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New Intersections for Student Engagement in Libraries: A Qualitative Exploration of Collaborative Learning with Multimedia Technologies

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Abstract

Objective – The purpose of this study was to explore new ways librarians can provide meaningful learning experiences for students beyond the traditional classroom assignment and the one-hour library instruction session.

Methods – The study was done within a qualitative framework using participative, interpretive, and personal experience methods. The research team consisted of two librarians and a graduate student. Data collected included transcripts of audio-recorded team meetings and interviews, field notes, and a post-project survey, where students described their experiences negotiating the conceptual and technical processes of authoring a multimedia story. The instructional layer was built upon a constructivist approach allowing for a collaborative learning setting to foster learner control and self-efficacy.

Results – Findings illustrate the benefits of collaborative approaches for enhancing the learning experiences of students in the library, in this case with multimedia. The data also suggest promising new ways for librarians to facilitate learning and to engage students in the library.

Conclusion – Through a multimedia project that involves both librarian-guided exploration and collaborative learning processes, libraries can offer students formal and structured opportunities to explore their own interests or underlying curiosities beyond the classroom assignment and the one-hour library instruction session.

Introduction

A recent report released by the Association of American Colleges and Universities (AAC&U), outlined the aims and outcomes of a typical twenty-first century college education. The report, representing conclusions of educators and employers, advised greater inclusiveness of students in higher education and a redesign of college learning in response to new global challenges. In addition, it described a dearth of meaningful assessments, enjoining: “Student success in college cannot be documented—as it usually is—only in terms of enrollment, persistence, and degree attainment” (AAC&U 4). Moreover, the report defined twenty-first century learners as intentional, empowered, informed, and responsible. Those characteristics also mirror the National School Board Association (NSBA)’s descriptors of tomorrow’s successful students: “intentional architects of their own learning, setting goals, exploring, reflecting, and integrating acquired knowledge and experiences into existing worldviews” (NSBA 10).

It is an inherent promise of libraries to guide students in ways to help them become “intentional architects of their own learning.” Yet, it is the case that the traditional classroom assignment and information skills instruction session remain the prevailing agents of education and student engagement within library walls. These familiar and prescriptive approaches have little influence on students, particularly when libraries can no longer expect students to come to them in the first place. A new model of student engagement that involves personal and

meaningful discovery is needed. In meeting the challenges identified by the AAC&U and the NSBA, libraries can play a viable and necessary role—one that calls for a grassroots approach to cast stronger student relationships with the library.

Literature Review

The theoretical foundation of this study applies a constructivist approach, employing learner control in a social, collaborative setting. The instructional layer uses reflection as a sense-making strategy was employed to encourage self-discovery. The constructivist perspective is built largely upon the work of educational theorists Vygotsky (1978) and Bruner (1967) who brought to bear the understanding that the onus of learning is on the learner and occurs most often experientially, in situ, building upon the learner's own knowledge and experience. Further, Vygotsky advanced the idea that knowledge is also constructed through social exchange. The theory of social interdependence, as explained by Deutsch (1962), is exemplified when learners share common goals and each other's success, which is determined largely by the quality of interactions; negative interdependence results when a group's interactions are competitive or opposing (Jonassen 7-11, 37-42). Importantly, collaborative discussions allow for a social construction of meaning as students express themselves and consider the viewpoints of their peers.

While the teaching of information literacy skills is not the objective of this study, the research on constructivist approaches to educating library users points mainly to active learning strategies. Although these strategies offer more active roles for learners, they are often embedded in traditional pedagogy which focuses on acquiring a skill set rather than on the thinking patterns and experiences of the learner. Naylor and Karp summarize the evolution of information literacy instruction from resource-centered to user-centered, a transition that involved a great deal of outreach to infuse the curriculum with information literacy, to improve methods of assessment, and to craft online delivery of content (237-239). Yet these advances lack the social, experiential, and metacognitive attributes inherently valuable in the learning process. One such study stressed the importance of a partnership between librarians and faculty in fostering independent, autonomous student research skills, and noted that acquiring a generic set of information literacy skills is not enough to foster autonomous learning (McDowell 264).

