to make learning choices.

Participants decided what to learn primarily by finding out about the aspects of the different software tool choices and taking into account industry practices. To find out about the different software tool choices, participants did various activities including searching online for information about the software tool and discussing the options with friends and students who had already taken *design and development tools*. The level of effort to find out about the choices varied greatly among participants. For instance, John spent many hours online reading about the different software options and Janice talked in-depth with some of her friends about what to choose. Janice also knew of some online learning resources that were available for one of the software tools but not for the others, and this affected her decision. Natasha spent very little time and effort in making the decision, choosing to simply go with something she had heard of and that the majority of class members were choosing.

Whatever the method of finding out about the software tool, participants had mixed responses as to whether there was enough support given to help them make a good decision. Because of his prior experience John felt that there was no lack of support for making a good decision. He already knew something about each software tool and was able to easily look up more information as needed. Natasha, by contrast, felt overwhelmed at having a choice because of her lack of background knowledge about the software tools. The design and development tools class offered very little information about any of the software choices so Natasha and most of the other participants suggested that the class provide short information sheets or in-class

presentations on each software tool choice and show examples of projects that can be done with each tool.

Data on why participants made the decisions that they did reveal a clear set of values leading to decisions. These values included a focus on industry practices, use of the subject matter in future classes, familiarity with the subject matter and personal interest (see figure 1). Lisa expressed her interest in learning Flash because of its closeness to industry languages such as XML and Javascript. She came to the class with a desire to create the types of projects that Flash would allow her to create. John indicated that his choice of what to learn would be strongly influenced by what software tool was being used by industry professionals, “I want to see what's the front end of development right now, and then I will base [my decision] on that because I think that would have […] an impact.” Other participants also expressed similar desires to know what software tool was on the “cutting edge” of industry practice. Janice, who is currently working in an instructional design capacity, wanted to learn something she could use at work, “I feel like what I will be able to do at the end with my knowledge in photoshop is applicable to my work.” In contrast, Megan indicated that she made a learning choice primarily based on personal interest, “…really they were just things that I personally wanted to be able to use on my own, um, yet they will help me in a future career.” Despite a strong focus on industry practices, all of the participants additionally voiced their personal interest as a factor in the decision-making process. Some participants also mentioned making a learning choice based on the idea that they will need the skill in a future class.

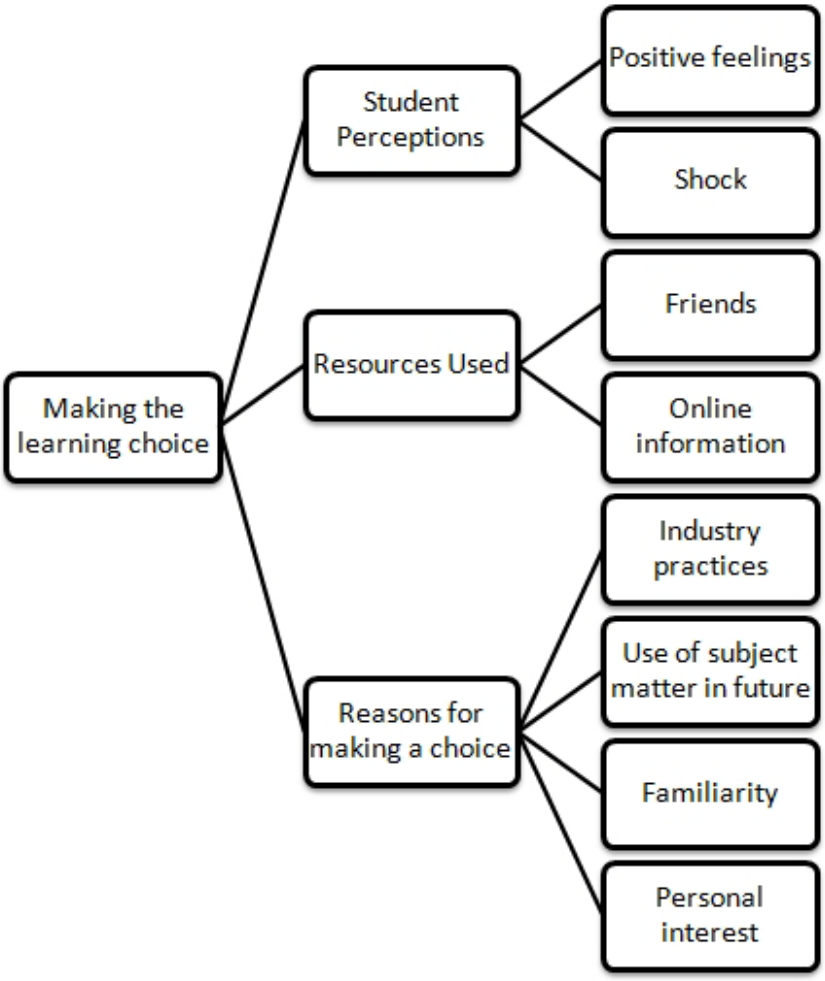

Figure 1. An overview of findings indicating student perceptions of, resources used in and reasons for making the learning choice.

