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Sandra M. Lawrence
Mt. Holyoke College

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TEACHING AND LEARNING IN DIGITAL CONTEXTS: UNDERGRADUATES' PERCEPTIONS OF THEMSELVES AND THEIR PROFESSORS COLLABORATING IN A "PARTICIPATORY CULTURE"

Sandra M. Lawrence, Professor of Psychology and Education, Director, Secondary and Middle School Teacher Preparation Programs, Mount Holyoke College

As digital technologies proliferate, so do programs for supporting faculty and students in their use. And since students seem to have more knowledge and experience with technology, numerous programs position students as mentors to faculty and their peers for effective applications of technology for learning purposes. At times, however, faculty and students come together in collaborations involving technology and learning outside of formal mentoring programs. Yet, our knowledge of these informal, ad-hoc collaborations involving digital matters is limited. In particular, we need to learn more about how students experience these partnerships with faculty members — collaborations that cross traditional roles and responsibilities.

This article explores undergraduates' perceptions of themselves and their professors collaborating in a partnership similar to a "participatory culture" (Jenkins, 2009) that evolved as faculty and peer mentors, in dyads, engaged in informal curriculum planning for enhancing student learning. To provide a context for this exploration, I begin with a brief discussion of the digital landscape in terms of its possibilities and limitations for participation and comment on college students' differing technological proficiencies as they participate in the digital arena. I follow with literature reviews concerning students as technology mentors for their peers, students as technology mentors for faculty, and students as pedagogical partners with faculty. I then describe a qualitative study of technology-proficient undergraduates working in a peer-mentoring program who became "ad-hoc," informal co-collaborators on curriculum matters with their faculty supervisors. In my analysis I use the notion of "participatory cultures" (Jenkins, 2009) as a template for examining students' experiences working alongside, and with, faculty in unplanned collaborations. The insights gained from this study have implications for how we might support or facilitate such collaborations in more intentional ways in teaching and learning in higher education.

Participating in and with digital media – Possibilities and limitations

The proliferation of digital media and the always-on availability of the Net provide extensive opportunities to create, contribute, and share on a variety of platforms (Rosen & Nelson, 2008; Greenhow, Robelia, & Hughes, 2009). People who gather together online to comment, create, and collaborate through digital media are considered to be communities that share a common purpose; researchers and theorists refer to these communities in different ways. Rainie and Wellman (2012), for example, claim that the coming together of Internet, social networks, and mobile devices enables groupings of people to solve problems and increase their knowledge and skills online. These groupings function as a type of new social operating system, which they refer to as "networked individualism," that "provides both opportunities and constraints, rules and procedures" (p. 7). Gee (2004) views these groupings as "affinity spaces" and underscores the ways in which they can offer extensive opportunities for enhanced informal learning. Jenkins (2009) uses the phrase "participatory cultures" to describe the digital spaces that are open to

engagement and sharing. He theorizes that these collective groupings are open because anyone with a connection can participate and outlines 5 common elements that characterize participatory cultures: 1) relatively low barriers to artistic expression and civic engagement, 2) strong support for creating and sharing one's creations with others, 3) informal mentorship whereby what is known by the most experienced is passed along to novices, 4) members believe that their contributions matter, 5) members feel some degree of social connection with one another (p. 5).

While Jenkins (2009), Gee (2004), and Rainie and Wellman (2010), among others, view the Net as open, participatory, and full of possibility, there are limitations. The digital divide, although declining, is still present; a percentage of the public is still without high-speed internet access, and digital inequalities in terms of ethnicity and class are still prevalent (Junco, Merson & Salter, 2010; Hargittai, 2008). Jenkins himself acknowledges the presence of a "participation gap" and maintains that while cities, schools, and other public-service organizations have helped to lessen the old digital divide in terms of access, who participates and how continues to follow the demographic factors that influenced access in the past. He challenges educators to teach the digital literacy skills that will enable all students to participate in online communities in productive ways. Rheingold (2012) supports the view that students need to learn the skills necessary for what he terms "participation literacy." He maintains that participation is power and outlines steps that educators, parents, and students themselves can take to become a "mindful participant" (p. 145) in a participatory culture.