From a broader perspective, Hensley calls for bringing curiosity and creativity back into learning; he states “. . . fostering an individual's sense of curiosity and creativity in tandem with developing his ability to find, locate, and evaluate information is the essence of information literacy” (35). Indeed, the “why” question is inescapably individual and personal. Consistent with this position is Woodard's examination of the relationship between information literacy, technology, and pedagogy. She concludes with an argument for student involvement in constructivist learning environments and encourages librarians to take on new roles to facilitate this. Woodward asserts that “the best uses of educational technology and the most appropriate environments for cultivating information literacy competencies use constructivist approaches to teaching and learning” (186). Finally, the results of Lloyd's study point to the benefits of a holistic, context-dependent approach to information literacy instruction, one that is embedded within “socio-cultural and physical experiences that are involved in coming to know an information environment” (2008). These studies indicate the need for a model which librarians can base an active, educationally influencing role that values students' individual interests, perspectives, and innate curiosities.

One important component in a constructivist approach is the idea of learner control. Self-Determination Theory (SDT) underscores the importance of feelings of autonomy built upon competency (self-efficacy) and relatedness—social-environmental factors that sustain or enhance intrinsic motivation (Ryan and Deci 68-79). In social cognitive theory, perceived self-efficacy is embedded in a theory of human agency . . . a belief in one's capability to organize and execute the courses of action required to given levels of attainments (Bandura 79-81). The essential elements of SDT—autonomy, competence, and relatedness—are crucial in a successful learning experience. For instance, the uninitiated learner must be persistent and have a sense of his or her own competence in order to construe and negotiate the multiple and often complex pathways to what they seek in the library. Bandura notes that “when faced with obstacles, setbacks and failures, those who doubt their abilities slacken their efforts, give up, or settle for mediocre solutions. Those who have a strong belief in their capabilities redouble their effort and figure out better ways to master the challenges” (49). Although learner control theory has been introduced in information literacy instruction (Wang 151-6), in general there has been little change in how students are taught these skills, as students are in general expected to learn and apply them in the context of a classroom.

Collaborative learning is defined as “a process through which a group creates knowledge for its members, for itself as a system, and for others” (Kasl, Marsick, Dechant 253-76). It has been proven that these environments enhance self-efficacy (Moriarty 73-84) and, according to Bandura, students who work together and help one another also tend to have positive self-evaluations of capability and perform better academically than those in individualistic or competitive learning environments (71-81). Accordingly, the importance of hosting and fostering collaborative learning experiences is valuable to building self-efficacy. In this context, the relatedness factor of SDT may translate into the relationship that a student has with the instructor through perceived and received support related to the course. The immediate outcomes of this relationship may be the amount of creative and exploratory effort shown by a student as well as the quality of the student's work. In fact, there is evidence that points to a positive relationship between relatedness and autonomy (Ryan and Deci 74).

In addition, Slavin reports that motivation-related attitudes of students who participated in learning together were more intrinsically motivated than were individualistically taught students, indicating that these environments enhance self-efficacy (46-9). Research evidence that shows how peer collaborations and social interactions can facilitate learning process and improve learning outcomes has been accumulating (Wentzel and Watkins 366-71). Even online learning environments can be designed to be “positive, caring, non-threatening,” fostering the sharing of personal experiences, expressions of personal growth, and a sense of community (Barab, Thomas and Merrill 132-5).

Strategies that encourage metacognitive activities, such as reflective thinking, have a key role in fostering learner control. Kolb's “learning by discovery” model highlights the importance of experience, perception, cognition, and behavior in learning as a holistic process (Kolb 25-38). In this study, those key elements were supported in collaborative activities that encouraged students to make sense of their experiences by thinking reflectively as they developed their multimedia projects. For instance, the process of story development provided them with opportunities to explore and reflect on crucial points in their experiences. Critical and imaginative thinking were required in order to translate ideas and evidences of their experiences into combinations of a variety of multimedia including texts, visuals, and sound. Students were also asked to monitor their own progress, allocate their time, prioritize multimedia building and

editing tasks, and to seek help when they needed it; all of which are crucial to success in high learner-control environments (Schmidt and Ford). In short, thoughtfully designed collaborative learning experiences can facilitate relatedness, build competence, and encourage self-directed exploration; the essential attributes for life-long learning.

