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Connected learning in and after school: Exploring technology's role in the learning experiences of diverse high school students

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ABSTRACT

This article explores the efforts of one network of afterschool programs to leverage new media technologies to promote out-of-school learning among high school students from nondominant backgrounds and connect this learning to their school contexts. The study entailed in-depth interviews and focus groups with 40 youth and adults involved in the afterschool programming, as well as 12 observations of afterschool sessions and school-based classes. A thematic analysis of the transcripts and field notes revealed a notable discrepancy in youth's learning experiences in school and afterschool settings. Out-of-school learning experiences were more likely to be peer supported, interest powered, and production centered. They were also more likely to engage youth and adults around a shared purpose and to take advantage of openly networked infrastructures. Two theoretical frameworks from the field of information behavior are used to explore the distinct successes and challenges associated with promoting rich learning experiences in each setting.

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Education researchers list competencies such as collaboration, self-direction, systems thinking, and complex communication as some of the “21st-century skills” required for full and productive participation in an increasingly global, technological, and information-based society (Dede 2010; Jenkins 2009; Levy and Murnane 2004; National Research Council 2012). New media technologies play a principal role in efforts to build these skills, in both the types of skills that should be taught and the pedagogical approaches used to teach them. Education technology scholars have demonstrated how various technologies and technology-based learning environments can be used to promote higher order thinking skills (e.g., Pea and Maldonado 2006; Scardamalia and Bereiter 1993; Wiske, Franz, and Breit 2005). And, in light of the centrality of technology in today's society, technological fluency itself constitutes an important 21st-century skill (Dede 2010).

The connected learning framework developed by Ito et al. (2013) articulates a vision for using new media to develop learners' 21st-century skills and knowledge in a variety of formal and informal contexts and share these skills and knowledge across networks, groups, and communities. Connected learning leverages networked technologies to promote learning experiences that are academically oriented, peer supported, and interest powered, as well as

production centered, openly networked, and grounded in a shared purpose. New media support connected learning by increasing young people's access to knowledge, providing timely feedback and individualized learning experiences, and connecting youth to a network of individuals who have expertise in an area of shared interest.

Unfortunately, for all too many young people—particularly those from nondominant backgrounds—this vision of connected learning is far from their reality. Existing evidence suggests that most learning environments—particularly those serving low-income students—do not use technology in ways that develop students' technological literacy and other higher order thinking skills (Cuban 2001; Hutchison and Reinking 2011; Reich, Murnane, and Willett 2012). Access to state-of-the-art technologies continues to be a problem for many nondominant youth, who are defined as members of diverse cultural groups that have traditionally been excluded from institutionalized sources of privilege (Gutierrez and Rogoff 2003; Ito et al. 2013). In addition, many youth also lack access to supportive adults who can engage them in sophisticated uses of technology that promote 21st-century skills (Jenkins 2009). If this state of affairs persists, the academic achievement gap between youth from dominant and youth from nondominant backgrounds will likely increase further (Neuman and Celano 2012).

In this article, we explore the efforts of one network of afterschool programs to leverage new media technologies to promote out-of-school learning among youth from nondominant backgrounds. This study fills a need for more research that adopts an ecological perspective to understand the connections and disconnections across learning contexts, as well as those factors—technological and otherwise—that promote 21st-century competencies (Ito et al. 2013; National Research Council 2012). Our analysis consisted of in-depth interviews and focus groups with youth, teachers, and afterschool staff and volunteers, as well as participant observations of classrooms and afterschool programs. We draw on this analysis to investigate the nature of students' afterschool learning experiences; how they compare and relate to school-based experiences; and the specific role that networked technologies like blogs and digital badges play in supporting connected learning. We apply two theoretical frameworks from the field of information behavior to explore the distinct opportunities and challenges associated with promoting connected learning experiences both in and out of school.

Theoretical context

Connected learning

Grounded in sociocultural learning theory, the connected learning framework articulates a vision of learning that is active, socially constructed and supported, and tied to learners' identities and interests (Ito et al. 2013). The framework is aligned with a progressive vision of education that stresses learning experiences with real-life applicability and connections to the issues and concerns of the broader community. It is also influenced by research on informal learning, which similarly highlights learning that takes place in the context of everyday social experiences (Bevan et al. 2013; Ito et al. 2009; Sefton-Green 2003).

Following earlier scholarship on youth development and learning (e.g., Barron 2006; Bronfenbrenner 1979), Ito et al. (2013) use an ecology metaphor to underscore the situated nature of learning and development and the diverse systems, institutions, and infrastructures that affect young people's learning experiences. They also observe that for many youth, these contexts of learning remain disconnected. The connected learning framework represents a model of teaching and learning that promotes connections across youth's various contexts. The underlying assumption is that youth will enjoy richer learning experiences when they recognize and appreciate these connections.

New media are central to connected learning. In particular, networked technologies can be used to provide youth with individualized and engaging learning

experiences; access to information and social supports; and opportunities to have their work and expertise recognized by a wide variety of people, including peers, teachers, parents, and potential employers (Ito et al. 2009; Jenkins 2009). At present, Ito et al. (2013) observe that most youth do not take full advantage of all the opportunities afforded by new media technologies. Instead of using technology to “geek out” and develop expertise in areas of interest, most young people use technology to “hang out” with friends (Ito et al. 2009). Also, those with the greatest opportunity to “geek out” with technology are typically affluent youth who already enjoy rich learning experiences both inside and outside of school (Neuman and Celano 2012). Indeed, Ito et al. (2013) recognize the challenge and necessity of ensuring that meaningful learning experiences that connect across contexts are not reserved for the affluent only. They argue that technology should be used to create diverse learning pathways for nondominant youth and to connect them to opportunities they have traditionally been denied.

The contexts and properties of connected learning

Connected learning unites three central contexts for learning: academic subjects, personal interests, and peer cultures (Ito et al. 2013). Academically oriented learning experiences connect youth to specific academic and institutional domains. Youth's work is seen and recognized by adults, and this visibility opens up possibilities for further academic and career opportunities. The second context for learning involves personal interests. When youth are engaged in activities that are personally relevant and interesting, they are more likely to sustain their engagement and deepen their understanding of a domain (Barron 2006; Hidi and Renninger 2006; Hofer 2010). Peer cultures represent the third context for connected learning. Learning that is embedded in peer networks leverages the feedback and support that peers give one another as they work together to accomplish a common goal.

Ito et al. (2013) note that young people typically experience these three contexts as separate, siloed within particular contexts that do not relate to one another. The environments best able to connect academic subjects, interests, and peer cultures are characterized by three core properties: shared purpose, a focus on production, and openly networked infrastructures. When youth experience shared purpose in their learning environments, they enjoy opportunities to take on significant roles and responsibilities; collaborate and compete with others; and work alongside adults toward a common purpose. Connected learning activities are production

centered, requiring youth to engage in tasks that approximate professional practice. Lastly, connected learning relies on openly networked infrastructures to connect young people's learning across their various contexts. Networked technologies like websites, blogs, and digital badges help to make learning visible to both the learner and relevant adults, revealing previously unseen pathways to pursue further learning and career opportunities.

Insights from information behavior

We draw on two theories from the field of information behavior to illuminate particular opportunities and challenges associated with connected learning. Fisher's theory of information grounds (Fisher, Durrance, and Hinton 2004; Fisher and Naumer 2006; Pettigrew 1999; 2000) provides insight into the desirability of socially embedded, peer-supported learning environments, while Chatman's theory of life in the round (Chatman 1999; 2000) addresses the challenges of connecting learning across contexts that have traditionally remained separate.