Participatory Cultures Big and Small

Although Jenkins and others conceptualized a participatory culture as a web-based one, I find that a participatory culture can have a wider applicability beyond members of a culture who post, create, and comment on the web. I posit that the presence of digital possibilities can give rise to a participatory culture not solely for the purpose of producing a digital creation but for teaching and learning in new ways. And I will use the notion of a participatory culture in this study for examining students' experiences working alongside, and with, their faculty supervisors in unplanned collaborations.

Using Digital Technologies for Learning

College students today (and others in their age group) are often referred to as the "Net Generation" (Tapscott, 2009) a term that refers to those who are so comfortable with digital tools that they "view technology as just another part of their environment (p. 18). Not only do young people view digital media in various forms as integral to their lives but they believe their knowledge and use of digital media is beneficial to their academic success and preparation for the future (Dahlstrom, 2012).

Although many college students are more tech-savvy than previous cohorts of undergraduates (Johnson, Smith, Willis, Levine, & Haywood, 2011; Zickuhr, 2010), not all of them are (Greenhow, Walker, & Kim, 2009). Even those who appear to others to be technologically proficient need considerable assistance using technology for learning purposes (Kennedy, Judd, Churchward, Gray, & Krause, 2008; Kvavik, 2005; Oblinger, 2007). Recent research, in fact, suggests that students need and want to learn more about how to function in the digital world

(Dahlstrom, 2012). Within the last decade college administrations have recognized that students enter with differing digital skills (Goode, 2010) and have responded by providing technology support programs for students, some of which involve hiring undergraduate technology assistants to mentor their peers as they learn about specific digital software necessary to complete assignments.

Technology assistants not only work with their peers, they also work closely with faculty who require that course enrollees use certain digital tools; as such, technology assistants are similar to teaching assistants and peer educators in their connections with faculty and students (Calkins & Kelley, 2005; Colvin & Ashman, 2010; Roderick, 2009; Smith, 2007). One noticeable difference, however, involves the levels of technological proficiency students and faculty possess. Typically in the teaching assistant-faculty relationship, faculty have more knowledge about the pedagogy and content than the TAs they employ. Such is not the case within the technology assistant-faculty relationship. Although the proliferation of mainstream information and communication technologies (ICTs) has lessened the divide between generations in terms of technological fluency (Zickuhr, 2010), generally, faculty who use these technology assistants for their courses tend to be less technology-proficient than the assistants.

Students as Technology Mentors for Faculty

Colleges not only provide technology assistance for students, but some administrations also provide faculty with structured technology mentoring programs, usually with students in the mentoring role. In fact, students have been teaching faculty about technology through structured programs for over 20 years (Thompson, 2007). These programs typically include the formation of intergenerational dyads composed of technology-proficient students with less technologically proficient faculty. Many of these programs employ graduate students to work with college faculty (Pamuk & Thompson, 2009; Thompson, 2007); others hire undergraduates to work with practicing teachers (Sprague, Kopfman, & Dorsey, 1998). Often these programs result in non-hierarchical relationships, collaboration endeavors (some involving course design and curriculum revision), shared goals for the learning of course enrollees, and mutual benefits for faculty and mentors alike (Chuang, Thompson & Schmidt, 2003).

