Accountable Talk and Learning in Popular Culture: The Game/Affinity Paradigm

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Over the past few decades a robust body of work has arisen on "accountable talk" as a foundation for learning in school (see Learning Research and Development Center, n.d.). "Accountable talk" is defined as "using evidence to support your opinions, ideas, predictions, and inferences" (see BetterLesson, n.d.; Michaels, O'Connor, & Resnick, 2008). Of course, what counts as evidence and support is relative to different disciplines, domains, practices, and discourse communities (diSessa, 2000; Gee, 2004). Too often in school, young people are engaged in evidential talk unmoored from any outside evidential community that sets standards for what counts as evidence and how it should be represented and marshaled in argument. Of course, classrooms can set their own internal standards, though this can run the danger of "doing school" for its own sake and not for its ties to life outside and beyond school as an institution.

This chapter is not about accountable talk in school—it is about accountable talk in popular culture. Today, more and more people, young and old, are engaged in conversations within interest-driven groups (Gee & Hayes, 2010, 2011). These groups often hold specific and high standards for what counts as evidence, what makes a contribution important, and how talk relates to doing and being, not just facts and arguments.

Before I move to my main concern, I want to offer my own take on the notion of accountable talk (as an outsider to the movement). In my view, talk is most efficacious for learning when people share rich background information, as well as an allegiance to some shared values and standards and, often, to a shared register. By "register," I mean a specific style of language that has been designed by groups of people to carry out certain functions, like the languages of mathematics, physics, carpentry, or video gaming. Elsewhere I have called these different registers or styles of language "social languages" (Gee, 1999). In school, talk is not always well anchored in deeply shared background information, values, standards, and a uniformly mastered appropriate (often technical) register. In the popular-culture practices I look at here, however, such sharing is the norm. Newcomers who wish to be more than peripheral participants are explicitly inducted into and mentored in such sharing.

A New Formation for Learning

Before I turn to accountable talk in popular culture, I want first to discuss a new formation of learning in society, what we might call an "out-of-school school system of popular culture." Because massive amounts of effort devoted to school reform have not translated into widespread success, there has been, over the past decade, a great deal of interest in learning out of school. As part of the digital transformation of popular culture, new paradigms for learning have arisen (Gee, 2004; Gee & Hayes, 2010). There is widespread interest in how some of these new popular-culture paradigms might be used to transform learning in libraries, community centers, museums, schools, and colleges without destroying their inherent properties, properties that are often at variance with "business as usual" in our schools and colleges (Gee & Hayes, 2011).

I want briefly to characterize one new paradigm in the "school of popular culture." This paradigm has no name and is in no respect standardized across different instances. Rather, different instances of the paradigm constitute at best a "family" of cases with "family resemblances." I call it the "game/affinity paradigm" (GAP). GAP is defined by the presence of a well-designed, well-mentored problem-solving space, which is what is needed for instantiating GAP. My examples involve games, but there are similar examples that use forms of media other than games (Gee, 2004).

Examples of GAP raise important issues about access to learning and mastery in 21st-century societies in our global world. Games can offer young people opportunities to learn 21st-century skills that are not available in schools, raising a crucial equity question, and creating stiff competition for formal institutions of learning and even for their credentialed experts. In my view, GAP can be brought into such formal institutions, without losing its true power, only at the price of true and deep paradigm change in those institutions. This level of transformation would be extremely difficult given the prevailing inertia in our traditional schools and colleges.

Let us look at some examples of GAP. Consider the highly popular commercial entertainment game Portal (currently in versions Portal 1 and Portal 2). In Portal, the player has a "portal gun," which creates a blue and an orange portal. If one is used as an entrance, the other must be used as an exit. In the first game, the player's character (a female avatar) is lured into complicated laboratory rooms by a female robot who says that she wants to test the player's intelligence but who actually wants to kill the player's character.

The virtual world of Portal obeys certain laws of physics. For example, the portals obey the law of conservation of momentum. The player must come to a tacit, embodied understanding of Portal's physics in order to solve various problems. I say "embodied" because in games, players often use avatars that become "surrogate bodies" in surprisingly powerful ways.

The solitary Portal player does not learn and need not learn physics in the sense of being able to speak and write knowledgeably about it. However, some players become inspired to join with others on the Internet in what I will call for the time being "interest-driven sites." In such spaces, players articulate the physics behind Portal, discuss how the relevant principles of physics can be used strategically in game play, and even use software to make their own Portal-like games.

