

Brokering in and Sustained Interest-related Pursuits: A Longitudinal Study of Connected Learning

Katie Van Horne, Carrie Allen, Daniela DiGiacomo, Josephina Chang-Order, Erica Van Steenis
University of Colorado Boulder

Introduction

Caring others play an important role in supporting youth as they pursue their interests over time and across spaces. Recent work has indexed the role of peers (Cartun, Kirshner, Price, & York, 2014) and adults (Barron, Martin, Takeuchi, & Fithian, 2009; Nacu, Martin, Pinkard, & Gray, 2014) in supporting and sustaining youth's interests over time and across spaces. This research has examined the role of these relationships as youth are engaged in interest-driven activities or programs. Peers act as brokers into interest-related pursuits and valued spaces in which to engage in those activities (Cartun et al., 2014). Further, when finding new opportunities for pursuing interests, youth often sign up for activities with their friends (Penuel et al., 2015). In learning environments, caring adults play various roles in supporting interests. For example, Nacu and colleagues (2014) explored how adult-youth interactions online contribute to equitable learning environments. In the online spaces they investigated, mentors played roles as audience, encourager, and instructor. They argue that access to mentors with specific expertise may be beneficial to youth who do not have access to high-quality face-to-face learning opportunities in their neighborhoods. Parents also play roles in supporting youths' interest development, with respect to technology, parent roles can vary from resource provider to learning broker (Barron et al., 2009).

In this paper, we build on this literature by specifically examining the role of brokering in sustaining youth's interests over time. Brokering in our research contexts refers to purposeful efforts by peers and adults to link youth to opportunities (Barron et al., 2009; Ching, Santo, Hoadley, & Pepler, *in review*). Although previous literature on brokering has focused on how adults and peers connect youth into future opportunities or careers pathways, in this paper, we are interested in how youth are brokered *into* interest-related programs and the relationship between this brokering act and youths' sustained interest development. Youth pursue interests across multiple settings (Azevedo, 2011), but coordinating learning across settings can be difficult for youth, and research documents a need to grow connections between people, places, and practices to attend to this fluid practice (Bell, Bricker, Tzou, & Baines, 2012; Ito et al., 2013). Further, there is little we know about what peer and other relational connections exist that keep youth in activities where they then have access to social networks and increased opportunities for being brokered out into new and valued futures (e.g., jobs, careers, leveling-up within an interest). We seek to expand the brokering model described by Ching, Santo, Hoadley, & Pepler (*in review*) through investigating how youth are brokered into interest-related programs and how being brokered in relates to their interest-related pursuits.

Theoretical Perspective

Brokering involves connecting youth to learning opportunities that support them in pursuing their interests (Barron et al., 2009; Ching et al, *in review*). Barron et al. (2009) focused on parents as learning brokers, who provided access to people and places and to formal instruction and who also provided youth with transportation to learning opportunities. For Ching, Santo,

Hoadley, and Pepler (*in review*), brokering occurs over time in out of school programs as adults actively support youths' interests. Brokering can take the form of organizing field trips, helping youth apply to programs of interest, and staying connected to youth after they leave the program.

Youth who are brokered into an activity may be more likely to persist in that activity over time and across social spaces. Youths' interests may persist over time and across the contexts of youths' lives (Hidi & Renninger, 2006; Azevedo, 2011). Interests, like hobbies, change as youth grow older, have new experiences, and level up. Further, opportunities for participation for youth vary based on available resources and places to engage with their interests (Azevedo, 2011). For example, we might see sustained engagement when a youth has opportunities to pursue film editing in an afterschool program, for a school project, and for her family and then decides to major in broadcast journalism at a nearby college. Or we may see sustained engagement if a youth is introduced to music production in middle school and then continues to produce music at his friend's house through high school. We see sustained engagement as participation over time, and as participation in an activity across contexts.

Methods

In order to explore how youth were brokered in to interest-related activities and how their interest sustained over time, we asked:

1. Who is brokering youth into interest-related activities and how does that brokering happen?
2. In what ways does being brokered in support youths' participation in interest-related activities?
3. What conditions of brokering support youths' sustained interest over time and across settings? (future work)

In this mixed methods study, we examined 54 youth and their engagement with interest-related pursuits and how those interests changed over time and across contexts. Each youth participated in an interest-related activity such as video gaming, digital journalism, music production, writing, and illustrating. We surveyed and interviewed youth to better understand their experiences of Connected Learning (CL) and their outcomes associated with participating in CL programs. The survey was administered in two waves approximately a year apart – Wave 1 in 2013 and Wave 2 in 2014 -- to youth aged 13-17 years old representing 19 different youth programs across the United States, Canada, and Europe. In 2015, we interviewed 54 of the 266 youth who took both waves of the survey.