Students as Pedagogical Partners with Faculty

In the new millennium it is not unusual for faculty and students to collaborate on various aspects of pedagogical planning, including course design, curriculum revision, and pedagogical approaches. In fact, there are established programs that connect faculty and students for exactly that purpose (Cook-Sather, 2010, 2011; Mihans, Long, & Felten, 2008;). Elon University's Center for the Advancement of Teaching and Learning, for instance, supports Course Design Teams (CDL) composed of faculty members, undergraduate students, and center staff, who work together to develop or revise a course. Through this process, students gain insight into the planning process and confidence that they have valuable contributions to make to it, and faculty learn "the value of really listening to our students." Focusing on approaches to teaching and learning in the classroom, the Teaching and Learning Institute (TLI) at Bryn Mawr College, for which this journal serves as a forum, pairs undergraduate consultants with faculty, and the pairs engage in semester-long explorations of particular aspects of teaching and learning in the faculty

member's course. While participating in this faculty development program, student consultants gain a wealth of new experiences including "layered learning" about content, college life and themselves; they also benefit from enhanced academic engagement (Cook-Sather, 2011).

The Present Study

The Student Peer Instructional Resource in Technology program (SPIRIT) at a small private liberal arts college was instituted eight years ago as a response to college student variability in technological proficiency. The program hires undergraduates to assist peers with particular digital software and web 2.0 tools such as iMovie, Audacity, blogs, wikis, etc. necessary for completing course assignments required by faculty. Undergraduates participate in a brief training program and attend scheduled cohort meetings; thereafter, they are paired with faculty who request that students in their courses have additional assistance for completing digital projects.

The primary responsibilities of technology assistants focus on the students enrolled in the course and their learning. But as in any peer educator or mentoring program involving faculty, peer mentors interact with faculty in various degrees and forms (Colvin & Ashman, 2010; Roderick, 2009; Smith, 2007), and the SPIRIT program was no exception. Assistants interacted frequently with faculty in face-to-face meetings, via email, and through social networking.

All peer mentoring programs regardless of their shape, dimension, and content seem to provide benefits to both the mentors and the mentees (Colvin & Ashman, 2010). A year-end informal inventory of completed web-based projects such as website designs, blog posts, wiki creations, theatre productions, YouTube videos, lab reports, etc. provided visual and audio indications that course enrollees benefited by using the digital tools necessary to complete course requirements. These creations and projects also suggest that the assistants were successful in helping students use digital tools in effective ways.

Anecdotal conversations with the undergraduate assistants also hinted that the assistance they provided went beyond helping peers. Some students revealed that they taught faculty about new tools and/or collaborated on curriculum. In some cases students initiated the collaboration; in other instances they responded to faculty invitations to work together and/or requests for assistance. Unlike intentional programs that focus on faculty mentoring by students and necessitate collaboration (Pamuk & Thompson, 2009; Sprague, Kopfman, & Dorsey, 1998; Thompson, 2007), the SPIRIT program did not involve faculty mentoring by students and did not have an explicit focus on collaboration. Yet the connections that developed between assistants and faculty seemed to lead to them anyway.

This study focuses on the experiences of undergraduates working in a peer technology-mentoring program who then became ad-hoc, curricular collaborators with faculty. The intention of this study was to explore undergraduates' perceptions of those collaborations, how they experienced them, and the meanings and benefits that resulted. Guiding questions include:

- How do students experience their work in the SPIRIT program?

- How do students perceive their experiences with faculty in the program? And what feelings do they have about them?
- What benefits, if any, do the experiences give them?

Data Collection

Qualitative inquiry, which seeks to make known the lived experiences of participants and focuses on meaning-making (Charmaz, 2006), seemed well suited for gaining an insider perspective on SPIRIT assistants' experiences. In-depth, semi-structured interviews lasting 75-90 minutes were conducted with the cohort of five assistants of the SPIRIT program at the conclusion of one academic year (note: there were 6 students in the cohort but one left campus before the interviews were scheduled).

I structured the interviews using an approach that explored the background of the participant, the details of the experience, and the meaning attributed to the experience (Seidman, 1991). I utilized open-ended questions from an interview guide and posed follow-up questions to explore the ebb and flow of each participant's experience. I recorded interviews using a digital recorder and transcribed them verbatim.