A final value that participants revealed in choosing what to learn was familiarity with the subject matter. Natasha expressed her initial desire to learn something that was already somewhat familiar to her, “I only did Dreamweaver because I thought, hey, I've heard of it before.” She later expressed a wish that she had learned something different, “I mean if I just keep saying oh well I'm comfortable with Dreamweaver, I'm comfortable with this, let me just keep going with it, then I mean what am I going to do whenever I don't need to use

Dreamweaver?" Janice chose to learn Adobe Photoshop and Dreamweaver in part because she had experienced these tools at work. In contrast, John chose a software tool to learn because it was new to him, "I already know Photoshop, I already know the concepts of Dreamweaver, this is a bit new to me […] so I said if I am going to push myself to learn something it might as well be the new one."

All participants indicated that the usefulness of the subject matter outside of the current class is an important value to making a good learning choice. Most participants felt that choosing to learn something that is not usable or relevant outside of the class would be an incorrect decision. Natasha expresses her feelings to this end, "I'm happy as long as […] I can use it outside of the classroom." Lisa comments on the importance of multiple applications for learned skill, "the more ways that I can connect with it, the more applications I can see for it, the power that it has in my life […] you know [if] I can take a tool and make it work 20 different ways, that's going to be better than a tool that I can only use three different ways."

Overall participants liked the idea of being able to make a substantial learning choice. Participants also had a set of values that guided their decision-making including future usefulness of the subject matter, familiarity with the subject matter and personal interest. Future usefulness of the subject matter (whether in professional settings or future classes) was a strong factor in participant's decisions (see figure 1).

Learning Resources

All participants used the learning resources provided by the class to some degree but most also collected further resources to help them learn (see figure 2). After beginning the class and starting out using the suggested resources, John determined that he wanted to learn more about the programming language behind Flash and decided to buy a supplementary book just on

ActionScript. He also obtained paid access to a website that provides online screencasts showing videos of how to do things in Flash. Janice accessed this same site which was suggested to her in one of her books. She accessed other online tutorials that she had known about before the class. At the beginning of the semester Megan had decided to do the activities in the suggested book chapter by chapter, but later she abandoned this strategy to help her focus on her final project and looked up online tutorials to meet this aim. The other participants used similar learning resources.

Participants indicated that several factors affected the use of learning resources including availability, familiarity and quality. For instance, Lisa made use of the available google search engine to find tutorials that would help her learn what she wanted, "generally what I do is I google what I think it is, however googling […] didn't get me very far, not knowing terms has slowed me down a little bit here and there." At first she was not able to make use of this learning resource because of her lack of knowledge of the software tool. John indicated that he simply started learning with whatever books he could first get his hands on because some books he purchased online were delayed in shipping.

The suggested books and workshops provided by the class were the most commonly used learning resources, but participants also used the websites, books and other resources that they were previously familiar with. Participants also often used resources that were recommended to them by others. John indicated that he had just stumbled upon a website about a year prior to taking *design and development tools* and when the opportunity came to learn Flash, he returned to the same site to start learning. Megan decided to use a single book for most of the semester because of her familiarity with it, but later moved to other tutorials that she could find online.

