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We build on sociocultural learning theory and empirical research that has documented learning in varied social and cultural settings, both within school and out of school. Our learning approach is guided by three key findings that have emerged from this body of learning research: 1) a disconnect between classroom and everyday learning, 2) the meaningful nature of learning that is embedded in valued relationships, practice, and culture, and 3) the need for learning contexts that bring together in-school and out-of-school learning and activity.

1. Formal education is often disconnected and lacking in relevance

Classroom ethnographers have documented how school learning is often disconnected from the contexts where young people find meaning and social connection. School subjects are often thought to impart knowledge and skills that will be useful, or will "transfer to" everyday life and future work, but these connections have proven elusive to learning researchers and students alike. In fact, a recent report by the National Academies concluded that "Over a century of research on transfer has yielded little evidence that teaching can develop general cognitive competencies that are transferable to any new discipline, problem or context, in or out of school" (National Research Council, 2012).

Even as classroom learning lacks utility and relevance for many young people, schooling continues to be strongly tied to future life opportunity. As we have noted in the first half of this report, we are seeing an escalating arms race in educational attainment because of the competitive nature of the market for high-quality jobs. In fact, the same National Research Council (2012) report that notes the lack of transferability of school-based knowledge advocates for a continued focus on educational attainment because it is the one factor that strongly influences future opportunity.

As noted earlier, young people in more privileged families are spending growing amounts of time in school-related as well as extra-curricular activities carefully and strategically organized by their parents (Gutiérrez, Izquierdo, Kramer-Sadlik, 2010, Levine, 2006, Pope, 2001). Although structured, competitive, and specialized learning activities are tied to future life opportunity, they can crowd out time for other kinds of meaningful learning and social development. Some evidence is emerging that "overscheduled" young people are suffering disproportionately from psychological distress and lack of motivation (Pope, 2001). Getzels and Csikszentmihalyi (1976) noted several decades ago, participation in tightly organized and managed activities leaves little room for problem-finding and creativity. The Digital Youth study likewise found that young people required a certain amount of autonomy and unstructured time to "mess around" online in order to explore knowledge and become self-directed learners (Ito et al., 2009). In other words, an over-emphasis on structured education and individual competitiveness can rob young people of meaningful social participation and the capacity for self-directed and open-ended learning and inquiry.

2. Learning is meaningful when it is part of valued relationships, shared practice, culture, and identity

By contrast, research in settings where formal schooling has not been prevalent has documented learning that happens as part of work, social interaction, and the ongoing life of communities (Greenfield, 2004; Lave, 1988; Rogoff, 2003; Scribner & Cole, 1973). The findings from this body of work parallel research on lifelong learning, examining how adults reconceptualize and reflect on earlier educational experiences (Edwards, Biesta and Thorpe, 2009; Holland et al., 1998; Levinson et al., 1996). The knowledge and skills people acquire in these settings have a highly positive value to participants because they are linked to practices and valued relationships in which learning is not the primary reason for engagement. In other words, learning is highly relational and tied to shared purpose and activity. Here learning can be understood as changing participation in cultural activity rather than an endeavor sequestered from everyday social life (Rogoff, 2003; Lave, 1988). This cross-cultural work on informal learning has helped us recognize learning that happens within the flow of everyday social life, work, and other kinds of purposeful activity.

We understand from this body of work that when young people are learning with peers and adults, pursuing shared interests and goals, the learning is both meaningful and resilient. What we seek to investigate is the specific supports and mechanisms that make these forms of learning effective, and how we can tie these insights to an agenda for educational design and reform. What are the entryways and pathways that young people need to access to arrive at connected learning? What are key supports along the way that young people need in order to continue along these pathways? How can we measure the outcomes of these connected learning experiences? Which outcomes are tied to opportunity and achievement in other contexts and later in life? The connected learning framework is an effort to get more specific on the supports and outcomes of learning embedded in joint activity and shared purpose in order to inform a design and reform agenda.

3. Young people need connection and translation between in-school and out-of-school learning

Based on the prior research in both in-school and out-of-school settings, we have arrived at a starting hypothesis for design and intervention that centers on building stronger connections between different spheres of learning. Connected learning posits that by connecting and translating between in-school and out-of-school learning, we can guide more young people to engaging, resilient, and useful learning that will help them become effective contributors and participants in adult society. We also believe that networked and digital technologies have an important role to play in building these sites of connection and translation.