The Student Assistants

All student participants were female; three were domestic white students, and two were international students of color. There were two seniors, two juniors, and one first-year student. The subject areas of the courses in which they mentored students working on digital projects included: biology, education, history, politics, and theatre. Brief biographical information about each of them is included below.

Indra

Indra is a first-year international student who has not yet declared a major but is leaning towards international relations. She views herself as "not as tech-savvy as some of my friends," but she feels compelled to stay up to date and likes to learn new digital tools. She applied to the SPIRIT program because she enjoys "helping people with problems." She knows that learning new software takes time and patience and feels that she can support students while they learn. She was assigned to a politics course in which students needed help with video projects.

Lauren

Lauren began working with technology in high school. She has always been curious about how things work and enjoys "toying around" with new tools. In her younger years she felt she was "a bored little kid, and if I found a screwdriver, like I would just go to town with it." She applied to be a technology assistant because she was already spending a lot of time helping peers with technology, "so the idea of doing that and getting paid sounded really cool." Since she already had extensive experience with iMovie, she was assigned to an education class to help students with final video projects.

Tamara

Tamara is a self-described geek. Her interest in technology began in middle school. Over the years she has taught herself HTML, worked at a help desk, and repaired hardware just for fun. Although she has taken some computer science courses, she decided she did not like the structure of the program and switched to a Spanish Studies major. Since she has had extensive experience working at a help desk and trouble-shooting problems with friends, she figured that the SPIRIT program would be a good fit. She was assigned to a course in history to help students set up and maintain blogs.

Alyssa

Alyssa is an international student majoring in theatre who “loves anything to do with sound and music.” Although she feels that “technology, sometimes, it really turns me off,” when it comes to the theatre, “sound design is like my passion.” She was assigned to an acting/directing class to help students create small performances using various sound editing programs. She enjoys mentoring younger students in the major, and the SPIRIT position gives her many opportunities to encourage students and monitor their progress.

Rhonda

Rhonda grew up with the belief that “technology is a fun thing, and it’s something you learn about and figure out.” Although she attempted several majors, as soon as she took a computer science course she was “hooked.” Rhonda feels strongly that technology is not taught correctly “because it’s these sort of recipes with bullet points and you do each one. But then you never really learn what you are doing.” The SPIRIT program was appealing to her because although she is “not particularly interested in being a teacher, I do enjoy imparting what I already know.” Since she enjoys working with software, she was assigned to a biology course in which students in the lab were expected to use software programs to understand genetic information.

Data Analysis

Because I was interested in the perspectives, meanings, and interpretations of the assistants, I analyzed interview transcripts qualitatively using a grounded theory approach (Glazer & Strauss, 1967; Strauss, 1987). Specifically, I used a set of procedures beginning with open-coding and concluding with theory generation (Strauss & Corbin, 2008). Steps involved dividing text into meaning units, determining the concept included in the meaning unit, labeling the concept with a code, and organizing codes into categories. Using a constant comparison method (Glaser & Strauss, 1967) allowed for identification of similarities and differences between codes and categories.

The next level of analysis included cross-case coding procedures (Strauss & Corbin, 2008) comparing categories from all five transcripts in order to identify common themes. In order to determine the trustworthiness of the themes being generated, I utilized triangulation processes (Webb et al. 1965, as cited in Miles & Huberman, 1984) across transcripts and in relation to time

sequences of data. The trustworthy themes served as the foundation of the theory generated from the data.

Results

From the qualitative analysis of interview data, I identified four themes that addressed the experiences of student assistants involved in collaboration with faculty: 1) owning and respecting identities, 2) reciprocal interactions, 3) trying on new roles, and 4) deepened connections, growing confident. These themes also parallel the features of a "participatory culture" which together form the basis of a hypothesis about the power of digital technology in altering teaching and learning.