Information grounds theory emphasizes the distinct aspects of social settings that shape the way information is exchanged between individuals (Fisher, Durrance, and Hinton 2004; Pettigrew 1999; 2000). The concept was developed through ethnographic research exploring the information exchange patterns among nurses and the elderly at community foot clinics, and has been applied to other community settings such as playgrounds and hair salons (Pettigrew, Fidel, and Bruce 2001). Through her research, Fisher noted that these diverse settings share an unstructured, open-ended quality that is marked by the spontaneous exchange of information and ideas. These forms of information exchange, in turn, support meaningful, authentic knowledge acquisition that is tied to individuals' particular needs and desires in the moment. The serendipitous nature of information exchange is a central characteristic of an information ground. Individuals may gather in a setting for one purpose, but in the process of their informal social interactions they encounter new ideas, form new relationships, and move in unanticipated directions. Information grounds theory underscores the importance to the connected learning model of allowing youth to engage in unrestricted, spontaneous interactions with other people who share a common purpose. Environments that do not allow for such social interaction are unlikely to produce information grounds that support rich information exchanges.

The connected learning model pivots on the open, free exchange of information and ideas across contexts. According to Chatman's theory of life in the round (1999; 2000), such openness is not always easy to achieve, or even desirable. Central to this theory is the concept of a small world. Inside a small world, actions and events are predictable, and people share a "common

landscape of cultural meaning" (Chatman 2000, 3). Chatman developed her theory of life in the round by studying the qualities of various small worlds, including the janitorial staff at a large university, women incarcerated in a maximum-security prison, and elderly women residing in a retirement complex (Chatman 2000; Pettigrew, Fidel, and Bruce 2001). She observed how the members of these small worlds—referred to as "legitimized others"—developed specific social norms, self-protective behaviors, and a shared worldview, all of which served to protect the boundaries of a particular small world and shape how information enters and is used in it. To protect their membership in a small world, people present specific versions of themselves to match the dominant norms and values (Goffman 1959).

Problems may arise when efforts are made to connect small worlds that share different cultural meanings (Chatman 2000). The legitimized others participating in one small world may not value the cultural meanings from other social contexts. They may view these external meanings as a threat to the integrity of the norms and worldview of their small world. As a result, they may do everything they can to protect its boundaries, including limiting or even cutting off the flow of information to and from the small world. According to Chatman, it is very rare for individuals to cross the information boundaries set up by life in the round; the information must be perceived as critical and relevant, and there must be a sense that the current status quo is not functioning properly. By highlighting the challenges of crossing social and cultural boundaries, the theory of life in the round points to distinct challenges associated with the collapsed contexts that have emerged with the rise of networked publics (Marwick and boyd 2011; Wesch 2009). In so doing, Chatman's theory complicates the openly networked dimension of the connected learning model.

This study

The preceding discussion underscores the importance of examining technology's role in learning within the socio-cultural contexts in which the learning takes place (Selwyn 2010). In the present investigation, we explore the opportunities and challenges associated with connected learning experiences among youth from nondominant backgrounds. We draw on interviews, focus groups, and participant observations with high school students, teachers, and afterschool staff involved in the Afterschool Network,¹ a network of afterschool programs that awards high school credit and digital badges for youth's participation in a variety of afterschool activities. Using the Ito et al. (2013) connected learning framework as a theoretical lens, we analyze the extent to which youth's

experiences in school and afterschool programs exhibit qualities of connected learning, including the opportunities and challenges faced in each context. We draw on theoretical lenses from information science to explore the successes and challenges associated with connected learning in afterschool and school settings. Our investigation is guided by the following research questions:

Research Question 1: What do learning experiences in the Afterschool Network's programs look like?

Research Question 2: To what extent do these learning experiences display elements of connected learning?

Research Question 3: How do participants describe the afterschool programs in relation to school?

Research Question 4: How do students exchange information with each other and with adults in afterschool and school contexts?

Research Question 5: What role does technology play in students' learning experiences in afterschool programs and in school?

Method

Research site

The research site comprises a network of afterschool programs, the Afterschool Network, which serves high school students attending public school in an urban city in the northeastern United States. In 2008, the Afterschool Network launched a new high school initiative to build on the organization's long-standing and well-respected middle school programs. In 2012, students in one high school began receiving elective credit for participating in these afterschool programs, which the Afterschool Network calls Expanded Learning Experiences (ELEs). During the same year, the Afterschool Network began awarding digital badges to students for their successful completion of ELEs. These digital badges are displayed on students' profiles on the website associated with the ELE program, called CentralSite. The Afterschool Network's ELE and digital badge programs expanded to a second school in fall 2013, and a third high school was included in spring 2014.

Sample and data collection

Given our research goals—to understand how youth, teachers, and afterschool staff perceive and experience the afterschool programs in relation to school—we chose in-depth interviews, focus groups, and participant observation as our primary methods of data collection. Interviews and focus groups gave us insight into the various stakeholders' commitments, values, and perceptions of their experiences. The participant observations gave us firsthand knowledge of students' afterschool and school experiences and the nature of stakeholders' participation in these settings.

Individual interviews with adults

We conducted interviews with 19 adults involved in the planning and/or delivery of ELE programs. Some interviews were conducted by phone and others in person. In the interviews, we asked questions about the goals and activities associated with each ELE program; the nature of students' engagement in ELEs and in school; and the use of new media technologies (see Appendix A).

Five of the adult participants were service providers working directly with high school students at various afterschool programs, some of which take place at the students' schools and some at other locations around the city. Six of the participants were teachers of record for ELE programs. As high school teachers employed by the school district, teachers of record are responsible for assigning students' grades and deciding whether students receive high school elective credits for their participation. Teachers of record observe ELE sessions during the semester; read and respond to students' blogs; and take part in the judging at the Exhibition Event at the end of the semester. The remaining eight interviewees were current or former Afterschool Network staff involved with the planning, implementation, and/or evaluation of ELEs and the badge system.

Group interviews with students

We also conducted five in-person focus-group interview sessions or student pair interviews with a total of 21 students in October and December 2013 (see Appendices B and C). During the focus-group sessions, we asked students about their experiences at the ELEs; learning with peers in and out of school; their use of technology; and their thoughts about digital badges. The students who participated in these sessions reflect the demographic characteristics of the broader student population in the public school district. Of the 6,516 high school students enrolled in the school district in 2013–2014, 72% qualified for free or reduced lunch; 63% identified as Hispanic; 19% were Black; 10% were White; and the remaining 8% identified as either Native American, Asian Pacific, or Multi-Race.²

Observations

We conducted formal observations of nine ELE sessions in October 2013 and April 2014, each lasting approximately 2 hours. The topics of the sessions included Android app programming; architecture, construction, and structural engineering; engineering of self-propelled model cars; visual art and design; arts appreciation; leadership in the school community; learning English as a second language; building and maintaining a functional bicycle; and discussing issues of empowerment with girls. The researchers participated in sessions and compiled

detailed field notes during and immediately after each observation.

In April 2014, we conducted formal observations of two math classes and one art class in one of the high schools affiliated with the ELE program. Each observation lasted approximately 1 hour. As with the ELE observations, we compiled field notes during and immediately after each session. Because we conducted fewer school observations than ELE observations, the school-related code counts are lower than the ELE-related code counts.

The Afterschool Network operates a website featuring student blogs where teachers and service providers can respond to students' posts about the work they are doing at the ELEs. Students have profiles on the site where they can earn and display badges for the completion of the ELEs. We observed some of the work on the blogs and patterns of usage for the site.

Data analysis

The interviews and focus groups were audio-recorded and transcribed, and detailed field notes were produced for each participant observation session. These transcripts and field notes constitute the data set used in the present analysis. Using thematic analysis (Boyatzis 1998), we developed a coding scheme aligned with the research questions and theoretical frameworks guiding the study. The coding scheme comprised 11 codes, six of which reflect the spheres of learning and core properties associated with the Ito et al. (2013) connected learning model: academically oriented, interest powered, peer supported, production centered, openly networked, and shared purpose. The remaining codes capture the specific context of the observation or participant comment (i.e.,

school or afterschool); comparisons between school and afterschool experiences; students' processes of exchanging information with other students and with adults in school and afterschool contexts; the use of technology in school and afterschool settings; and comments and observations relating to constraints on youth's access to resources and learning experiences due to economic, cultural, or geographical barriers. These codes are described in further detail in Table 1.