For example, some Portal players have made a wiki to explicate the physics behind Portal. Here is one entry:

> The portals create a visual and physical connection between two different locations in 3D space. Portal ends are restricted to planar surfaces, but if the portal ends are

> on nonparallel planes, bizarre twists in geometry and gravity can occur as the player character is immediately reoriented to be upright with respect to gravity after leaving a portal end. An important aspect of the game's physics is "momentum redirection." Objects retain the magnitude of their momentum as they pass through the portals but in a direction relative to the surface the exit portal is on. This allows the player character to launch objects, or even herself, over great distances, both vertically and horizontally, a maneuver referred to as "flinging" by Valve. ("Portal [Video Game]," n.d.)

This is, of course, articulated knowledge, not just tacit knowledge. However, the two are complementary in science learning. Tacit embodied understanding can give "situated meanings" (meanings based on images, actions, goals, and experience, not just verbal definitions) to the articulated words. Situated meanings are the deepest kind of meanings, because such meanings allow people to understand complex language well enough to solve problems in a domain, not just to retain information for tests. Indeed, situated meanings are so important to learning that Valve, the company that makes Portal, has released the full Portal engine so that science educators can use it.

If we want to know what sort of learning goes on in and around Portal, we must look not only at the game but also at its accompanying interest-driven sites. Players can join these sites to discuss the game's physics or to redesign the game ("mod it"), thus learning technical design skills and how the physics of game worlds works in general. A game and its associated sites interact to create learning and change over time. So the unit of learning here is "game plus interest-driven site." It is interesting to note that Valve used the following text to advertise the first Portal game: "The game is designed to change the way players approach, manipulate, and surmise the possibilities in a given environment" (Valve, 2009).

The game gives the player a new tool—the portal gun—which lets the player see the world in a new way and "surmise" new possibilities for solving problems. I cannot imagine a better vision statement for an educational institution in our highly complex, rapidly changing, high-risk global world. We need to ask why a company that makes an entertainment product has a better educational vision than many of our schools and colleges.

I have used Portal as a characteristic example of how people can move back and forth from games to interest-driven sites in a learning process. There are many other examples. Consider The Sims, the bestselling series of games in history. Sims players build families and communities. They can buy houses, clothes, and furniture in stores, or they can make them with design tools that come with the game or other tools such as Adobe Photoshop. They can also create albums with pictures of their "Sims" (artificial people) accompanied by text.

Some players join interest-driven sites at which they can specialize in designing landscapes, houses, clothes, or furniture to share with (or sell to) other players. They can also challenge one another to play the game in a certain way (Gee & Hayes, 2010). For example, one player who called herself "Yamx" gave other players the following challenge on an interest-driven site devoted to The Sims:

> **Sims 2: Nickel and Dimed Challenge**
> This challenge was inspired by, and is named for, the book *Nickel and Dimed* by Barbara Ehrenreich [which has nothing whatsoever to do with Sims, but is nevertheless highly recommended]. The idea is to mimic, as closely as possible, the life of an unskilled single mother trying to make ends meet for herself and her kids.
> **The Goal:**
> Raising your kids successfully until they're old enough to take care of themselves. If you can get all children to adult age without anyone dying or being taken away by the social worker, you've made it. (X3Carli, 2010)

Ehrenreich's 2001 book is about how hard it is to be poor, how much struggle is involved, and how much intelligence it takes to survive. Simulating the life of a poor single parent is not easy either. So Yamx wrote a long "manual" that stated the rules of the challenge and showed players how to adapt their game play and the technology of the game to meet it. She and others had to think carefully about the rules of play and how The Sims worked as a piece of simulation software. They debated these matters as a group and made changes as needed. Players who "won" the challenge had to use the album function that comes with The Sims to write a kind of graphic novel about the story of their family and how the game interacted with that story.

This challenge is not a social studies assignment—its purpose is entertainment. Nonetheless, the players engaged in a good deal of thoughtful reflection on the nature of poverty. They discussed how one could simulate such a life at the level of emotion, not just the physical realities, in order to gain empathy. Indeed, several women wrote to the discussion board that they are or were poor single parents and that this challenge captured their experiences in powerful ways. One woman even said that she was going to keep the challenge to show her child what it was like to be a poor single mother and how she managed the struggle.

In the way it combines social studies, technology, and writing, this challenge is a better "assignment" than many a high school student or college undergraduate ever undertakes. Yet there is no teacher or professor. There is only a "dungeon master" (Yamx) and players who mentor one another.