Methodology

The purpose of this study was to explore ways librarians can provide meaningful learning experiences for students beyond the traditional classroom assignment and the one-hour library instruction session.

The study was done within a qualitative framework using participative, interpretive, and personal experience methods. These methods are rooted in the works of John Dewey who viewed education, experience, and life as inseparable and, as explained by Clandinin and Connelly, “Personal experience methods are inevitably relationship methods” offer “an opportunity to create a middle ground where there is a conversation among people with different life experiences.” Further, these methods are understood “. . . as ways to enter into and participate with the social world in ways that allow the possibility of transformations and growth” as well as spontaneity, flexibility, and openness among investigators and participants (150-78). Personal experience methods “. . . require researchers to set aside preconceptions and to become immersed in individuals’ life world in order to understand how they subjectively constitute and interpret reality” (Powell 91-119). Data collection points included: team meetings, student interviews, and a post-project survey.

Five meetings, referred to as “team meetings,” supported the collaborative learning approach. A team of two librarians and a graduate assistant acted as both investigators and instructors throughout the project. While one librarian keyed observations and conversations on a laptop, we each kept a separate field log. Additionally, we all participated in actively guiding discussion and encouraging clear and open communication during the meetings.

The instructional layer of the study consisted of story development with storyboarding activities; team meetings designed for explorative conversations about story ideas, and translating those into texts, photos, illustrations, video, and audio; and finally, sessions geared toward rendering a composite with common multimedia tools such as Dreamweaver, Flash, and Adobe Premier. The students had a ten-week period during the spring quarter to acquire basic multimedia and digital story development skills and to complete their projects.

Study Participants

Building upon an existing program of student learning in the library, we recruited volunteers from The Ohio State University Libraries’ Peer Library Tutor (PLT) program. PLTs are paid student employees of what is a highly decentralized, complex research library system. They are trained to assist their peers in using library resources and they help staff a central reference desk. In addition, PLTs are given assignments each quarter that are designed for active learning; for example, interviewing a subject librarian, exploring and reporting on a special collection, or investigating the operations of a library service. It is important to note that the participants in this study attended librarian-led information literacy sessions covering principles of intellectual property and copyright.

Recruitment involved an initial informational meeting that was held at the end of the winter quarter. The winter break allowed students time to consider participation in the study in view of course loads and other commitments. At this meeting, students were introduced to the study's purpose and procedures, and to the rubrics of the multimedia project. We emphatically stressed the voluntary nature of the study and the multimedia project, and their right to opt-out of both at any time. Handouts detailing the study's purpose and procedures, a list of students' rights to anonymity and confidentiality safeguards were made available on the university's course management system.

Eight students accepted the invitation. The participant group was comprised of four sophomores, two juniors, and two graduating seniors. Gender was split: four female and four male students.

Procedures

To promote collaborative learning, team meetings were held every other week. While meetings were scheduled for 90 minutes, students often lingered to chat or to continue work on their projects. A librarian's office served as the meeting space since it had two multimedia-enhanced workstations and comfortably accommodated the group.

The first 20 minutes of every team meeting were given to students to openly express concerns and frustrations and to ask questions. Thirty minutes allowed coverage of one or more of the building blocks of multimedia development, these were: 1) conceptualizing ideas through concept maps and storyboards; 2) refining and articulating a message and determining audience; 3) identifying and acquiring artifacts (photos, music, sounds, and other objects); 4) converting non-digital artifacts; 5) editing or creating media; and, 6) adding interactivity and navigation. The remaining time was used for a "show-and-tell" when students shared their ideas, storyboards, artifacts, and project developments. The findings suggest this collaborative time was crucial to the overall quality of students' experiences as it affected their learning about themselves while motivating them to stick with their projects.

To foster learner control, each student would decide the message, purpose, content, and format of his or her own project. Their work would not be graded nor evaluated. A showcase event was planned at the end of the quarter to leverage student motivation and to allow them to receive recognition for their work by the university community. Instructional materials consisted of a storyboarding activity sheet, descriptions of available software and digital recording devices, a matrix of questions to foster reflective thinking, links to sample digital stories and portfolios, and a project development timeline used to keep projects moving forward to the final showcase event. All materials were made available on the university's course management system.