Owning and Respecting Identities: "We don't learn with manuals"

All student assistants had a sound "technology identity" (Goode, 2010). Although they had varied technology skills, they all believed they had a solid ability in technology. They believed that technology was important to their lives, that they had ample opportunities to participate in technology, and they were motivated to learn more. Like others of their "Net Generation" (Tapscott, 2009) also called "millennials" (Zickuhr, 2009), these undergraduates learned new technology by playing, tinkering, and clicking around and were confident that if they did not know an answer about a digital tool or function, they could find it. Alyssa's remarks typify how students felt about how they learned:

You mess around and you're like, "Oh, what does this button do?" So, you try it and keep messing. Of course, there is a manual, but messing is so much fun! When you master it, it feels great!

Lauren also spoke about the utility of messing around with technology.

Everything I do is trial and error. There's so many instruction manuals and protocols and things, but I don't learn through any of that. I need to do it, mess it up, then I have to figure it out, become completely frustrated and then finally something clicks...I just do a lot of exploring. Like I sit at my computer and just click through things and see what I can do....it's just about plundering around until you find the right button.

Assistants commented that they valued their technological know-how. They also recognized that faculty were not as technologically proficient as themselves nor did they learn about technology in the same ways. Yet they valued the motivation faculty had in improving their technology skills. Rhonda acknowledges her professor's range of experience as well as her interest in helping him gain more.

He wasn't a professor who wasn't aware of technology or wasn't capable. He was sort of vaguely aware of some things, so I sort of sat down and explained and he got more excited about it. He wasn't really aware of the pedagogical problems with teaching software, so I talked to him a bit about that.

Indra also recognizes faculty limitations in terms of technology, but that is not a problem for her because she knew how to do it.

So, my professor knows about the applications, but he didn't use them. So, in that sense, like the software, I would know more than him like in terms of editing or like troubleshooting problems. But that's fine because I do.

Similarly, Lauren noted her professor's abilities while also hinting that her knowledge base probably lies elsewhere.

She seemed to be pretty kickin'. She used some programs. But like the less common ones, you know specific ones – she wouldn't know how to use those. Like iMovie, you know, she's probably not well versed in iMovie. How often is she really going to make movies? She's a teacher. I don't expect her to know all those things or be reasonable to ask her to teach those things. That's not her area of expertise, you know.

These and others in their cohort seem to display a somewhat protective stance towards their faculty supervisors' limited technology skills; they also seemed motivated to help them learn more. Students, as exemplified by Tamara's remarks below, felt genuinely excited about teaching, learning, and applying their talents together:

I really enjoyed like when the professor would come in and we were sort of setting up how he was going to organize his website. I sort of gave him an assignment ahead of time. And was like "can you please collect your information and stuff like that." And he actually got his books and his photo albums out. And he did an outline of how he wanted things to go. And we were very excited with how it was going to go. And what I like is like he's making a commitment, and I'm making a commitment. And we're doing it together.

Striking here is the way in which students' confidence in their capacities — their knowledge and their problem-solving abilities — positions them to be effective partners with faculty members. Faculty bring their disciplinary expertise and some technological understanding, and students bring their more extensive technological understanding and their capacity to be responsive to what they don't yet understand. They respect their own and their faculty partners' identities — key in a genuine partnership.

In order for students to have a sense of working together, certain communication features had to be in place. The next theme highlights students' perspectives of the types of interactions they had with their professors.

Reciprocal Interactions: "There's no hierarchy here"

The appreciation and caring exemplified in the remarks above were also evident in assistants' perceptions of their interactions with faculty. Assistants described those interactions as open, inviting, and flexible. They also spoke about joking around, sharing stories and feeling respected. Tamara spoke about respect in this way:

...sometimes like my professor would miss our meetings, and he would be like, "I'm so sorry." I'd say it was OK, but he was like, "No, I should not have done that. I should not have missed the meeting, and I shouldn't have emailed you at the last minute. You're busy too."