In line with ongoing critiques of the concept of "transfer," we do not believe that the goal of educational environments is to impart "generalized" skills and knowledge that will be subsequently applied to work or further education (Beach, 1999; Bransford & Schwartz, 2001; Dyson, 1999; Lave, 2011). As Vygotsky (1978) has noted, concepts form when everyday and scientific knowledge grow into one another. An ecological approach to learning means that we don't believe knowledge can be easily uprooted and transplanted between contexts and practices. Instead, we emphasize horizontal knowledge and the connections across domains of experience in and out of school (Pacheco, 2012). Within this approach, learning is oriented toward shared practices that emerge from youths' repertoire of practices developed in the horizontal movement and flow as youth move across everyday settings. We understand development as the acquisition and expansion of a cultural toolkit based on involvement in a range of specific cultural communities.

Our hypothesis is that in order to develop these cross-cutting repertoires of practice, young people need concrete and sustained social networks, relationships, institutional linkages, shared activities and communication infrastructures that connect their social, academic, and interest-driven learning. It is not enough for young people to have knowledge "in their head" and expect that they can apply it appropriately and effectively in varied settings on their own. They need caring adults, supportive peers, shared cultural references, and authentic ways of contributing to shared practices in order to mobilize their skills and knowledge. In contrast to the voluminous literature and research on cognitive and individual models of transfer, there has been very little work that looks more ecologically at the relational, infrastructural, and institutional settings that undergird effective translation and transfer between formal instruction and varied practices. The connected learning approach is an effort to propose a proactive research and design agenda that addresses this gap.

Connected Learning Outcomes

The issue of outcomes is often at the forefront of concerns for educational equity and reform. Most commonly, learning outcomes are framed in terms of individual knowledge, skills, competencies, and dispositions. In line with our ecological approach, we see the collective and individual outcomes of connected learning as integrally related to one another. If we are to pursue an approach to educational reform that is about elevating all young people, it is critical that we consider outcomes not only in terms of individual success and competitiveness, but in relation to the health of the groups, communities, and institutions that build and support connected learning environments.

Consider the case of the Harry Potter Alliance (HPA), a network of young activists and Harry Potter fans who mobilize around issues of literacy, equality, and human

rights **(see Case Studies 6 and 7)**. Making use of social media platforms and channels such as Facebook, YouTube, Livestream, and Twitter, the HPA connects young people who are inspired by the civic virtues portrayed in the Harry Potter books, and want to apply them to the real world. Through a national organization and a network of local chapters, the HPA offers young people opportunities to create and share their own media products with like-minded fans, as well as contribute to collective causes, campaigns, and charities. By participating in HPA, young people are contributing to the health and growth of a civic collective, jointly produced stories, and real world social change. At the same time, they are developing individual capacities through leadership, collaboration, self-expression, and exposure to wide-ranging social issues (Kligler-Vilenchik et al., 2012).

Unlike models of learning that center on individual outcomes and competition for limited resources and rewards, HPA exemplifies how connected learning is value-additive, elevating individuals and collectives in an integrated way. When individual HPA participants learn, create good work, and exercise leadership, it increases capacity and value for others in their community and beyond. This is in contrast to most classrooms that center on standardized metrics and individual competitiveness. When young people do well and are well behaved in the classroom, it improves the classroom experience, but it does not elevate culture at large or expand a valuable social network if the activity ends at the classroom walls. Further, when individual competence is assessed based on grades, test scores, and other standardized and summative metrics, one student's success highlights another student's failure. Environments like the HPA, Quest to Learn, or Clarissa's online writing group have a different dynamic because individual growth is tied to collective goals and community development. Conversely, we can expect that high-functioning connected learning environments will embody ample opportunities for individual contribution and development in the service of collective goals.

In the sections which follow, as a starting point for this kind of design research, we outline a working framework for considering how to identify, build, and support connected learning environments. Rather than center on a top-down design of a specific product, technology or curriculum, connected learning environments are a complex alchemy of designed and emergent elements in a process of experimentation and flux. The frameworks for understanding key components of connected learning environments are presented in this spirit of experimentation and iteration.

