

# Identities and Astronomy Camp: How individual campers make meaning of science experiences

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**Abstract:** This study uses the concept of affinity space to analyze youth participation in a summer science camp, examining how students took on virtual identities as astronomers, merged them with their real identities, and, to varying degrees, adopted projective identities of themselves as scientists. Analyzing camper interviews, I investigate the degree to which Astronomy Camp is an affinity space and present individual cases of ways campers make meaning of their research experiences by creating different identities.

Gee (2004) argues that *affinity spaces* (physical or virtual designed spaces tied by a shared interest or endeavor) allow for a particular interplay of personal identities: virtual, real, and projective. Although his illustration of this potentially transformative interplay of identities is grounded in video or computer games, he argues that it would be much more powerful if learners create virtual and projective identities that can be carried into the real world rather than a virtual gaming world, for instance taking on the virtual identity of a scientist in a classroom or other space, merging it with a real-world identity, and creating a projective identity of a certain type of scientist that will have a history and future. Researching affinity spaces with the potential for real-world projective identities and the ways that learners create and merge identities within them can illuminate ways to encourage a student to “know that he or she has the *capacity*, at some level, to take on the virtual identity as a real-world identity” (Gee, p.114). This study uses Gee's concept of affinity space to analyze youth participation in a summer science camp, to examine how students took on virtual identities as astronomers, merged them with their real identities, and, to varying degrees, adopted projective identities of themselves as scientists.

## Background

The Advanced Astronomy Camp is an eight-day summer camp directed by a professional research astronomer where youth ages 14-18 create research questions, develop proposals, investigate their questions in groups with professional instrumentation and telescopes, flesh out theories for how their data relates to current published research, and present their findings to the entire camp. The camp purposefully links itself to professional astronomy and astronomers through its view of youth as ‘guest astronomers’, its access to astronomers and students in various stages of becoming astronomers (e.g. graduate and undergraduate student counselors), tools of astronomers, and an intensive research process. The camp has been operating for over fifteen years and has a high reputation among attending youth, their teachers, and their parents. The camp’s strong reputation and its emphasis on immersing youth in research posed a distinctive opportunity to consider what aspects of this informal science learning environment interest and motivate the youth who attend and how youth create identities at camp that can change the way they imagine their futures.

## Method

Ten of thirty-three campers, four of eight counselors, and the director of the Advanced Astronomy Camp in the summer of 2002 were interviewed. In addition to the interviews, the researcher observed and took field notes for the entire Advanced Astronomy Camp. Campers were chosen through a form of random sampling that accounted for three different variables in order to include a range of participants representative of the population of the camp that summer: age, gender, and previous Astronomy Camp experience. This allowed for a breadth of opinion and experience of the youth. The camp was equally distributed in gender and high school grade level; just over one-third of campers had attended an Astronomy Camp in the past. In semi-structured interviews, campers were asked questions regarding three themes anticipated to be relevant to their experiences: affective aspects (confidence, community, personal interactions), science knowledge (science, math, critical thought), and ways of being in the world (careers, higher education, what scientists do). Based on grounded theory, an initial two-step open coding process (Charmaz, 2000) was used to analyze the interviews, generating common themes among all campers or counselors interviewed. Using the interviews, I look for ways that camper descriptions of Astronomy Camp align or

do not align with Gee's (2004) theory of affinity spaces. Within this context, I individually analyze each interview to understand how campers brought their previous knowledge, experiences, and identity to bear on their interpretation of what they found most important about the camp and any ways that they created projective identities for the future.

## Findings

The findings of this analysis are illustrated here through the case of one individual, although the full poster will present the full set of cases. Consider Pam (pseudonym), in the summer before her senior year in high school and having attended Astronomy Camp before. Pam specifically expressed a virtual identity as an astronomer: "You know, it's like being a real astronomer." The following two quotes from her interview illustrate the rich ways that her real-world identity and virtual identity interplayed to help her create a projective identity as a researcher and astronomer.

There's so many challenges that you gotta break through, there's so many unknowns you know, and you, you learn that and you learn how really hard it is, and we're constantly discovering new things, that we've, we discover them, but we don't know what they are, and that's just, that's great ... so it's really kind of changed my perspective on a lot of stuff. Um, and just made me want to learn a lot more, like more physics. Like I didn't understand a lot of things last year, so I went back and took like two years of AP Physics in one, you know, and just like, the camp did that for me.

Well, I think it's really going to suck for me for the first few years of college because I'm gonna be taking these classes, and knowing, that I've been up here...I've already done this and this and I actually did it on a telescope ... I think that's gonna be really hard for me, um, and so I'm definitely gonna go and seek out a lot more research opportunities

In these quotes, Pam expresses a view of science as difficult to do and changing with new discoveries. In fact, she speaks of scientists as "we" not they, positioning herself as a scientist through her research experiences at camp. Her Astronomy Camp experience in a previous summer helped her realize that there was a lot of physics that she needed to know in order to understand more astronomy, so she engaged in an ambitious year of physics classes. In addition, she has discovered that research of the type they did at camp where they made up their own questions and had access to professional equipment like 40" and 60" telescopes is not necessarily a part of the college experience. Pam has created for herself a projective identity of a persevering future astronomer who will pursue appropriate knowledge and research opportunities to get herself through the loopholes of becoming an astronomer.

The full poster will demonstrate the ways in which Astronomy Camp is an affinity space and the different ways that campers create an identity within it. Through individual cases, it will illustrate different campers' ways of making meaning of their virtual identities at Astronomy Camp as they interplay with their real-world identities in their home situations and some campers' creation of projective identities as either professional or amateur scientists and even Mars astronauts. This analysis provides an opportunity to explore characteristics of a real-world affinity space and the ways that youth can interact in it to create new identities for themselves.

## References

- Charmaz, K. (2000). Grounded theory: Objectivist and constructivist methods. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of Qualitative Research* (pp. 509-535). Thousand Oaks, CA: Sage Publications.
- Gee, J. P. (2004). *Situated language and learning: A critique of traditional schooling*. New York, NY: Routledge.