To ensure the codes were applied consistently and accurately to the entire data set, we employed a joint, iterative process of collaborative discussion and independent corroboration (Smagorinsky 2008). In the first stage of analysis, each author independently applied the codes to a transcript selected at random. We calculated kappa statistics and percentage agreement for each code, documented areas of agreement and disagreement, and then engaged in a series of in-depth discussions aimed at clarifying the definition and appropriate application of each code. Following guidelines suggested by Landis and Koch (1977), we repeated this process until acceptable levels of kappa (above 0.60) were obtained. This process required three rounds of reliability testing. We then divided and coded the transcripts and field notes independently, meeting regularly to discuss our coding progress. Reliability statistics for each code are reported in.

Findings

The findings from the current investigation show that, compared to school, the Afterschool Network's ELE programs are more likely to be peer supported, interest powered, and production centered. They are also more likely to engage youth and adults around a shared purpose and to take advantage of openly networked infrastructures.

Table 1. Code descriptions.

Code	Description
1. School vs. afterschool	Participant makes comparison between school and afterschool settings
2. Context	Observation or comment tied to a school or afterschool setting
3. Use of technology	Observation or comment about the use (or nonuse) of technology in a school or afterschool context
4. Information exchange	Students' processes of exchanging information with other students and adults in a school or afterschool context
5. Academically oriented	Youth provided opportunities and recognized for academic achievement, civic and political engagement; youth experience career opportunities, develop career-relevant skills
6. Interest powered	Youth experience personal affinity, passion, engagement in activity; activity enables the discovery of new interests and skills; self-initiated learning; interests pursued across settings
7. Peer-supported	Peers engage in activity together and give each other feedback
8. Production centered	"Hands on" learning; activity approximates authentic, professional practice; activity promotes critical consumption of media tools and messages; collaborative production
9. Openly networked	Youth experience connection between different learning contexts and institutions; connections/access to resources/tools enabled by open, networked platforms; youth's work is openly visible/accessible to others in different contexts
10. Shared purpose	Adults and peers share interests and common purpose; activity gives youth meaningful opportunities to contribute, take on significant roles/responsibilities; authority distributed across youth and adult spaces; activity affords opportunities for collaboration and competitions
11. Socioeconomic challenges	Constraints on youth's access to resources or learning experiences due to economic, cultural, or geographical barriers

Table 2. Reliability statistics, by code.

Code	Kappa, round 1	Percent agreement round 1	Kappa, round 2	Percent agreement round 2	Kappa, round 3	Percent agreement round 3
1. School vs. afterschool	0.79	97.9%				
2. Context	0.84	94.7%				
3. Use of technology	0.49	75.1%	0.74	89.2%		
4. Information exchange	0.75	95.9%				
5. Academically oriented	0.66	83.0%				
6. Interest powered	0.79	94.4%				
7. Peer supported*	0.39	88.8%	1.00	100%	0.67	90.9%
8. Production centered	0.58	89.1%	0.74	92.5%		
9. Openly networked	0.63	82.6%	0.67	97.2%		
10. Shared purpose	0.49	82.9%	0.69	87.2%		
11. Socioeconomic challenges	0.66	95.5%				

*We conducted a third round of reliability coding for code 7 because there were no instances coded as peer supported in round 2.

Our analysis of the information exchanges in afterschool and school settings revealed that the former are considerably less constrained than the latter. The greater fluidity of interactions in the afterschool setting creates the necessary conditions for the elements of connected learning to work in conjunction rather than at cross purposes. By contrast, the more tightly controlled interactions experienced in classroom settings creates tensions between elements of the connected learning model, for instance, between the academically oriented and peer-supported spheres of learning. Our analysis also revealed challenges with respect to implementing connected learning in afterschool settings, including times when the openly networked aspect of the connected learning framework may conflict with participants' values and goals.

Connected learning in and out of school

Academically oriented

Across all interview transcripts and participant observation field notes, 348 excerpts were coded as evidence that students are being exposed to academic topics by participating in the Afterschool Network's programs. In contrast, only 58 excerpts were coded as evidence of an absence of or challenge with respect to academic orientation. Teachers of record and community partners saw clear connections between topics covered in the ELEs and academic standards such as those in the Common Core. In their application to run an ELE, community partners must show how their program aligns with specific Common Core and state standards. This standards alignment is a necessary condition for the school district to allow students to earn high school credit after school and serves as a means of legitimizing the ELEs for external audiences.

At the same time, our analysis uncovered specific challenges with the academic orientation of ELEs. Of the 58 excerpts that were coded as an absence of or challenge

associated with academic orientation, 21 (36%) related to the rigor of the work that students produce in the ELEs. One girl we interviewed said she recommends ELEs to her friends because it is an easy way to get credit: "In school, teachers, they give us a lot of work. In ELE, they don't, and the work is easier than the teachers give in school." Students' blog posts accounted for 5 of the 21 excerpts addressing challenges associated with ELE quality. One community partner observed: "The students' blogging that I was looking at was very much on the order of 'I'm having a really good time, and it's wonderful.'" Our scan of students' blog posts confirmed that many of them are short and lacking in detail and evidence of deep reflection.

Interest-powered

In our data, 161 excerpts were coded as interest powered, compared to only 23 excerpts coded as an absence of or challenge associated with students' interest in ELE activities. Notably, approximately one-third of these excerpts (55/161) represent comments made directly by students. This pattern was reversed in relation to school-focused excerpts: Only 16 excerpts were coded as evidence of school being interest powered, compared to 60 excerpts coded as an absence of or challenge associated with students' interest in school. A key factor in the discrepancy between ELE and school relates to student choice. One teacher of record observed: "The students are there ... not because they have to be but because they choose to be." Similarly, a student commented: "It's more exciting [than school] ... And it's something that interests me. It's not like something I chose not to do."

Students' interest in the ELEs is often tied to their long-term career goals. For instance, a student taking the Bicycle Design program said that he signed up for this ELE because he is interested in science and wants to pursue a science-related career. Another student taking Car Design stated: "[In] Car Design you kind of learn how to

build different cars and structures and just kind of Physics stuff. I thought I might want to go into that.”

Of the 161 excerpts coded as interest-powered, 37 related directly to students’ sense of identity and agency. For example, one girl who was learning English as a second language explained that she chose to enroll in debate in order to build her confidence speaking in public. She said: “I can learn like more how to speak in front of the people instead of being shy.” The challenges that students are given in ELE programs appear to promote this confidence building. One boy described his experiences in Live Music Mixing:

We had a 10 minute freestyle which was you played your own songs and you mix it. Scratch by yourself. Sound effects, like you’re doing it. I’m just like hearing DJs playing it. I never thought about me actually doing it. Like it came from me doing it, I was like oh, snap. It’s pretty cool. I was just happy listening to my mixes.

Evident in this quote is a sense of personal connection and empowerment associated with learning to scratch music the way professional DJs do. Like many of the students we observed, this student is developing his sense of agency in the context of being challenged in an area of personal interest to him.

Peer supported

Peers are a primary entry point for students’ participation in ELE programs, and peer interaction is central in ELE sessions. One boy explained why he decided to sign up for App Creator: “Like my friend, he’s in App Creator ... He was making like a game on his phone, and it sounded exciting.” In an arts-based ELE, one girl encouraged her friend to sign up with her. That friend then encouraged her boyfriend to enroll, as well. In our observation of this ELE, we observed the first girl assume a leadership role, offering her friends support and encouragement and modeling active engagement in the activities. The community partner for this ELE told us that she believes this network of peer support contributed to the program’s success.