Data Collection

As investigators we were most interested in students' experiences during the ten-week process of developing their multimedia project—a process that necessarily implies transitions, positive or negative, that have bearing on attitudes, perceptions, and understanding of oneself or others. We made note of such changes as important indicators that a transition in a student's thinking had occurred.

As previously mentioned, there were three data collection points: team meetings, student interviews, and a post-project survey, all of which involved students recounting their experiences

as they negotiated the conceptual and technical development of their multimedia story. We aimed to record the discussion and interactions as close to the experience as possible. Accordingly, an audio-recording was made of each meeting in addition to the investigators' hand-written and computer-keyed logs. While the logs contained our separate accounts, we used the margins to indicate the speaker's voice (feeling and tone), expressions, body language, and other signifying words, behaviors, or interactions. Our own observations, perceptions, and questions were recorded and notationally bracketed for later analysis. To ensure student anonymity, paper slips were inscribed with a number, 1-8, and placed in a bowl; each number as drawn was assigned to a student from an alphabetical list. These numbers were referenced in place of names on all recorded and transcribed documents.

Investigators met before and after each team meeting. These small group discussions were recorded to maintain uniformity in procedures and to capture our discussions of events as they unfolded. Further, our discussions helped to ground us in our objectives and most importantly, to position ourselves in neutrality and openness. Post-meetings allowed us to debrief while students' conversations and interactions were fresh in our minds and to check our impressions against the recorded data and notes collected. It was particularly helpful to resolve inconsistencies in this way while the relevant data was immediately at hand.

Student Interviews and Post-project Survey

Within a few days after the showcase, each student was interviewed separately. The interviews were audio-recorded with permission. Each was asked eight open-ended questions that invited thoughts on their experiences with the project from its beginning to the showcase event. Students were also given a printed survey to take with them to complete and return by campus mail. The survey consisted of five open-ended questions which gave them an opportunity to leave anonymous feedback and to express any thoughts they may not have been comfortable expressing during the interview (Appendix).

Data Analysis

An inductive analysis procedure as described by Miles and Huberman (1994) was applied to the four data sets. Separately, each investigator performed a chronological, iterative reading of all data in order to gain an initial impression which was then followed by a closer reading of each student's data in order to note significant attributes such as statements, patterns of thought or expression. We then read through the data sets again to note frequencies of those distinct attributes. Each reading allowed us to identify salient themes, forming clusters which ranged from level of student interest, engagement, and collaboration to reflective thinking and positive self-talk. Margins were used for noting the speaker by number and associated pages in each set. Each investigator wrote a summary account of each student's data, noting the theme clusters, and then met to synthesize the accounts. The aim of the synthesis process was to disambiguate the theme clusters for consistency in definition and attributes; this brought about a clarified set of the most prominent themes. We then assigned a color for each that aided in locating them within the data sets. The color coding was borrowed from a manual code-and-retrieve method described by Richards and Richards (214-215). Data patterned into outcomes or themes of ownership (learner control), reflectivity, collaboration, and transformative thinking.

Findings

Data indicated that student behavior was aligned with the theoretical attributes of learner control and collaborative learning. All but one student demonstrated growth in accepting control and ownership but they all demonstrated growth in confidence in their ideas and the ability to express them through multimedia. The collaborative learning approach facilitated engagement in the project and each student gained a measurable degree of skill in using digital media devices and multimedia software. In addition, the value of “library as place” was evidenced in three students’ projects in which they positively characterized their library experience and its personal and educational value.

We learned that the multimedia project itself was an inherent motivator. Two graduating seniors chose to do digital portfolios or resumés as a way to market themselves to potential employers. One student used the opportunity to develop a multimedia website to promote his barber shop quartet and another created a short film to chronicle his life as a student. In short, the benefits of acquiring multimedia skills were obvious as the students had no trouble coming up with a purpose for their projects. In addition, we discovered that the showcase event was a significant motivator as it kept students on task while providing them the opportunity to present their work to the campus community.