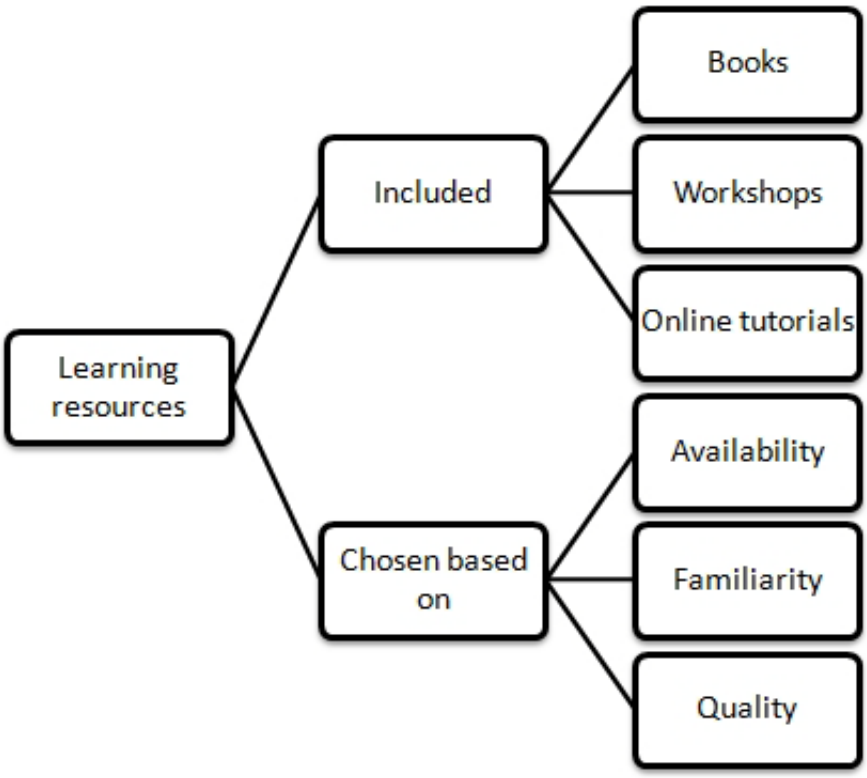

Figure 2. An overview of findings indicating resources used for learning and why they were chosen by participants.

The quality of learning resources is the third and perhaps most influential factor in participants learning resource decisions. Participants tended to assess the quality of a resource as they used it and quickly stopped using a resource if they deemed it low-quality. Conversely, participants sought more of the same type of resources if a learning resource was particularly helpful. John indicated that he sought more resources from a particular author that he felt was informative, “I realized that the ActionScript 3 book was his, I thought his online tutorials were really good [so] I went with that book.” Several of the participants found that they had to learn to quickly judge the quality of resources before fully engaging in them to save time. Most judged the quality of resources by looking at the final product of the resource and comparing it to their

own desire and interest in producing that product. Megan expresses this sentiment as she tells how she decided which learning resources to use, “I think it’s an overall appearance to the final product. I do like the grunge look but I also like for things to be very clean so […] those are the things that catch my eye.”

Overall participants found learning resources based on whether they were available to be used, familiar to the student and/or of a high quality. These tools came both from recommended sources and searches in response to personal needs (see figure 2).

The Learning Process

Throughout the semester, participants had to carry out a learning process to assure that they knew the software tool of choice and could create a final project with it. These learning processes balanced class sponsored events such as workshops and project-focused days, and personal learning events initiated by students. Within the constraints of the class, participants made choices of how to proceed with their learning. These choices were affected by student goal orientation, prior learning experiences, and often involved trial and error experiences.

Participants typically began by attending class workshops on the software tool and working through tutorials in the book; however things changed very quickly from a linear process to one of trial and error. Even before the midpoint in the semester, participants had adopted an approach to learning affected by their own goal orientations. Lisa explains her non-linear approach to learning, “It's kind of an odd experience because I would […] go home with the homework, and if I couldn't figure out what I could do to make the button work, I would think well wow, what else can I do and then I would get this entirely different idea and go off and do that instead.” She characterized this type of learning as “spaghetti learning” because it goes in many different but connected directions. Megan characterized her learning as trial and

error but more or less in a linear direction. Natasha also indicated that her learning involved some trial and error, “doing just random things with it just to figure out what the tools can do which is, kind of just playing with it like that but, if you mess it up you can always just undo it.” This trial and error emerged as students began working on their final projects or had other goals to accomplish with their learning.

The learning process that participants went through was affected by their goal orientations and their prior learning experiences. The learning process progressed from a software tool or subject matter approach, to a project or goal-oriented approach. All participants revealed that the learning proceeded more linearly up to a certain point and then when they had obtained sufficient knowledge of the software tool, they began to focus on learning things to help them complete their final project. This balance continued to shift until participants were no longer doing tutorials for their own sake but to help them know how to complete key tasks for their final projects.