Here, we focus on the 2013-2015 longitudinal data from an analysis of the 54 youth we interviewed. Our team interviewed the 54 youth who agreed to participate throughout summer 2015. The interviews were conducted over the phone and lasted between 45 minutes and one hour. Interviews were recorded, transcribed by an outside transcription service, and uploaded and analyzed in the software program Dedoose (2015). During six code creation summits members of the research team participated in reading interviews and organizing codes into thematic patterns we saw across the data. Once these thematic patterns were established, we developed code constructs including parent and sub codes. Following the completion of the coding scheme,

the coding of the corpus of data was divided amongst the research team. We established inter-rater reliability for all codes, with resulting Cohen's kappa ranging from 0.63 to 1.00. In this analysis, we used the codes designed to capture youths' experiences during their initial engagement with the activity and subsequent engagements with the activity. These "temporal participation" codes had inter-rater reliability measured with Cohen's kappa ranging from 0.73 to 0.84. We then used the concepts of roles and brokering acts (Barron et al., 2009; Ching et al., *in review*) to recognize when youth report being brokered into an activity and to characterize what the brokering act looked like. We selected representative cases for this paper that illustrate a range of brokering acts and sustained engagement with the activity.

Findings

Our findings suggest that for youth who are brokered into interest-related programs, their interest is sustained over time. Youth who were brokered in, for example, were close to 30 percent more likely to stay within the activity over the two year survey period (see Table 1). In addition, youth who were brokered in on reported two more supportive connections in the second year of the survey on average ($F(1,156)=5.079, p=.026$).

Table 1. Survey Results Comparing Youth Brokered in to Youth Not Brokered in

	Brokered In	Not Brokered In
Percent of Youth who Stayed in the Same Activity from Wave 1 to Wave 2	79.3%	51.5%
Mean Number of Supportive Connections (e.g., parents, peers, other caring adults) reported in Wave 2	18.07	14.77

These results provide evidence that when youth are brokered into an interest-related activity, they have sustained participation which can open up more opportunities for making connections within the activity and therefore, youth may have increased opportunities for being brokered out into valued future interest-related pursuits.

Two Case Studies of Brokering In

To build on the survey data, in this section, we present two representative cases of youth who were brokered into an interest-related activity and whose interest was sustained over time and across spaces?

Devon: Friends as brokers into interest-related activity and sustained participation

Devon (Black, male, all names are pseudonyms) was a sophomore in high school looking for a job when his friend, Frank introduced him and brought him to Media Production Program (MPP). He immediately liked using the camera and the editing tools like Final Cut Pro. He had used a video camera at church before working at MPP but the program was his first formal experience.

We interviewed Frank, the broker, about getting his friends involved in the activity and he said the following about Devon:

Interviewer: Was there anybody that you met outside of [Free Spirit Media] that's kind of become a friend about editing?

Frank: Yes, one of my friends who actually graduated high school with me. He as well, saw me editing and actually joined MPP as well, because he saw me doing it and we both loved doing it so he did it as well with me. It was actually Devon, so we both did it and loved it. We both tried to go out and edit things.

For over three years, Devon worked at MPP, primarily focused on video editing. Most often participating in teams of mixed ability and expertise, Devon enjoyed video production because he could explore topics he was interested in, for example, teenage runways, and he could also take a leadership role in the team projects. He was motivated to continue media production at MPP because he wanted to, "change the way society thinks." He was specifically interested in targeting racism, he told us, "society thinks negative on on each other and I want to change that."

At the time of the interview, Devon worked for part of the organization, MPP Pro – the most advanced offering for youth at MPP, focused producing videos for clients within the city. He had just completed filming a documentary for a local organization. He aspired to be a film director, using the leadership and filming skills he developed at MPP.

When talking about his sustained experiences with MPP, for example, Devon's narrative is centered around his desire to be a leader of social change through video production. He was brokered into MPP by a friend from school and sustained his participation by moving up through the program into the most advanced, client facing opportunity within MPP.

Emily: Sustained interest in STEM through parent brokering and female mentors

Emily (White, female) was a junior in high school at the time of the interview study. She had been working at the [New York Hall of Science Museum] for 2 years as an intern. As part of her duties there, Emily worked as an "explainer," educating the public through exhibits at the museum. She also worked on a project that involved interviewing women scientists and engineers about their careers, their pathways into science and engineering, how they had navigated these decisions, and their work with other young women to encourage their pursuit of science or engineering careers. Her time at the museum had worked to cultivate Emily's interest in science - as a young girl, she had imagined herself as a Ph.D. scientist - and sparked an interest in engineering.