Learner Control, Collaboration, and Patterns of Self-Efficacy

Feelings of autonomy arising from a sense of control, one of the three previously referenced social-environmental factors (autonomy, competence, relatedness) that contribute to intrinsic motivation was indeed available through the freedom students had in choosing their project’s purpose, audience and content. Initially, this proved a delicate balance for some students who struggled with that freedom and pressed us for guidance. For instance, one student explained: “I was first kind of really baffled by the project; I didn’t really know what I was going to do. At first I really focused a ton of effort on the actual website rather than on the content . . . I really didn’t know where I was going with it.” And while all the students successfully completed their projects, despite our best efforts to be supportive, one student was ambivalent from beginning to end. He expresses it this way: “. . . one of the barriers was just motivation—it wasn’t like I was making something that I wanted to do, totally, it’s kind of like they are giving us this idea of what they wanted us to do, and then we kind of have to develop it ourselves . . .”

Indeed, autonomy was an important component as five of the eight students demonstrated strong and sustained investment in their projects. These same students were also more engaged in group interactions and received more support from others; as this student explains: “It really helped just to pick up a camera and start looking around . . . I found inspirations from a lot of different places.” Remarkably, this student claimed she had never used a camera before. Another student took responsibility for her ideas from the start and led other students in the same manner despite moments of doubt and pressure to finish her project in time for the showcase. She stated: “. . . I’m a perfectionist, and you know, [I had to] throw things out, and then I had to do things in quicker ways; but then afterwards, when we were showcasing everything and I had people coming up and asking me questions about that, I was really proud of it.”

Furthermore, student feedback and behavior indicated they felt a commitment to the project. This was demonstrated by their regular attendance at team meetings, sustained engagement in their projects, and trust demonstrated their in openness to giving and receiving

feedback and responding to questions that prompted self-reflection. For instance, one student explains how his thinking changed over the course: “. . . at first I was approaching it like something I had to do, but then the more we did, the further I got into it . . . I started realizing the whole value of it—it was going to be something really cool.” Another student stated: “. . . it was just an assignment to begin with, but it evolved into something that I could take for myself and use for personal experience, and I could also share it with others.”

Self-efficacy and Multimedia Technology

Two of the eight students in the study indicated that they had some prior experience in working with multimedia while most showed initial reticence; one expressed anxiety about using technology altogether. Despite these potentially inhibiting factors, by the end of the project all of the students expressed satisfaction and even delight in the technological skills they had acquired; as one student expressed it: “I just think that I gained more confidence as the process developed. I feel I succeeded by being able to work with new technologies and I feel that I got a great deal of satisfaction out of this.” Another stated: “I feel a lot more comfortable going up to a computer. I definitely didn’t feel like I could do any sort of basic web page or movie stuff; like that was a whole other world, and it used to be this huge, scary world like all the web pages and Internet and computers, uhhh! But now it’s not scary any more, because I have done it.” And another expressed it this way: “I think the technology was the coolest part of it—just learning everything—that was my favorite part;” While learning the technology was evidently rewarding, it was also challenging for some: “It was challenging, but it was fun to learn. But, it was definitely challenging;” and another, “I was not technologically savvy . . . most of the programs I enjoyed, and just got used to them.”

Collaborative and Experiential Learning

The project was initially received with mild, probably less-than-sincere enthusiasm. However, the more students discussed their ideas, we noticed a rise in general motivation and enthusiasm. The team meetings were critical in reinforcing the collaborative aspects of the project as students shared and received feedback from one another and even began to give each other support through encouragement or help with visualizing or editing. One student expressed it this way: “. . . talking it through with people was one of the things that helped—having that teamwork with everybody was one of the things that helped me the most to be successful in the project.” Another said: “Those [team meetings] helped a lot—just kind of seeing what everybody was doing helped me focus mine a lot—just bouncing ideas off of each other.” When asked in the interview what was most helpful, one student stated: “It helped to bounce ideas off of each other, to talk about it, to do the little things like, to share what we’re doing and to express the doubts that we have—questioning whether we would make something interesting.”

The students’ narratives as well as their observed performance suggested that a collaborative learning environment contributed to their self-efficacy and even encouraged achievement. For example, the student who had earlier expressed ambivalence, later said: “. . . we were all supportive of each other, so that helped you complete it. One wanted it to be good because you know everybody else is doing a good job, putting a lot into it, so you want to make sure you did too.”