Lisa discusses why this change in the learning process took place for her, “I started off with the books that were assigned and realized that they didn't really fit what I was working on.” Lisa had found that what she wanted to do for her final project was not covered in the books. Megan comments about her linear learning at the beginning of the semester, “I looked through the book to where I was missing information […] and you know essentially they run the gamut, they are all over the place, which is why I ultimately decided to begin at the beginning.” In the next interview, however, Megan shows a change in her learning to focus on project-related skills, “once I figured out what I was going to do for my project I focused on the things that I wanted to create and build so I tried to […] gear my learning toward those things.” Janice explains that she changed her learning process because of time constraints, “I think that in the beginning of the

class I might have had these lofty ideas about really learning every intricate detail about the program, but I think that over time I've just sort of learned what's necessary."

Even participation in the class workshops was affected by goal orientation. John quickly shifted from working on a graphics-related project featured in a workshop and moved on to something more challenging, "[I] said okay yeah I can make trees […] and it's like that's not going to teach me enough of what I want in the amount of time given so, to an extent that was a big change, its like okay just drop this, lets get to the stuff that I know I am going to need later to make things do what I want." So during the workshop, John decided to work on something more applicable to what he wanted to do instead of participating in class.

In addition to goal-orientation, two participants also cited prior learning experiences as important in helping them cope with the current learning process. John had prior experience figuring out how to use software in a business situation, which he called "alternative methods." He said that this experience helps him to be fearless in his use of trial and error to make things work the way he wants. Lisa often mentioned a similar experience to the design and development tools class at another university in which she had to direct her own learning and performance. This experience helped her to self-direct her learning in the current situation.

Another way that participants conceptualized their learning process was from being isolated to becoming part of a community of learners. At the beginning of the semester most participants expressed feelings of isolation from others as they completed learning activities. By the end of the semester, however, participants typically mentioned the importance of other people to their learning. This sense of community provided a comfortable climate in which students could learn from one another and feel more at ease with their struggles. Lisa characterized her learning process in design and development tools by saying, "I went from

being more of an isolated individual to being more involved in the community." Natasha voiced her thoughts about this same sense of community, "people willing to help you when you need it has made me feel a lot better about doing things on my own because I know that if I […] get to a place where I'm just stuck and I don't know what to do, […] it's okay to email someone or call someone." At first, Janice did not realize at first that relying upon others would become an integral part of her learning process and was not used to asking classmates for help, she said, "in a way it felt like cheating to ask people who already knew the answer." Her opinion changed over the semester as indicated by her subsequent comment, "I think that when I learn a tool in the future I will probably […] seek out somebody who already knows the tool […] that can be there for me to ask immediate questions."

Overall, the learning process depicted by participants progressed from linear to trial and error, from subject matter goal orientation, and from isolation to community (see figure 3). Student goal-orientations and prior learning experience played a part in these learning process changes.

Discussion

There are some lessons learned in this setting and these may be of use to educators and researchers. The reader must determine if findings are relevant to other situations outside the original study setting (Lincoln & Guba, 1985). Perhaps the most important implication of this study includes the values on which students based their learning decisions. Participants in this study based their learning decisions primarily on future usefulness of subject matter. This view is consistent with motivation in Garrison's (Fall97) self-directed learning model in which students are predicted to be motivated to become involved in a learning task based on valence, or whether the task will meet a personal or future need. Studies have found that college students are far more

focused on their own career and life preparation than mastery of subject matter or discipline content, yet faculty are too often focused on the latter (Myers, 2008; Voss & Gruber, 2006). The future usefulness of subject matter should be taken into consideration when institutions decide what students should learn.

When given a choice of learning resources, students in this study chose resources based on availability, familiarity and quality. In similar situations students might make learning resource choices based on similar values. However, quality from a student perspective may be very different from that of a teacher or expert. Also, when a student chooses learning resources simply because of availability or familiarity, he or she may be missing better resources simply because such resources are not readily available.

Students learning processes in a class that provides a loose structure and features a final project may go from deliberate chapter to chapter study, to a focus on the final project. Student goal-orientations and prior knowledge will likely have strong effects on learning processes in a class with loose structure. Also students may experience a shift from isolation in learning to a sense of community in the learning experience, especially if they are given an opportunity to discuss projects and work together. It may be advantageous to foster this sense of community in order to provide effective learning.

Future research in this area might examine the use of a curriculum that is focused on future usefulness of subject matter. Such a curriculum could be used to determine the effects on student motivation and learning. Other research should focus on when it is appropriate to provide substantial learning choices. It seemed that those participants in this study who had more prior knowledge of the subject matter and prior experience making learning choices were more comfortable making learning choices, but we do not know if they increased in learning because

they were able to make the choice. More research is also needed to clarify the support that learners need to be able to make an effective learning choice. Additional studies that show student perceptions of learning choices may shed some light on these important issues.

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