Although Tamara did not feel that missed meetings was a form of disrespect, her professor appeared to think that it was, and Tamara recognized the value he placed on respect.

Assistants also valued the relaxed atmosphere their professors created. During the interview Alyssa compared the open interactions she had with her professor with other professors who were less approachable.

I had a really hard time being with professors and like having a kind of hierarchy, and like "oh, my gosh, you're a professor." But with Will, it's just like amazing because it was just like collaboration. It's never been a thing like I'm learning from a professor, and I have to put him on a pedestal.It was very, very relaxed. Very open. Very respectful. It worked both ways; like he would ask, "Can you do this or is it possible for you to come in on Tuesday?" Not like, "I need this" or whatever. It was a very comfortable and productive relationship.

As is evident from these comments, students did not feel that faculty were just being nice to them in some sort of supervisor-subordinate way nor were faculty taking advantage of them. Rather, students perceived the interactions as genuine, mutual, and productive. The features of these connections are indicative of a type of "functional interaction" which researchers have identified as important to college student success (Cox & Orehovec, 2007). And these respectful connections gave rise to SPIRIT assistants seeing themselves in different ways.

Trying on New Roles: "That's sort of flipped"

The SPIRIT intergenerational dyads working together to enhance course goals are like other educational arrangements such as peer mentoring or peer tutoring because both constituents have the goal of improving student learning. But they are also unlike other arrangements because students with their advanced digital knowledge were not novices but experts in a particular domain. This unique feature combined with open, respectful connections with faculty enabled students to take on new roles. This theme provides some glimpses of those evolving roles and illustrates the ways in which the non-hierarchical structure of the dyads was exciting for some, but unsettling for others. For example, Rhonda spoke a lot about her new role as a consultant — a role that she liked.

I kind of felt like a consultant, and I really appreciate sort of being treated that way. He sort of trusted me to go and do what I needed to do. The consultant relationship really worked... and that's sort of flipped. I'd come in and say "this is how I'm thinking of doing things" and he'd sort of consult on that as opposed to a more formal teacher/student relationship.

Similarly, Alyssa appreciated the freedom she had to offer opinions about assignments and suggest improvements.

I would say, you know, this is what I thought about the class. Like about the assignments, like making them – not harder – but adding more elements. I also mentioned that we should find some time to use the main stage for the class. I also had some critiques like he needed to give the more technical aspects of performance more weight and giving it more time to be explained. Like add more “oomph” to it. I felt free to make those suggestions. And he would always ask, Oh, so how do you think it went?”

In contrast to Alyssa, Lauren felt unsure about providing feedback or making suggestions because she questioned why her opinion should hold any weight:

So she wanted me to help her make a worksheet — which was really freaking cool! Like you know I could tell her...I started to tell her my ideas, and she started writing them down. And I was like this is the weirdest role reversal ever! You know. Like I can't believe you're taking notes on what I'm saying; who am I? I'm not any source of, you know, authority on this.

It seems that taking on new roles while maintaining existing ones is a difficult state to maintain. Studies have revealed that other undergraduates working with professors in programs that specifically focus on faculty-student collaboration have experienced this “in-between or liminal” position (Cook-Sather & Alter, 2011, p. 46). The difficulties that accompany this “liminal” position can be addressed in programs where collaboration is intentional. But as in the case of Lauren where collaboration is an outgrowth not a programmatic focus, it is likely that her faculty supervisor was unaware of the feelings she experienced in her changing role.

How conscious and intentional students and faculty are in discerning and taking up new roles in these kinds of partnerships affects both the experiences themselves and the lessons the partners learn from them. Linked to the sense of respect and affirmation the students experienced, though, they all seemed inspired by, if sometimes still uncertain about, the opportunity to take on new roles.