Students experience ELEs as considerably more peer supported than school. Seventy-seven excerpts were coded as positive evidence of peer support in ELEs, compared to just 15 excerpts coded as an absence of or challenge associated with peer support. In contrast, only 8 excerpts were classified as positive peer support in school, compared to 43 excerpts classified as an absence of or challenge related to peer support. When commenting on the difference between ELEs and school, one student observed: “[Students] really help each other [in the ELEs]. Like we’ll be in groups or I’ll be missing something and they’ll like get it for me or something when I

don’t even know them.” He said that he does not experience the same level of peer support at school.

Shared purpose

Shared purpose is marked by experiences of collaboration and competition; meaningful opportunities to take on significant roles and responsibilities; and shared interests among adults and students. Across all interview transcripts and participant observation field notes, 141 excerpts were coded as evidence of shared purpose in ELEs, compared to only 10 excerpts coded as an absence of or challenge associated with shared purpose. In contrast, 13 excerpts were coded as evidence of shared purpose in school, compared to 65 instances of an absence of or challenge associated with shared purpose.

In our data, evidence of shared purpose included instances of both collaboration and competition that supported academic goals. For instance, we observed a session of Introduction to Architecture in which approximately 50 students worked in small groups alongside 16 adult mentors who were professional architects, engineers, builders, or college students training to work in these professions. During the session, each group was given the task to measure the room using a person’s body length instead of standard units. Group members worked together to trace a person onto a large sheet of paper and use these tracings to measure the length, width, and ceiling height of the room, then calculate the room’s dimensions in standard units. Though we observed a few adults struggle at times to cede authority to students, in most groups we observed authority being distributed across adults and students. An element of competition was introduced by having the groups compete against each other to arrive at the closest approximation of the actual dimensions of the room.

Within these collaborative settings, ELEs afford opportunities for students to take on significant roles and responsibilities. For instance, during our observation of the Students as Leaders program, students were working together to analyze a school-wide survey they had conducted earlier in the year on students’ attitudes about their school and teachers. They were preparing to share the results with the principal of the school in the hope that their data would lead to positive change in the school. The opportunity to take on significant roles sets ELEs apart from schools. When comparing her experience in Students as Leaders program with school, one student reflected:

Well, in Students as Leaders, we actually hear everyone’s opinion, but when you’re in school, usually, they hear like one or two people’s opinion. They don’t really hear everyone, so that’s kind of different because in school,

they don't really hear your opinions, but in Students as Leaders they do. And that's actually pretty good.

This student feels that she has greater opportunity to voice her opinions and be heard at her ELE than at school. Our interview participants identified a number of constraints facing teachers that hinder their ability to encourage their students to take on significant roles of responsibility, including time, class size, classroom management challenges, and pressure to prepare students to pass high-stakes tests.

Production centered

Our analysis revealed a sharp contrast between ELEs and school with respect to production-centered activities. Across our interview transcripts and field notes, 126 excerpts were coded as positive evidence of a production-centered focus at ELEs, compared to just 4 excerpts coded as an absence of or challenge associated with production centered activities. In contrast, only 7 excerpts were classified as evidence of production-centered activities in school, compared to 10 instances of an absence of or challenge associated with production-centered activities.

In ELEs, the high school students are given opportunities to engage in activities that approximate professional practice. In App Creator, they design Android apps with guidance from university students while using MIT's App Inventor program; in Bicycle Design, they learn to construct a functioning bicycle and perform maintenance on it; in Entrepreneurial Youth, they create a business plan and pitch their ideas to potential investors; in Video Editing, they learn skills necessary to write, film, and edit original movies; and in Web Development, they learn HTML and CSS in order to design and build a functioning website. In one of our student focus groups, students compared the production-centered focus of the Web Development ELE to their Web design classes at school. In school, they said, Web design consists of creating PowerPoint slides depicting what their website would look like if they actually built it. In the Web Development ELE, by contrast, they both build and publish their websites.

Openly networked

Openly networked environments allow youth to experience a sense of connection between learning contexts and institutions. In such environments, tools, resources, and supports are freely available and facilitate openness and connections across settings. In our analysis of interview transcripts and field notes, the number of excerpts coded as positive instances of openly networked ELEs was only slightly greater than the number of excerpts coded as an absence of or challenge associated with openly networked infrastructures

(200 vs. 186 excerpts). Moreover, fully 123 excerpts were coded as potential not yet realized, meaning that the ELEs were capable of being openly networked but had not yet found a way to realize this capacity. In contrast, only 16 excerpts were coded as positive instances of schools being openly networked, compared to 47 excerpts coded as an absence of or challenge associated with being openly networked and 20 excerpts coded as potential not yet realized.

Networked technologies accounted for more than half (53%) of the 200 positive comments made about the openly networked nature of ELEs. Of these technologies, the blog was cited most frequently. To receive high school credit for their ELE participation, students are expected to write at least eight blog posts reflecting on what they did and learned during the course of the semester. The teachers of record read and sometimes comment on these blog entries. Afterschool Network staff and members of the community—particularly those who serve as judges of students' ELE work at the end of the semester—may also look at what students post to the CentralSite website. One teacher of record said he uses students' blogs to get a sense of what they are doing in the ELE when he cannot be there: "There was a photo of [a student] ... beat making and another kid had video editing equipment in the background and it showed the instructor working with them ... It gave me a glimpse of what an average day might be at the ELE."

Digital badges are another way the Afterschool Network attempts to make students' work visible outside the ELEs and facilitate open connections across contexts. After successfully completing an ELE, students earn a digital badge that is displayed on their CentralSite profile. One student reflected on how badges are widely visible and can be used to unlock academic opportunities: "With the website you can see the digital badge. If you put that on your college resume, [admissions officers] can actually look at it and see how much work you've done." Another student suggested that she would be proud to show her badge beyond the CentralSite website: "I would put [my badge] on Facebook like, 'Oh yeah! I got a badge for making Android apps!' because you know *that* is cool."

Though participants recognized the potential in badges, they also noted the current lack of awareness and social buy-in among youth and adult stakeholders. Reflecting on the present lack of social buy-in for badges, one community partner commented:

I would just start from the ground up and say who is this useful to and who needs it? And then build it from there, because the badges, to me, feel like currency. It's, like, until someone decides that the paper money means something, it doesn't mean something.

By comparing badges to paper money, this community partner underscores the idea that in order for badges to be useful they must be perceived as holding real value by all relevant stakeholders. Only then will they be able to support the openly networked dimension of connected learning. If stakeholders do not see the value in badges and other networked technologies, these technologies will be hard-pressed to promote meaningful connections across contexts.

The challenges of openly networked learning environments

Access

Our analysis identified a variety of specific challenges in the 186 excerpts coded as an absence of or challenge associated with ELEs being openly networked. Fifty-two of these excerpts (28%) related to challenges students have accessing resources such as the Internet, computers, and the CentralSite website, as well as nonnetworked challenges such as language, cultural, and geographic barriers. Issues of technological access typically related to the fact that students live in socioeconomically depressed neighborhoods. For instance, one Afterschool Network staff member reflected on reasons why students have inconsistent access to the CentralSite website:

Some kids have access [to the CentralSite website] on a smartphone that gets Internet as long as somebody pays the bill. So they have access for the first 10 days of the month, and then they lose it for the next 20. I think some of them have personal computers at home. That seems to be less common. Many of them use the computers at school. Lots of them know how to go to the library. So I think it just depends on the family. I think, in general, we are aware that we work in high-poverty communities, and that not all of the kids are going to have personal computers at home.

Issues of access in school represented an even higher proportion of excerpts coded as an absence of or challenge associated being openly networked. Of the 47 total excerpts coded, 32 of them (68%) addressed access to resources. In addition to the socioeconomic factors affecting ELEs, access in schools is also affected by the filters used to block specific websites like Facebook, Twitter, and YouTube. One Afterschool Network staff member noted: “[The] Internet firewalls in our public schools most closely resemble China’s firewalls.”