Connecting the Spheres of Learning

Table 3
Connecting Three Spheres of Learning

Connected learning knits together three crucial contexts for learning:	
Peer-supported In their everyday exchanges with peers and friends, young people are contributing, sharing and giving feedback in inclusive social experiences that are fluid and highly engaging.	Guiding reflections: Are young people given opportunities to: • Contribute expertise, ideas, and questions? • Share work? • Give feedback to their peers? • Socialize and hang out? • Mess around/play in a social context?
Interest-powered When a subject is personally interesting and relevant, learners achieve much higher-order learning outcomes.	Guiding reflections: • Is the experience centered on participant interest (adult and teen)? • Can young people form groups to explore a facet of this interest? • Are there ways for young people to "lurk" as they discover new interests? • Are there supports for young people to develop expertise around their interest? • Is interest being publicized and celebrated? • Are pathways for mastery in an area of interest made visible for others to see, either within the platform or within connected experiences?
Academically oriented Learners flourish and realize their potential when they can connect their interests and social engagement to academic studies, civic engagement, and career opportunity.	Guiding reflections: • Are mentors present who can help young people to connect their interest/activity to academic/institutional domains? • Are outputs made visible within academic/institutional contexts that have relevance to the adult world? • Do adults celebrate youth participation as academically meaningful and relevant? • Do formal/academic settings provide space/opportunity for engagement with interest?

As we have described, connected learning focuses attention on the spaces of integration and translation between divergent domains of knowledge, culture, and social practice. More specifically, we propose that bringing together and integrating the motivations, content, and abilities from social, interest-driven, and formal educational spheres can expand the reach of meaningful and sustained learning. Connected learning seeks to integrate three spheres of learning that are often disconnected and at war with each other in young people's lives: peer culture, interests, and academic content. For youth who are alienated from formal educational institutions, peer culture and interests can provide alternative avenues into connected learning experiences. Figure 6 illustrates the relationship between young people's existing learning environments and connected learning.

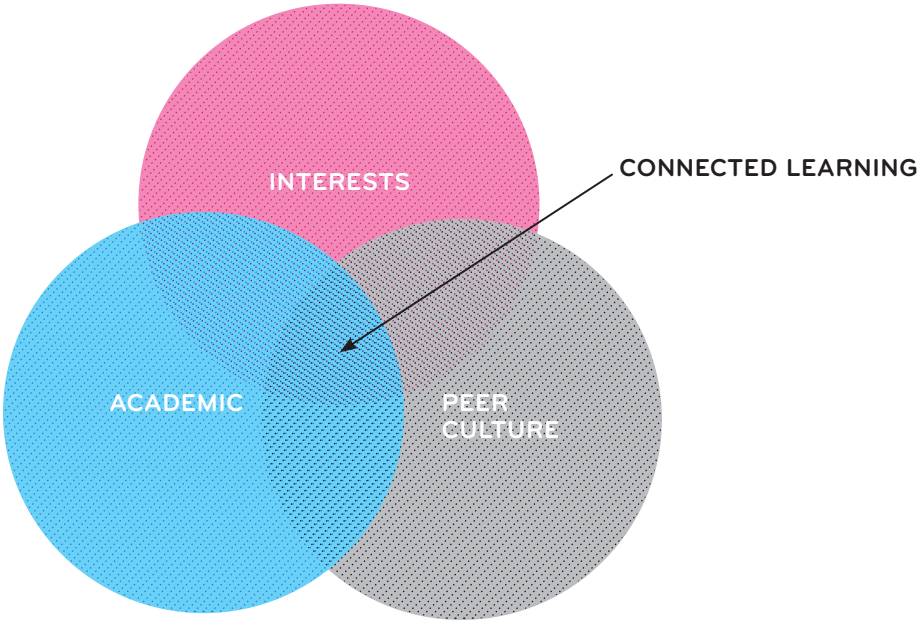

Figure 6
Connecting the Spheres of Learning

Consider the case of the YOUMedia learning lab at the Harold Washington Library in Chicago **(see Case Studies 8 and 9)**. Located on the first floor of the main downtown library, YOUMedia was designed as a space catering to teens and their interests in media production, ranging from music to graphic arts and spoken word. Young people are welcome to drop in to hang out with their friends, eat, play videogames, or check out a laptop. They are also given opportunities to deepen and broaden their interests by mentors and librarians running workshops and creating events and spaces to showcase their work. In this way, YOUMedia Chicago creates an environment that is rich in peer interaction, centered on interests, and connected to academic, career, and civic opportunity. Young people can enter into the culture and activities of YOUMedia

through any of these spheres—by being introduced by friends, through an interest in creative production, or through achievement-oriented aspirations. The environment also seeks to leverage the learning dynamics of all three of these spheres by bringing together personal passions, a drive to achieve, and peer support.