Indeed, the more salient findings point to enhanced learning experiences and self-efficacy due to the collaborative learning environment. In this context, the relatedness factor of SDT may be represented by the relationships among the students and between the students and the investigators, and the perceived and actually received support (from us and their peer group). The immediate outcomes associated with this factor may be the amount of time invested or effort made by a student, as well as the quality of the student's work. Indeed, six of the eight students emphasized the importance of the group interaction and support to their learning. As this student expresses it: "All the meetings definitely helped—talking it through with people—having that teamwork was one of the things that helped me be successful in the project." Another said, "If there was an aspect that I didn't understand or something that needed clarified, hearing others' input definitely helped a lot." Another added: "At meetings we could just bounce ideas off each other—just us talking and somebody else showing what they were planning, then somebody else going up to the board—just everybody talking about what they're doing—that helped a ton." Another expressed it this way: "We joked around and if one of us knew or didn't know how to do something we could ask each other." Finally, as one student poignantly summarized it: "Just seeing everybody else's portfolio was—we were all excited and we'd ask 'so what's yours?'"

We also witnessed reciprocal benefits as students began to seek each other out, many meeting in small groups of two or three: "I'm not a visual person so I couldn't draw, and I couldn't really show what I was trying to say. She's [Student A] more of an artistic person; she was able to draw what I was able to say." Student A said in reply to Student B: "I had a lot of feedback from her [Student A]. She would look over my page and proofread it." Another example: "She'd [Student C] help me if I couldn't figure out the color or she really helped me figure out when I first had an idea, like I told her what I was thinking and she helped me 'Okay. This is what you're saying, let's get it down on paper.'"

The Role of Reflection

Of the eight students, four indicated they had experienced some level of change in their thinking about some aspect of the project or themselves: "It was more about the learning experience than the final product. You know, I don't think that we all would have learned as much had you just said, 'Okay, this is what we want at the end.' I don't think all of us would have gotten this much out of it. What I came up with I was really proud of and the further I got into it, I started realizing the whole value of it." Another student who did a short video documentary of his senior year stated, "I've gained a great sense of accomplishment from this project, and I'm grateful for the positive changes it's brought to my life."

Student narratives also evidenced positive self-talk (personal explanation of events). In fact, there was a commonality among those students who evidenced self-talk, and the overall quality of their projects. For example, one student, a senior, was facing personal setbacks during the project. He explained in his interview: "For awhile my confidence was not quite there in terms of my abilities to do it, but it forced me to look at and reflect upon my life and you know, my current situation, but also to think more about what themes in my life made this process important." In essence, this student used the project as a focus point and creative outlet. Similarly, for many others it was the process of developing their story that brought about changes in their thinking.

Here are a few more examples that show how self-talk helped students change negative attitudes: “There were times when I thought, ‘I just don’t want to do this stuff but it’s going to get better, it’s going to be marketable—such a good thing for you when you’re done.’ So that was one thing that kind of kept me through.” Another example: “I was like, you know, there was just too much stuff going on, I needed to focus on school, ‘but these skills are going to help me in the end—just keep going—it’s going to turn out how you want it to—you are going to like your end product and you are going to be happy with it, just keep going through.’” Struggling with self-doubt, another student revealed his personal mantra: “You CAN do it; you’ve done it before, so why can’t you do it again?”

The interviews after the showcase evidenced how some students’ thinking had changed during the project. For example, early on this student described her thoughts about the project this way: “This is kind of a random assignment—I felt it kind of defeated the purpose of our job—I didn’t really see how it tied in with the library . . .” In her interview after the showcase, however, she states: “I gained confidence in myself; I knew there was something to figure out. To pinpoint what it was, was nice.”

The process of gathering evidence of one’s life invoked reflection for this student: “Before, I didn’t think much about where everything was taking me, and then during, as you were gathering information on your life, you kind of realize what you’re doing and where you’re going.” One student used self-talk to change her mind about getting technical help from her peers: “It made it so much better when I actually use what was available to me instead of just sitting back and ‘Oh, I don’t know what to do. Well, these people can help you, go ask for it.’”

Discussion

The purpose of this study was to explore new ways librarians can provide meaningful learning experiences for students beyond the traditional classroom assignment and the one-hour library instruction session. More notable were outcomes that suggest new ways librarians might engage students in the library with multimedia assignments and in hosting and facilitating collaborative learning projects.