With respect to nontechnological access issues, language, cultural, and socioeconomic barriers limit students’ access to formal and informal learning experiences. Many students have immigrated to the United States from Spanish-speaking countries such as Dominican Republic. For these students, language serves as a barrier to knowledge

and social capital in both school and afterschool settings. Another sociocultural barrier to students’ participation in the Afterschool Network pertained to the manner in which students physically moved between school, home, and ELE programs. In order to participate in the ELEs at Ivy University and Metropolitan College of Art and Design, students must take a fairly long bus ride (approximately 1 hour) to a part of the city that is unfamiliar to them. One Afterschool Network staff member reflected on the challenges associated with this journey:

For the App Creator program, it’s really tricky to navigate just the campus in general, and even then a part of town that—even if you’re a [city] resident, you might not get out of your neighborhood all that often and get up to this bustling college campus on the east side, in the computer—like we go to the App Creator program, we’re going like deep into the computer science building at Ivy University. It’s like a maze to begin with, and then you’re in an area where it’s just like a bunch of really busy grad students milling around. So I think—yeah, I think that in and of itself is just a barrier, just like getting to a new place where you don’t feel as comfortable.

According to this participant, transportation poses not only a physical challenge but also a psychological challenge associated with crossing cultural and socioeconomic boundaries.

Sociocultural barriers also prevent many students’ parents from accessing and participating in their children’s formal and informal learning experiences, as do work- and family-related time constraints. One teacher reflected: “Unfortunately in our public school system here in [the city] it’s like pulling teeth. Parents are either working or can’t get up there and see what their kid is doing.” The resulting lack of parental involvement in school and the ELE programs represents a challenge for promoting connections between students’ learning contexts and their family environment.

Visibility and connection versus privacy and boundaries

The primary challenge related to the CentralSite website was its lack of visibility and visitor traffic. One student commented: “Nobody looks at people’s profiles on the Hub [website].” As a result, both blogs and badges—which are found on the CentralSite website—also suffer from low visibility. Participants believed that both technologies would be better able to facilitate connections across contexts if the CentralSite website were more highly trafficked. One student declared: “I just feel like what’s the point of a digital badge if it’s only on the Hub website?” With respect to the blog, students rarely look at or comment on other students’ blogs. One student

noted: “I don’t really read nobody[’s blogs]. I just post [my blog], do my job and I’m out.”

Even if the CentralSite website were more visible, students may not welcome this visibility without reservation. In our analysis, a tension emerged with respect to the Afterschool Network’s efforts to promote an openly networked environment and connections across contexts, on the one hand, and students’ desire for privacy and the maintenance of a separation between their various social contexts, on the other. In ELEs like Be Heard, students discuss personal, sensitive topics. One teacher of record said she believed that the desire to keep such discussions private might account for students’ reticence to write blog posts about their ELE experiences. Similarly, the community partner for one arts-based ELE noted that she once took a video of girls dancing and only one of them was comfortable with having it posted on the CentralSite website.

Students also expressed a desire to keep their personal social media use separate from their formal educational experiences. This sentiment emerged particularly in the context of digital badges and the potential to display them across online platforms:

Interviewer: You will get a badge at the end of your debate program. Would that be something that you would want to show on Twitter if you could?

Student: [Shakes head no.] Because I don’t know. I don’t want anybody to know.

Interviewer: How come?

Student: Because like I want to keep that separate like one thing from the other.

Interviewer: Why do you want to keep Twitter separate from what you do in debate?

Student: Because Twitter is basically like to show—it’s like to put your feelings, what are you doing. It’s different because you post—with the CentralSite website, you post like about the debate. What you’re learning.

Interviewer: And that’s different from sharing your feelings on Twitter?

Student: Yeah. Something like that.

It is evident that this student makes a distinction between her use of Twitter to communicate her feelings and her use of the CentralSite website to share what she is learning in debate. She values maintaining a separation between these two social contexts online.

Information exchanges in afterschool and school settings

Student-student interactions

We investigated the information exchanges among students and between students and adults in afterschool and school settings. During our observations of ELE sessions, we noted that students move fluidly

between goal-directed and casual conversations with each other. For instance, in an App Creator session, we observed a group of three girls conducting Internet searches to find visual inspiration for the design of their apps. As they searched on their individual computers, they frequently looked over at each other’s computers, commenting on and making suggestions for further searches. One girl’s search brought up a series of anime images, which led to a discussion of the girls’ favorite TV shows. Another girl’s search resulted in images of sneakers, which led to a discussion of her plan to buy a new pair of sneakers with the money she had been saving. The girls proceeded to move seamlessly between these casual conversations and more focused discussions about their apps.

Our classroom observations in school indicated there is considerably less room for such spontaneous information exchanges in classroom contexts. The following is an excerpt from the field notes taken during an observation of a math class:

Generally, I see in this class a lot of peer interaction interspersed with math work, just as I did in App Creator. However, the balance is greater toward the classwork rather than peer interaction, and the peer interaction often seems to compete with the classwork. They seem to be in an uneasy co-existence where the teachers are trying very hard to keep the peer interaction under control. This isn’t always the case. I did see several instances of kids working together, helping each other, and [the teacher] encouraged this.

Our conversations with teachers were consistent with these observations. It appears that while casual peer interaction is sometimes permitted, it generally poses a threat to the teachers’ classroom management efforts and steady progress through the curriculum.

Adult-youth interactions

With respect to adult–youth interactions, our findings show that adults and youth often interact as peers in the context of ELEs. Indeed, in several ELEs, the community partners are college students who are not much older than the high school students. The following exchange from one of our student focus groups illustrates the peer-like quality of student–adult interactions in ELEs:

Student 1: In the ELE programs, you actually like even if it has a lot of kids or just partially some kids, [the community partners] actually have their time to take with you like step by step and everything. They make you understand much more better [than teachers in school]. They are much more friendlier too and they actually wait for you to talk.

Student 2: Talking to an adult is like talking to another—

Student 1: Friend.

Student 2: Friend, yeah.

Interviewer: So the community partners who do the ELEs talk to you like a friend?

Student 2: Yeah, and here [school] they're like "Oh, I'm your teacher. You got to do what I tell you to do."

These students experience community partners as supportive, friendly, and caring. Consequently, they see them more as friends than as teachers. In our observations, we witnessed many instances of impromptu, friendly conversations between students and adults. For instance, at the end of a Be Heard session, one girl stayed behind to talk with the community partner about a troubling e-mail message she had received from her teacher. The community partner listened actively as the student recounted her struggles in the teacher's class. She acknowledged and sympathized with the student's feelings, and encouraged her to seek further support from the school's guidance counselor. During a Bicycle Design session, we participated in a casual conversation between a student and community partner during the walk back to the university campus after a field trip. The student asked the community partner if she enjoyed college, whether she found the work difficult, and whether she had any time for fun. The community partner shared her experiences and asked the student about his interests and future college plans.

This view contrasts sharply with the students' recollections of their exchanges with teachers, who are depicted as being primarily concerned with enforcing their authority over students. Our participant observations provide some insight into the disjunction between students' perceptions of ELE and school teachers. In one math class, for instance, the special education teacher was clearly trying to relate to students in a friendly, casual manner, patting several on the back and greeting others with fist bumps. However, these efforts tended to yield to his attempts to keep the classroom quiet and the students on task. In contrast, the community partners were under no such pressure to keep students focused and on task in the ELEs we observed. Due to the small student-teacher ratio, greater flexibility of the curriculum, and the fact that most students had chosen ELEs related to their own interests, community partners have greater capacity to engage with students in a casual, peer-like way.