Peer Culture

The common denominators of much of young people's peer culture are status negotiations over popularity, romantic relations, and hanging out with friends. Peer cultures generally map onto the social networks that young people are immersed in through school or community. In online environments, Facebook and personal communication technologies like instant messaging and text messaging support these activities. Social belonging motivates much of this engagement. Learning in this sphere is highly engaged, inclusive, and peer-based, but can be disconnected from academic pursuits and specialized kinds of interests. In school, where young people are brought together based primarily on their age rather than their interests, peer cultures do not necessarily reward specialization, knowledge, and expertise. Other than those engaged in interests highly validated by the school and peer culture such as mainstream sports, kids who are passionate about their interests are often branded as "geeks," "nerds," "freaks," or "dorks."

When peer cultures are centered on interests, however, they can drive knowledge and expertise and can be intergenerational. The tendency to segregate young people into age cohorts has created contexts where peers are often of the same age, but we do not consider peer culture to be necessarily age-specific. Peers can refer more generally to those who associate on equal footing.

Interests

Personal interests include hobbies, sports, academic, and artistic interests. These interests are not innate, but rather are discovered and cultivated within particular social and cultural contexts. Social relationships and institutional supports for interests are diverse and often involve adults and can bridge contexts of home, community, and commercial culture. With the advent of networked media, interests can be supported by platforms such as LiveJournal, Tumblr, Pinterest, and sites devoted and designed for specific interest groups such as DeviantArt, Ravelry, or fantasy sports leagues.

The primary driver of participation for interest-driven activity is a sense of personal affinity, passion, and engagement. Learning in this mode is generally knowledge and expertise-driven, and evaluated by the metrics internal to the specific interest group, which can often be subcultural or quite different from what is valued by local peers or teachers. For example, skateboarders, rap artists, and competitive eSports players have highly engaged forms of achievement and learning that are often at odds with what most same-aged peers and schools value.

Academic

The other major sphere of activity that young people navigate is driven by adult-defined achievement and future-oriented goals, such as academic achievement, civic and political involvement, and cultivation of career relevant skills and recognition. We use the term "academic" to refer to this sphere given that for most young people, their most immediate future-directed goals are primarily success in school. This sphere represents, however, a more general orientation to future success, opportunity, and access to sites of power, what we consider young people's "work" rather than friendship, hobbies, or play.

For some young people this may mean pursuing athletics as an avenue to college and a career, while for others it may mean developing more vocational skills in a local community or industry. The common thread is that key institutions of power and access maintain this sphere. Learning is most commonly organized in a structured, standardized, and institutionalized format, guided by adults, and social relationships center on adults who have the power to offer rewards and recognition. The drivers of participation are not typically intrinsic motivation or social belonging, but structured systems for instruction and assessment.

Many young people experience their learning in the three spheres of interests, peer culture and academic subjects as disconnected, and do not have sufficient exposure or support to explore their interests. Even among those who do, their interests generally lack connection to cross-generational learning, academic subjects, career pathways, and civic and political participation. Whether focused on sports, games, popular media, creative production or the arts, these interest-driven activities are often pursued in relatively self-contained institutions, peer-groups, or communities of practice that do not cut across the divides of home, school, afterschool, and peer culture.

Connected learning, as its name implies, works to connect these spheres more purposefully. The goal is not to fully integrate these spheres of learning—each requires its own autonomous space—but to build connections, hand-offs, and sites of translation in order to reach more young people where they are. Some young people are reached best through their friendships and social relationships, others through their personal interests, and others through their schools and other sites of institutional recognition. By giving equal weight to all of these different sites of learning, we can create more entry points and diversify the pathways towards learning and opportunity.