A dedicated space in the library was important as it gave students a place to meet, openly interact with each other and librarians, and also to work on their multimedia projects. It was also a place where they could collaborate without disturbing students who were studying. Although not all of the quotes suggest direct ties between their learning and the library environment, the fact that each student benefited from individual and collaborative team work suggests a promising view of the library as a space that nurtures collaborative learning. It is noteworthy that participants in this study were not divided into small groups by the librarians; instead, they formed their own groups and found learning partners among themselves. When a space affords such group activity, students can adapt their behavior to social collaborative learning more easily. Also important was the dynamic relationship of the librarians as facilitators rather than instructors to the students. It was the guidance from the librarians as well as a tailored level of learner control that allowed the students to have such positive experiences in the project. Lastly, the opportunity to learn multimedia technologies and apply them in personally meaningful ways reveals new opportunities and formats for student learning in the library.

There are important limitations in this study that should be acknowledged. Foremost, we believe the fact that the students knew each other prior to the project had an effect on the

outcome. Another potentially limiting factor was the students' prior knowledge and experience in the library and the fact that they were already identified as motivated learners through the PLT program. Had students been randomly recruited from a diverse, more representative group of undergraduates the outcomes would likely have been more mixed.

Implications

Overall, the study evidences a student learning experience that was both positive and meaningful. Apart from tools for developing multimedia projects, the library's resources, space, and infrastructure proved to inspire students' creativity. Librarian-led instruction covering principles of intellectual property, copyright, and the use of information resources, including digital images, were all made available. In fact, three of the eight students chose their library experience as the focus of their multimedia project. These same projects were later used as communication and promotional tools for the library. One of the students conveyed the following: "I wanted to focus on the library and I wanted to make it come off as very alive and moving because people tend to think that it's boring in the library, and I just wanted to show everyone that it isn't."

Further, working with multimedia technologies requires a rubric of literacies (critical perception, listening, thinking, and writing) and exciting new formats for students to demonstrate learning and articulate their experiences and knowledge of the library. A space within libraries for multimedia development promises a means to integrate new ways of learning with library's knowledge resources and information technologies. As a teaching and learning resource, multimedia formats provide intersections for libraries to engage with both students and faculty, inside and outside the classroom, promoting a more flexible and a more tangibly relevant library. This is an intersection of student learning in libraries that merits further exploration.

The findings also suggest that the concept of collaborative learning within the library holds meaningful potential, one where guidance from librarians can ensure that learning experiences involve principles of information literacy, copyright and intellectual property, and importantly, the mixing of reliable traditional and nontraditional knowledge resources with computer and multimedia technologies. Investigators set out to better understand this premise by creating an assignment that would enable to students to use library resources to create a story or message about their own learning. The overall positive findings indicate the power of authentic learning experiences, where students are guided by their own curiosities yet supported in the process of intellectual and personal discovery—the very promise of libraries.

Recommendations for further study include more exploration into multimedia learning as a library service. Other questions that were raised during the course of the study include: in what ways does the library provide a different kind of multimedia learning experience than a computer lab? In what ways can librarians use their subject knowledge to help students working on multimedia assignments? How might library instruction programs blend information and multimedia technologies for effective learning? Could we learn something about how students experience the library through their personal explanations of events?

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Appendix

Interview Face Sheet

Date: Interview No: Time: End Time:	
(guiding phrases): Think back . . . Describe . . . Characterize . . . Tell me about . . . In what ways . . . What was/is . . . How . . . What do you think . . . How do you feel . . .	Describe your story or what you wanted to convey with your portfolio. Has your story changed since the beginning of the project? How . . . Can you identify any changes in your thinking about yourself before and during the creation of your portfolio, compared to now What aspects of the D-story development process helped you . . . Can you tell me about a particular incident that was particularly helpful to you . . . What were the difficulties or barriers in your experience . . . What could have helped, assuming the help was possible? Did you discover anything about yourself that was particularly surprising . . . What about discoveries about others . . . If you had this project to do over again, what would you do differently What would you want us (co-investigators) to do differently . . . Do you Have any Questions for Me?