Deepened Connections, Growing Confident: “I finally did something right”

Despite uncertainties concerning new roles, the undergraduate assistants appeared to gain in ways similar to those experienced by student collaborators in intentional programs focused on faculty-student partnerships in explorations of teaching and learning (Cook-Sather, 2010, 2011) as well as technology mentoring (Chuang, Thompson, & Schmidt, 2003). They gained in academic ways such as learning new content and/or perspectives on content, and they increased their digital knowledge and skills with particular software.

They also benefitted from their close contact with faculty. Students commented that they got to know faculty on a personal level not just an academic one, and this connection led to some surprising outcomes. Tamara related during the interview that because she got along so well with

her professor, she would ask him to be her new advisor (even though he was not in the same field as her major).

Like sometimes he would start talking. And he gave me some books. And I told him the kind of stuff I wanted to do, and he was interested in it. He said that he would be really interested in some research that I wanted to do. And we really love to talk and joke around, and we tell stories. So, I'm going to ask him to be my advisor.

Although on the surface it could seem that students merely exchanged their technological know-how with faculty for closer connections to them, it is important to keep in mind that teaching faculty how to use digital media was not the intention of the SPIRIT program. The connections that developed between SPIRIT assistants and faculty grew as a result of working together on curriculum and pedagogy; the collaborations developed but were not planned.

Students also described how they felt valued, respected, and more confident as a result of the connection. Lauren, although feeling a bit unsettled by her new role as co-creator of curriculum materials, spoke about her confidence in this way:

I felt so proud. I was really blown away that she cared about my voice and my opinion that much. It made me feel that I'd finally done something right. Like I actually do know this stuff.

Similarly, Indra describes a specific confidence the experience has given her:

The whole experience made me more comfortable in college...And like now, I'm on top of this audio/video editing process. And I'm doing this internship documenting the lives of street children, and I'll know how to do it now.

Like Lauren and others in her cohort, Indra felt good about her new abilities and like other undergraduates who have reported feeling more confident as a result of meaningful connections with faculty (Komaraju, Musulkin, & Bhattacharya, 2010; Martin, 2000), SPIRIT assistants hinted at future successes in and beyond the confines of the classroom. Thus, through their connections with faculty, students experienced a stronger sense of their own capacities and agency.

Conclusion: Digital Context as Catalyst

The student remarks quoted above and others like them serve as a foundation for a hypothesis about this cohort of students and their perspectives of their experience as SPIRIT assistants, namely that students' digital proficiencies enabled them to interact with faculty in non-hierarchical, supportive climates — similar to a participatory culture — which then permitted them to take on new roles in the teaching and learning process. I identified the intergenerational dyads as a participatory culture because students' experiences seem to parallel the critical elements of a participatory culture as defined by Jenkins (2009).

Jenkins described the terrain of a participatory culture as one that has low barriers to participation. Although the barriers to participation are low, they are not non-existent. Students needed to have a certain amount of digital proficiency and a desire to learn more in order to be SPIRIT assistants. Once they passed that threshold, however, students experienced their relationships with faculty as non-hierarchical, open, and reciprocal. Students also experienced the low barrier in terms of the collaborative projects they produced with faculty and then posted to the web. These relationships they had with faculty as well as the good communications they experienced are indicative of a setting that not only has a low barrier for contributing but also has a welcoming atmosphere. And the fact that suggestions and opinions were not only welcomed but also encouraged coincides well with Jenkins' view that participatory cultures must have strong support for creating and sharing.

All participatory cultures involve some type of informal mentorship whereby what is known by the most experienced is passed along to novices. The SPIRIT assistants and their faculty supervisors experienced this sharing and mentoring in a back and forth manner. In terms of digital media, the students functioned as experts passing on information to faculty as novices within the digital domain. They helped faculty get better at using new tools, they enjoyed answering technology-related questions, and they enjoyed working on problems together and providing guidance along the way. Students felt that professors as experts passed along valuable information to them as well. They shared stories about academic life, they discussed ideas about content, they shared research interests. Students appreciated the developing connections they had with faculty and spoke about the benefits they received.