Influence of standards-based education

Our analysis uncovered a tension between the current flexibility of the ELEs, on the one hand, and the pressure to align afterschool programs with state and federal standards, on the other. Several adult participants, including community partners, teachers of record, and Afterschool Network staff members, made the observation that the very thing that gives ELEs legitimacy with

the school district—adherence to educational standards—is precisely what makes school less engaging for many students because it limits their agency. One community partner commented: "ELE represents the opportunity to make a choice and to work in an area of strength. And so much of our current practice in schools is devoted to students meeting a standard." Similarly, a teacher of record reflected on how standards-based education constrains his classroom practice and, by extension, his students:

I'm so driven by the curriculum ... if the students haven't made the connection for themselves by the end of the period or by the end of the activity, I feel pressure to help them make the connection faster so that we can move on to the next [topic] ... Since math is so highly tested and quantified, and used in so many school evaluations and graduation requirements, there's so much pressure to teach a certain amount of content in a certain amount of time.

This teacher contrasts the constraints he experiences at school with his observation of ELEs: "They're a little more flexible [in ELEs]. They have an objective of the session, but they have more time and they have more flexibility." One Afterschool Network representative expressed concern that trying to tie ELEs to standards would compromise that flexibility: "You don't want school standards, which have been designed for their own sort of need and their own process, political and otherwise, to dominate a really valuable program that's been developed with other standards in mind."

Discussion

The current study investigated the learning experiences of youth from nondominant backgrounds in school and afterschool settings. Using interviews, focus groups, and participant observations, our analysis provides unique insight into the degree to which youth experience aspects of connected learning in school and afterschool programs. It also highlights various successes and challenges associated with connected learning in these contexts. We draw on two theoretical frameworks from the field of information behavior to explore these successes and challenges in depth.

Connected learning after school

Our analysis uncovered positive instances of the three contexts and three core properties of connected learning in the Afterschool Network's ELE programs. With respect to the program's academic orientation, students are learning concepts related to a variety of academic subjects, including math, physics, art, and English

language arts. The deep engagement that youth demonstrate in the afterschool programs reflects the interest-powered nature of the learning there. Many students saw direct connections between an ELE and their long-term career goals. By developing students' skills and competencies in the context of their personal interests, ELEs promote their sense of identity and agency. Lastly, peers play a central role in students' experiences at the ELEs. Youth value the ability to work closely with their peers, as well as to engage in casual conversations with them.

The three core properties of connected learning are also evident in the ELE programs. Youth come together with peers and adults around a shared purpose that provides opportunities to collaborate, compete, and take on significant roles and responsibilities. Also, adults serve as caring mentors who support and encourage students' learning. With respect to production-centered learning, ELEs provide youth with a variety of opportunities to design, build, and create their own products and ideas, as well as to critically evaluate issues and events in their communities. Once created, youth's productions can be made visible through openly networked infrastructures like blogs and digital badges.

Connected learning in school

In contrast to ELEs, school provides students with considerably fewer opportunities to experience aspects of connected learning. Though the youth and teachers in our study experienced school as academically oriented, this academic focus tends not to be pursued in a production-centered way. It also bears little evidence of being either interest driven or peer supported. With respect to the former, a key challenge is the lack of choice associated with school; students have not elected to be in school, nor do they have a choice in the courses they must take to graduate. With respect to peer interaction, we observed a notable tension between students' desire to talk with friends and the teachers' need to control the class in order to make consistent progress through the curriculum. The dynamic of adult control that results from the pressure to move through the curriculum and prepare students to pass standardized tests makes it difficult for adults and youth to work together around a shared purpose. Lastly, schools face similar challenges as ELEs with respect to the degree to which they are openly networked. These challenges include a lack of access to networked and nonnetworked resources, language barriers, and limited family involvement. Such challenges highlight the difficulty of realizing connected learning in underresourced communities serving nondominant youth (Ito et al. 2013; Neuman and Celano 2012).

The drawbacks of openly networked learning environments

Our analysis uncovered distinct challenges associated with the openly networked infrastructures on which the connected learning model hinges. Such infrastructures are intended to connect youths' experiences across contexts and reveal previously unseen pathways to pursue further learning and career opportunities (Ito et al. 2013). However, the youth in our study sometimes expressed reluctance to share their activities and learning achievements through networked technologies like blogs and digital badges. For some, privacy was a concern in ELEs that address personal, sensitive topics. These students did not want to make their private conversations visible to an external audience by blogging about their experiences on the CentralSite website. Many students also expressed a desire to maintain strict boundaries between their academic and social contexts, and were resistant to the idea of sharing their afterschool achievements on social media platforms like Twitter and Instagram. These students suggested that their friends who do not participate in ELEs would not recognize or value the activities and learning they pursue in this setting.

It is instructive to examine students' resistance to connecting their social contexts in light of Chatman's small world conceptualization and theory of life in the round (Chatman 1999; 2000). The small world in which youth participate with their non-ELE friends does not share the same social norms or cultural meanings as the ELE context. To introduce into this small world of friends a new set of values and meanings from an external context could threaten to destabilize the members' shared worldview. Youths' resistance to sharing their digital badges across social media platforms can thus be seen as a self-protective behavior that maintains their status as a legitimized other in the small world. Life in the round also illuminates why it is so challenging for these young people to leave the familiarity of their neighborhood and board a bus to an elite college campus. Crossing such cultural and socioeconomic boundaries means they are leaving the security of their small world, with its predictable patterns of activity, clear social norms, and consistent worldview.

This analysis introduces limitations associated with the connected learning model. By emphasizing the positive aspects of connecting youth's social contexts, the model does not adequately account for the drawbacks of making such connections. The Internet has made it possible for diverse audiences from a person's life to converge and come into contact in ways that nonnetworked publics cannot (Marwick and Boyd 2011; Wesch 2009). In nonnetworked settings, people present specific

versions of themselves to match the particular social context and the people found there (Goffman 1959). In networked spaces such as Facebook and Twitter, it may be hard to know which version of oneself to present if multiple audiences are viewing one's posts. This convergence poses challenges to adapting one's language and behavior to suit a particular social context. Efforts to promote connected learning must address such challenges in a way that is sensitive to the values, needs, and desires of the youth who are invited to participate in connected learning environments.

An information perspective on connected learning

Fisher's information grounds theory (Fisher et al. 2004; Pettigrew 1999; 2000) provides a useful framework for understanding the successes of connected learning in afterschool settings as well as the challenges identified in school settings. The key distinction appears to lie in the way the learning experiences are structured in each context and, consequently, the way information is exchanged. Our analysis showed that the open-ended, flexible nature of ELEs supports—indeed, encourages—the free flow of information among students and between students and adults. Conversations can, and often do, lead in unexpected, serendipitous directions. This element of serendipity is a hallmark of an information ground, whether information exchanges take place in a “voluntary” or “hostage” setting (Fisher and Naumer 2006).

In our observations of the ELE programs, we saw how goal-directed and casual conversations are interwoven and mutually supportive. This interweaving creates synergies among the spheres of connected learning. Students' interests and peer interactions are welcomed and become an integral part of the learning experience. In school, by contrast, they are often seen as a threat to the teacher's authority. The exchange of information is tightly controlled in an effort to satisfy the demands of the curriculum and mandated standardized testing. Without the pressure to move steadily through a set curriculum and prepare students for high-stakes tests, community partners can give students room to explore their interests deeply; take their learning in unanticipated directions; and make connections between the academic content and their lived experiences. The supportive relationships that community partners and students develop in the process serve to reinforce these connected learning experiences.