Her entree into the museum was largely supported by her exposure to the internship program as a younger child. Her mother worked at the museum at the time and therefore Emily had become familiar with the program and had gained an affinity for the museum itself,

Interviewer: How did you get started [at the museum]?

Emily: Well, my mom used to work here when I was younger, so that's how I knew of the program. When I was younger, I always knew I wanted to do this. I mean, I

was in the youth programs, called Kids Club. After school, we'd come and do activities at the [museum]. I knew I really loved it here. I've been wanting to work here since I was little, so when I finally was old enough to get working papers, I applied, did the interview process, and I was happy to finally be able to work here myself.

Interviewer: Did you have any other motivations or reasons for deciding to work there?

Emily: Well I mean, I loved the idea of the place. I loved the Hall of Science, kind of sharing science with the community was just something that I feel like we don't have enough of just in general. There aren't a lot of science centers around, so this is a special place. I thought besides the fact that I could help others, I knew that there was a [youth] development aspect to it.

Although it was her mom's prior work at the museum first introduced Emily to the internship program and activities at the museum, her mom's continued involvement in Emily's experiences at and success within the museum were important in sustaining Emily's involvement in the museum.

Interviewer: I'm wondering, in general, who, if anyone, supports your involvement at the museum?

Emily: Well my mom's definitely a huge supporter of not only this, but just everything I do. I mean, my parents, in general, really whatever I go out for, they're there backing it 100%, which is great. I've got to study sometimes for our demonstrations and my mom would always kind of sit there and like listen to me practice. She would like do it with me. She'd quiz me on it, like if there was a test, which is nice. Whenever I need help, she's been there.

In addition to helping Emily prepare for her work at the museum, her mom provided her with transportation to and from the museum on the days she worked.

Once in the program, Emily had exposure to other women who had pursued and been successful in science, mathematics, or engineering careers (a resource she did not have outside of the program).

Interviewer: Do you know anyone who is already a scientist or an engineer?

Emily: In my family, not so much...I'm actually just working on a side project [through the museum] where I interview women who are acting scientists and engineers and mathematicians. I've definitely been meeting more. I've been reaching out to people, which is great. Just talking to them has been helpful but in my family, not so much.

Interviewer: Can I ask you more about your side project and what are the kinds of things that you're learning from these women?

Emily: Sure. The project, like I said, it's interviewing in STEM and hearing their stories to help young girls, like me, to kind of understand what their career is like. I mean, I'm sharing these videos that I'm recording online, but it's just so helpful to meet these women because you kind of see their career path, almost. How they got their degree and as to why they went to this school. Now, here they are, researching

marine biology, or they're researching like degenerative disease and all these sorts of things that ...

You learn the process of these careers. You're also learning ... They give some really great advice, which is something I wasn't expecting. Like, be prepared to do a lot of grant proposals, or understanding that they have to make compromises between family and work. Like, things that I kind of understood, but hearing it straight from them, it really helps me understand if I go into these things, what I'll be facing.

Emily's interactions with these women also served to pique her interest in STEM pathways for other young women, like herself,

It's [understanding people's career paths] been a thing I've always been passionate about. I'm doing a research project on the school. Because I like science so much, I was wondering why other girls and other people don't enjoy it as much. One thing I found, personally, is I feel like there's not a lot of knowledge about [STEM careers]. It's kind of rare. Everyone's told, "Oh, you get a degree in science, engineering, you can have a great career and all that," but there's just a lot of, "What do I do after I get this degree? What career am I going to go into?" I think it's just good to share this information. I wanted to learn about it and I thought other people might want to hear about it too.

These experiences of being supported by her mother and having exposure to women in STEM careers, worked to sustain Emily's interests in science and generate interest in engineering,

I always knew I was interested in science. That was something I thought I was going to go into college and major in biology. I guess just as I've gotten older, it's a mix of being here and talking to these women and just kind of living almost. I realized I might like engineering. I know it might be difficult, but I thought I would give it a shot. That wasn't something I thought I like, because I know it's very nasty, but I've kind of learned ... I guess I didn't really like math too much. I'm decent at it. I just didn't find it super fun, but as I've gotten older, it's kind of become interesting to just ... There's something that's kind of special about math that I think that I might like to do with engineering.

Her experiences too supported Emily in seeing connections between math (something she did not used to find "super fun") and engineering (a career path she was now interested in pursuing).

Conclusions and Implications and Future Work

Brokering in and peer support in a Connected Learning or interest-related program are good for youth persistence in the activity and for sustaining of interest over time. Similar to Barron and colleagues (2009), we see the role of parental brokering in the case of Emily. Emily's mother played an integral in bringing her into the activities of the museum internship and practices of career scientists and engineers. Her mother supported her learning of science content and her access to the museum (through transportation and early exposure to the internship program). Further, through Emily's participation, she gained exposure to women in science and engineering careers who bolstered her sense of self as a future scientist and prompted her interest in an

engineering career. These mentoring experiences further supported Emily in considering in nuanced manner the practices of scientists and engineers and which of these mapped onto her interests and future desires.