Surrounding a participatory culture is the belief that contributions matter and that members care what other people think about their creations. Students involved in informal collaborations with professors mentioned that they felt like "collaborators" and "consultants" and that they felt respected and appreciated. They believed they were connected around a common purpose, which was to help students in the class complete the assignments and learn the content. And because their suggestions were used to make curricular adjustments, software changes, and design features of web material, clearly their ideas mattered.

As described earlier, the student assistants varied in age, class year, experience, and country of origin. The courses they were involved in with professors were in the arts, social sciences, and physical science. And yet all of them engaged in informal collaborations with faculty in addition to their assigned task of assisting their peers with course projects. A common feature of all the collaborations was the digital context and its ability to foster participatory cultures, and that context seemed to provide the catalyst to make those collaborations happen.

Educational Significance

Literature confirms that college undergraduates benefit in innumerable ways from beyond-the-classroom contact with faculty (Calkins & Kelley, 2005; Cotten & Wilson, 2006; Komarraju, Musulkin, & Bhattacharya, 2010). Studies suggest that when students are better connected with professors, advisors and others in the learning environment, their engagement in campus and academic life increases as does the likelihood of achieving their academic goals (Pascarella & Terenzini, 2001; Thomas, 2000). Newer programs gaining momentum in college settings that

enable undergraduates to be in collaborative partnership (Cook-Sather, 2010; Thiessen, 2010) also enhance connectivity and demonstrate benefits for students and faculty alike (Powers, 2011).

This study revealed that SPIRIT assistants also benefited from the informal linkages that arose with faculty as they collaborated in participatory cultures in ways that were similar to those voiced by students in large-scale studies of faculty-student interactions (Komarraju, Musulkin, & Bhattacharya, 2010). They felt their knowledge was valued, they felt their ideas were welcomed and respected, and they grew in confidence. Although the SPIRIT program studied here was not intended as a form of student-faculty collaboration, students were able to connect with faculty in a reciprocal, somewhat collegial manner and seemed to benefit from the new arrangement. Thus, this study has important implications for student engagement and retention under the right circumstances.

Yet this is not a model for widespread faculty-student connectivity because students needed a certain level of digital proficiency and interest in order to become SPIRIT assistants. While the participatory culture studied here is not a model that could be universal in all college settings, it does highlight another venue for informal faculty-student interactions. And it provides a glimpse of what can happen when faculty and students come together in unplanned ways to share common goals for teaching and learning in digital contexts.

Limitations of the Study

Even though findings suggest that the digital context led to the collaborative environment in which the novice-expert roles were somewhat reversed, it is important to acknowledge the limitations of the study. For one, only one cohort of students from one particular year was interviewed for the study. Even though the students varied in age, major field of study, technological skills, and personality, there may have been a factor common to the group of five and their prior experiences that the interviews did not uncover that enabled them to be more open to and/or seek collaboration.

In addition, all of the students were female and attended a small liberal arts college. Research has shown that female students are more inclined to seek relationships with faculty than their male counterparts (Ryan, Stiller, & Lynch, 1994), so gender could have been a factor. The small size of the student body and faculty could also have influenced the findings. And finally, this study focused only on students' perspectives of the collaborative experience. Obtaining faculty perspectives on the interactions and connections might have yielded different interpretations of the situations that transpired.

Still the results of this small-scale study do reveal that for this group of students and within this setting, collaborations with faculty did occur. Whether they would have occurred without the backdrop of the digital arena and the participatory cultures that it engenders remains to be seen. But given the ubiquity of the Internet, the abundance of online practices among the Net Generation (Greenhow, Robelia, & Hughes, 2009), and the always-on connectivity that is a form of daily life for young people (Rainie & Wellman, 2012; Martinez-Aleman & Wartman, 2009), the power of the digital context to influence not only student and faculty forms of interaction but

also all corners of the teaching and learning is evident. And there are likely more surprises to come.

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