Our analysis suggests that the Afterschool Network faces a distinct challenge with respect to maintaining the open, flexible quality that supports the success of connected learning in the ELE programs. Youth are largely attracted to these afterschool programs because they perceive them to be friendly, low stakes environments in

which to pursue their interests. At present, the community partners who lead the ELEs enjoy the time and capacity to engage students deeply and on an individual level. Lacking the pressures of a state-mandated curriculum and high-stakes testing, community partners can encourage students to take their learning in unanticipated directions. At the same time, ELE administrators and teachers are not immune from these pressures. In order for students to receive elective credit for their participation in the ELE program, the school district requires the Afterschool Network to demonstrate how each ELE aligns with specific Common Core and state standards. If the Afterschool Network decides to pursue authorization from the school district to award core credit in addition to elective credit, the pressure to demonstrate standards alignment and academic rigor will likely increase. Facing pressures similar to those of schools, the ELE experience may move away from open, flexible information exchanges toward more tightly controlled, restrictive exchanges. Such a development would threaten the information grounds that currently support peer interaction and shared purpose.

Limitations and future directions

The combination of interviews and direct observations used in this study provides a rich, layered view of the experiences and perspectives of the high school students enrolled in the Afterschool Network's ELE programs, as well as the extent to which students experience connected learning in their school and after school settings. At the same time, it is important to acknowledge the study's limitations. First, because our primary focus was the Afterschool Network's ELE program and because we encountered challenges gaining access to the schools, we conducted considerably more observations in the afterschool settings (nine observations) compared to school classrooms (three observations). This discrepancy likely contributed to the smaller numbers of school-related excerpts coded for each of the six connected learning elements. Had we conducted a greater number of observations in a wider variety of classrooms, it is possible that we would have seen more evidence of connected learning in the school setting. Still, the inverse ratios of positive to negative connected learning experiences in afterschool versus school settings are an unmistakable finding of this study and would be unlikely to change with more school-based observations. The comparisons that teachers with experience in both settings made between ELEs and school support this claim.

An additional direction for future research relates to the challenges associated with promoting connected learning that we identified in this investigation. It would

be worthwhile for future research to examine the circumstances under which connected learning succeeds or fails for youth from diverse backgrounds. Such research would provide added insight into the strengths and limitations of the connected learning model across different populations of youth.

Conclusion

New media technologies have the potential to transform processes of learning, including the social supports, tools of production, and modes of recognition available to learners. In order for educators to take advantage of these potentials, models of learning are needed that identify the circumstances under which new media technologies support learning. The current study investigated one such model of learning—the Ito et al. (2013) connected learning framework—in the context of nondominant high school students' participation in school and after-school settings.

Our analysis revealed that students enjoyed considerably more opportunities to experience connected learning in their afterschool settings compared to school. The analysis also identified challenges with respect to implementing connected learning in afterschool settings, including times when the openly networked aspect of the connected learning framework conflicted with participants' values and goals. By examining the findings in light of Fisher's information grounds theory and Chatman's theory of life in the round, the current investigation provides new insight into the circumstances under which connected learning succeeds and fails in formal and informal learning settings. These insights will be useful to educators seeking to incorporate new media technologies into their learning environments and to scholars seeking to identify, test, and refine models of learning for a networked, digital age.

Notes

1. All names are pseudonyms to protect the privacy of study participants.
2. Citation withheld to protect the privacy of study participants. Data were obtained from the state department of education.

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Appendix A: Adult interview protocol

Section 1: Participants' involvement with ELEs

The purpose of these introductory questions is to find out about the role(s) the teacher or Community partner has had with ELEs, and what is important to the participant about the program(s) they work with.

- 1.1. (*Teachers only*) Where do you teach? What do you teach?

(*for Community Partners*) Tell me about {*CP's Organization*} and your roles there.

- 1.2. If someone asked for your brief professional bio, the 30 second version, what would you tell them about yourself?
- 1.3. How did you become involved in the After School Network ELEs?
- 1.4. What are the ELEs you have been involved with? (*alt for staff*)—What are your roles with the ELEs?
- 1.5. How was the planning done to get your ELE started? Who was involved? (*alt for staff*)—How is planning done to get an ELE started? Who is involved?

Section 2: Badges, learning, assessment, and motivation at ELEs

Assessment and learning

- 2.1. What do you want the youth to know or be able to do by the end of your ELE? (*alt for staff*)—Can you give examples of what youth should know or be able to do by the end of an ELE?
- 2.2.1. How does assessment work for the ELE?
- 2.2.2. What sorts of things have students created or done as a production?
- 2.3.1. How do the community partners and teachers of record communicate with each other about what students are learning?
- 2.3.2. How do you communicate with students about what they're learning?

Digital badges

- 2.4. What do you know about the badges?
- 2.4.1. What personal experience do you have with badges on the Hub website and/or at the ELEs?
 - 2.4.1.1. How are badges used?
 - 2.4.2.1. How do students earn badges?
 - 2.4.3. [*if aware*] How do badges relate to other forms of assessment at the ELEs?
 - 2.4.4.1. [*if aware*] Where do they display or show their badges?
 - 2.4.4.2. Do you have a sense of who looks at their badges?

Motivation

- 2.5.1.1. What roles does the badge system plays in student learning now?
- 2.5.1.1. What roles do you think the badge system could play in student learning?
- 2.5.1.2. Does it motivate students to learn? (How so? Or Why not?)

- 2.5.1.2. How could it motivate students to learn in the future?

Opportunities and challenges

- 2.6. In general, what do you think about badges? (in ELEs, in school)
- 2.6.1. Do you think they're a good idea, bad idea, or maybe you don't care about them?
- 2.6.2. [IF ANSWERED DON'T CARE TO 2.6.1] Is there anything that would make you care about them?
- 2.7.1. What opportunities do see for the digital badges?
- 2.7.2. What challenges do you see?
- 2.8. What if badges replaced grades?
- 2.8.1. Can you imagine what that would be like?
- 2.8.2. Would there be anything **good** about having badges instead of grades?
- 2.8.3. Would there be anything **bad** about using badges instead of grades?
- 2.9. What if students could use badges to help them get into **college**?
- 2.9.1. Would that make badges valuable to you?
- 2.9.2. Would it make them as valuable—or even more valuable—than grades?
- 2.10. What if students could use badges to help them get a **job**?
- 2.10.1. Would that make badges valuable to you?
- 2.10.2. Would it make them as valuable—or even more valuable—than grades?

Design

- 2.11. As After School Network uses badges now, students can earn one badge at the end of the ELE, but imagine if students could also earn a few smaller badges along the way in your ELE. What are some of the students' achievements or milestones you might want to recognize along the way?

Section 3: Comparing school with learning after school

- 3.1. We're interested in how students' experiences in the ELEs compare to their experiences in school. You [may] have had experience with students in both contexts. In what ways are the things students do in each place similar? In what ways are they different?
- 3.1.1. Could you describe the types of activities, the things students do in each place?

- 3.1.2. What about the way students talk with each other/work together in ELEs? How does it compare to school (or other contexts)?
- 3.1.3. What about the way students and adults interact? What's it like in the ELEs? What's it like at school?
- 3.2. I'm interested to know how students use technology when they're in school, at ELEs, and also when they hang out with friends or at home.
- 3.2.1. What technologies do students use at **school**? What about your computer class in particular?
- 3.2.2. What technologies do they use at the **ELEs**?
- 3.3. How do you think the level and quality of students' work in ELEs compares with their work in school?
- 3.4. How do think the criteria for successful completion differs among the various ELEs?
- 3.5. To what extent do you think students are learning academic topics at the ELEs? Can you describe examples?
- 3.6. I'd like to know more about me about state learning standards, Common Core, or other sets of learning standards. How, if at all, do such standards relate to what happens in the ELEs?