In Devon's case, when he needed work, his friend brought him into the program where he was supported to discover and develop his interest in media production. This brokering in moment by Frank opened up a paid opportunity for Devon, in which he leveled up over time, gained experience, and gained access to professional work through the client facing MPP Pro program.

These findings point to the important role of relationships in bringing youth into interest-related activities and suggest the ways that being brokered in can expand youths' networks and opportunities for skill building in ways to sustain their participation and interest. These findings suggest that brokering matters for youth in their early on in their interest discovery where they have time through high school to develop interests and skills related to those interests. Access to these opportunities also increases youths' opportunities to build more peer and adult relationships that might lead to further brokering into new opportunities, further education, or careers.

For future analysis (research question three), we intend to examine what conditions of brokering (e.g. who was doing the brokering and in what ways) led to sustained interest over time and across social spaces of these youths' lives. Specifically, we plan to employ a methodological approach to comparative case analysis called Qualitative Comparative Analysis (QCA) to examine, for youth who were brokered in, what combination of brokering conditions resulted in interest sustainment. As an analytic approach designed to identify the multiple combinations of conditions that lead to a particular outcome (Rihoux & Ragin, 2009; see Kintz, Lane, Gotwals, & Cisterna, 2015; Woulfin, 2015), QCA may offer greater insights and a more nuanced view into what brokering practices support youths' interest sustainment and how we might promote the kinds of relationships that expand youths' opportunities.

References

- Azevedo, F. S. (2011). Lines of practice: A practice-centered theory of interest relationships. *Cognition and Instruction, 29*(2), 147–184.
- Barron, B., Martin, C. K., Takeuchi, L., & Fithian, R. (2009). Parents as learning partners in the development of technological fluency. *International Journal of Learning and Media, 1*(2), 55-77.
- Bell, P., Tzou, C., Bricker, L. A., & Baines, A. D. (2012). Learning in diversities of structures of social practice: Accounting for how, why, and where people learn science. *Human Development, 55*, 269-284.
- Cartun, A., Kirshner, B., Price, E., & York, A. J. (2014). Friendship, participation, and site design in interest-driven learning among early adolescents. In J. L. Polman, E. A. Kyza, D. K. O'Neill, I. Tabak, W. R. Penuel, A. S. Jurow, K. O'Connor, T. F. Lee, & L. D'Amico (Eds.), *Proceedings of the 11th International Conference of the Learning Sciences* (Vol. 1, pp. 348-353). Boulder, CO: ISLS.

- Ching, D., Santo, R., Hoadley, C., & Peppler, K. A. (*in review*). Not just a blip in someone's life: Integrating brokering practices into out-of-school programming as a means of supporting and expanding youth futures.
- Dedoose Version 6.1.18, web application for managing, analyzing, and presenting qualitative and mixed method research data (2015). Los Angeles, CA: SocioCultural Research Consultants, LLC (www.dedoose.com).
- Hidi, S., & Renninger, K. A. (2006). The four-phase model of interest development. *Educational psychologist, 41*(2), 111-127.
- Ito, M., Gutiérrez, K. D., Livingstone, S., Penuel, W. R., Rhodes, J. E., Salen, K., Schor, J., Sefton-Green, J., & Watkins, S. C. (2013). Connected Learning: An agenda for research and design. Irvine, CA: Digital Media and Learning Research Hub.
- Kintz, T., Lane, J., Gotwals, A., & Cisterna, D. (2015). Professional development at the local level: Necessary and sufficient conditions for critical collegueship. *Teaching and Teacher Education, 51*, 121-136.
- Nacu, D. C., Martin, C. K., Pinkard, N., & Gray, T. (2014). Analyzing educators' online interactions: a framework of online learning support roles. *Learning, Media and Technology, 1*–23.
- Penuel, W. R., Harrison, J. F., Falk, J. H., Hendrey, M., Staus, N., & Dierking, L. (2015). *Using agent-based modeling to gain insight into adolescents' interest development*. Paper presented at the Annual Meeting of the American Educational Research Association, Chicago, IL.
- Rihoux, B., & Ragin, C. C. (2009). *Configurational comparative methods: Qualitative comparative analysis (QCA) and related techniques*. Thousand Oaks, CA: Sage.
- Woulfin, S. L. (2015). Highway to reform: The coupling of district reading policy and instructional practice. *Journal of Educational Change, 16*(4), 535-557.