Appendix B: Student focus group protocol

1. Which ELEs are you taking/have you taken? [**ask them to list on paper, put name, age, grade, school at top—star the ones you're taking now**]
2. How did you hear about them?
3. Why did you sign up?
4. Why do you think most kids sign up to take ELEs?
5. I'm interested to know how your experiences at school compare to your experiences in the ELEs. In what ways are the things you do in each place similar? In what ways are they different?
 - 5a. Could you describe the types of activities, the things you do in each place?
 - 5b. What about the way students talk with each other/work together in ELEs? How does it compare to school?
 - 5c. What about the way students and teachers interact? What's it like in the ELEs? What's it like at school?
 - 5d. Which do you enjoy the most (ELEs or school)? Why?
6. I'm interested to know how you use technology when you're in school, when you're in the ELEs, and also when you're just hanging out with friends or at home.

- 6a. what technologies do you use in **school**? What about your computer class in particular?
- 6b. what technologies do you use in **ELEs**?
- 6c. what technologies do you use in **free time/hanging out with friends**?
- 6d. what similarities and differences do you notice?

CentralSite website

7. What do you use the CentralSite website for?
8. How often do you use it?
9. WHERE do you use it?
10. Do you ever look at other students' profiles?
11. Does anyone comment on your blog?
12. What do you think about writing blogs for your ELO?
13. Are there any problems with the CentralSite website?

Badges

14. Who has heard about badges?
15. What have you heard?
16. How are badges used in ELEs?
 - 16a. How do students earn badges?
17. Who's got badges on their profile?
 - 17a. How do you find out that you earned a badge?
18. For those of you who have badges, what do you think about having badges on your profile?
 - 18a. Is it something you give much thought to?
 - 18b. Do you like/dislike/don't care about having them?
 - 18c. Do these badges help you in any way?
 - 18d. Do you think they could help you in the future?
19. Do kids talk about badges?
20. Do kids look at each other's badges?
21. What if badges replaced grades?
 - 21a. Can you imagine what that would be like?
 - 21b. Would there be anything **good** about having badges instead of grades?
 - 21c. Would there be anything **bad** about using badges instead of grades?
22. What if you could use badges to help get into **college**?
 - 22a. Would that make badges valuable to you?
 - 22b. Would it make them as valuable—or even more valuable—than grades?
23. What if you could use badges to help you get a **job**?
 - 23a. Would that make badges valuable to you?
 - 23b. Would it make them as valuable—or even more valuable—than grades?
24. In general, what do you think about badges? (in ELEs, in school)

24a. Do you think they're a good idea, bad idea, or maybe you don't care about them?

24b. [IF ANSWERED DON'T CARE] Is there anything that would make you care about them?

25. Imagine that you could earn badges for the skills you gain at After School Network and maybe also the skills you gain in other places, like school or other activities, and then display your badges wherever you wanted to online (e.g., Facebook, Twitter, After School Network website). Where would you display them?
 - 25a. Are there any places where you would NOT display them?
26. Right now at After School Network, students can earn one badge at the end of the ELO, but imagine if you could also earn a few smaller badges along the way in your ELO. Can you think of anything that you're doing or learning right now in your ELO that you might want to earn smaller badges for? What do you think about this idea?
27. What do you think of when you hear the word badge?

Appendix C: Student interview protocol

Background questions

1. Outside of school, what activities are you involved in? (e.g., student clubs, sports, community service, political organizing, religious groups, etc.)
 - 1a. What ELEs are you taking/have taken?
 - 1b. Any plans to take future ELEs?
2. How did you first become involved in the ELO programs? How did you hear about them?
 - 2a. Why did you sign up?
3. Apart from school and these activities, how do you spend your free time? What kinds of things do you enjoy doing?
4. In general, what are you interested in? What are some things that really matter to you? [RQ6]
5. Do you ever get to pursue your interests in school?
 - 5a. What about in the ELEs?
6. What are your favorite subjects at school?
 - 6a. are you aware of activities at the After School Network related to ___? Have you participated in any of those activities? If NO, what have you heard?
 - 6b. In general, would you say you enjoy school? Why/why not?
7. What are some goals that you have for yourself now, or in the next few years?
 - 7a. What do you think you might want to do when you're older?

7b. Are you doing anything now (in school or somewhere else) to prepare for that?

Afterschool network

8. Why do you think most kids sign up to take ELEs?
9. Do students perceive some ELEs as easier or more difficult than others?
10. Do you ever talk to friends who aren't in ELEs about the ELEs? How? What do you say?
11. I'm interested to know how your experiences at school compare to your experiences in the ELO's. In what ways are the things you do in each place similar? In what ways are they different?
 - 11a. Could you describe the types of activities, the things you do in each place?
 - 11b. What about the way students talk with each other/work together in ELEs? How does it compare to school?
 - 11c. What about the way students and teachers interact? What's it like in the ELEs? What's it like at school?
 - 11d. Is there anyone in your ELEs whom you look up to and admire (could be a teacher or another student)? What about in school, is there a teacher, staff member, or student whom you look up to and admire?
 - 11e. Which do you enjoy the most (ELEs or school)? Why?
12. I'm interested to know how you use technology when you're in school, when you're in the ELEs, and also when you're just hanging out with friends or at home.
 - 12a. What technologies do you use in **school**? What about your computer class in particular?
 - 12b. What technologies do you use in **ELEs**?
 - 12c. What technologies do you use in **free time/hanging out with friends**?
 - 12d. What similarities and differences do you notice?
13. Do you see any connections between the activities at the ELO and what you're learning in classes at school?
 - 14a. Do you talk to your family about what you're doing at school? Do they participate in school events?
 - 14b. Do you talk to your family about what you're doing at ELEs? Do they participate in events related to the ELEs?

Badges at afterschool network

15. Have you heard about badges?
 - 15a. What have you heard?

16. Can you tell me what you know about how badges are used in ELEs?

16a. How do students earn badges?

17. Have you earned any badges?

17a. Do you have any badges on your profile?

[IF YES to #17]

18. How did you find out that you earned your badge/s?

18a. What steps did you need to do to earn your badge/s?

[IF YES to #17]

19. What do you think about having badges on your profile?

19a. Is it something you give much thought to?

19b. Do you like/dislike/don't care about having them?

19c. Who do you think looks at your badges?

19d. Do these badges help you in any way?

19e. Do you think they could help you in the future?

[IF NO to #17]

20. Do you know of anyone who has badges on their profile?

20a. Do you know what steps they needed to do to earn their badge/s?

20b. Who do you think looks at them?

20c. Do their badges help them in any way?

20d. Do you think their badges could help them in the future?

21. Do kids talk about badges at all?

[If yes] How much? What do they say?

22. Do you think kids ever look at each other's badges?

22a. Do you ever look at other people's badges?

22b. [IF YES] How often?

22c. What makes you or other kids look at other people's badges?

23. What if badges replaced grades?

23a. Can you imagine what that would be like?

23b. Would there be anything **good** about having badges instead of grades?

23c. Would there be anything **bad** about using badges instead of grades?

24. What if you could use badges to help get into **college**?

24a. Would that make badges valuable to you?

24b. Would it make them as valuable—or even more valuable—than grades?

25. What if you could use badges to help you get a **job**?

25a. Would that make badges valuable to you?

25b. Would it make them as valuable—or even more valuable—than grades?

[IF NOT ANSWERED IN #19]

26. In general, what do you think about badges? (in ELEs, in school)
 - 26a. Do you think they're a good idea, bad idea, or maybe you don't care about them?
 - 26b. [IF ANSWERED DON'T CARE TO 26a] Is there anything that would make you care about them?
27. Imagine that you could earn badges for the skills you gain at After School Network and maybe also the skills you gain in other places, like school or other activities, and then display your badges wherever you wanted to online (e.g., Facebook,

Twitter, After School Network website). Where would you display them?

- 27a. Are there any places where you would NOT display them?
28. Right now at After School Network, student can earn one badge at the end of the ELO, but imagine if you could also earn a few smaller badges along the way in your ELO. Can you think of anything that you're doing or learning right now in your ELO that you might want to earn smaller badges for? What do you think about this idea?
29. What do you think of when you hear the word badge?