As another example, consider Foldit, a game in which players can contribute to scientific knowledge (see Center for Game Science, n.d.). In Foldit, players tackle the problem of protein folding. Proteins are like small machines in the body that carry out almost all of the body's functions. They are made up of chains of amino acids that fold into distinctive three-dimensional shapes. However, any protein can fold into billions of different shapes. Scientists use supercomputers to find the optimal fold of a protein (usually its lowest energy state) in order to understand the function of the protein. Foldit presents players with a model of a protein, which they can fold by using a variety of tools. The game scores a player on how good a fold the player has made. Scores are uploaded to a leaderboard, creating competition among players from all over the world. Foldit results have been published in prestigious science journals, including the leading science journal *Nature*, in a paper with thousands of authors, a first for the journal. In official competitions, players have in some cases beaten scientists' supercomputers in the search for correct protein structures. For example, in 2011, Foldit players helped to decipher the structure of the Mason-Pfizer monkey virus, which causes AIDS. Although the puzzle was available to play for 3 weeks, players produced an accurate three-dimensional model of the protein in 10 days. As one media source reported: "Video-game players have solved a molecular puzzle that stumped scientists for years, and those scientists say the accomplishment could point the way to crowdsourced cures for AIDS and other diseases" (Boyle, 2011).

As in the other two cases we surveyed, Foldit players can join others to study protein science, suggest better ways to play the game, and even improve its aspect of scientific discovery. For example, players have made a wiki that contains a wealth of scientific information and suggestions for discovering optimal folds for proteins:

> Amino acids are also the basic units of FoldIt. In the structure of a protein, each amino acid contributes one link in the protein Backbone and (usually) one Sidechain. The backbone establishes the basic structural aspects of the protein, and the sidechains determine the details of its biological function. ("Amino Acids," n.d.)

Players can follow links to learn more about protein science. They can also visit interest-driven sites to mentor and be mentored in protein science and the game, apply what they learn, and see how complex scientific language applies to the world and to problem solving. Without formal degrees or credentials, some players of Foldit and other games have become domain experts who compete with credentialed experts. The combination of games (and other digital forms of learning) and interest-driven sites is producing "pro-ams," people with deep expertise but no "professional" credentials (Anderson, 2006; Leadbeater & Miller, 2004).

My final example is intended to show that this world of games plus interest-driven sites is not for the young alone. As an example of passion plus persistence, it will bring us to the idea of passionate affinity spaces (PASs).

"Tabby Lou" is the screen name of a woman who retired in ill health and became homebound in her late 60s. In the old days, "retired shut-in" could have been the end of the story. However, Tabby Lou's daughter and granddaughters played The Sims, and she grew to enjoy the game as well.

Tabby Lou's granddaughter wanted a purple potty for her Sims' houses, an item not available in the game. To avoid disappointing her, Tabby Lou decided to make one, at a time when the game did not include user-friendly digital design tools. This, too, in the old days, could have been the end of the story: no help, no tools, or tools that are too difficult to learn on one's own.

On the Internet, however, individuals passionately devoted to designing clothes, houses, furniture, landscapes, and stories for The Sims have grouped together. These people offer sophisticated digital three-dimensional design tools and lucid mentoring. At their best, they are organized in interesting ways: newcomers with experts, old with young. Everyone is helped to achieve mastery if they wish; everyone has opportunities to mentor or to be mentored. Everyone is expected to take a proactive stance toward learning.

Tabby Lou used one group's resources and made a purple potty that pleased her granddaughter. She also developed a passion for design. Today, over 13 million people have downloaded her designs. She has won design awards. In her guest book on the Sims Resource site, people have thanked her for her work over 1 million times. She is internationally known and respected.

Tabby Lou's story gives us a theory of passion, what I call "the purple potty of passion." At first, her passion is local and small. She finds an interest-driven site and its tools to realize that passion. The site is organized in such a way that she becomes passionate about the other people on the site and their shared passion (designing for The Sims). Energized by these people, wanting to rise on the site and to serve others who are part of it, she persists through thousands of hours of practice with complex digital tools. She becomes a rock star.

Passionate Affinity Spaces

Thus far I have used the term *interest-driven site* for groups of people organized on the Internet around interest in a specific game. Elisabeth Hayes and I studied such sites connected to The Sims (Gee & Hayes, 2010). Different sites worked in different ways, but many were well organized to energize learning. We call a subset of interest-driven sites "passionate affinity spaces" (Gee, 2003, 2004, 2007).

The concept of a PAS rather than a passionate affinity "group" suggests that the organization of the space (the site and what it links to, including real-world spaces and events in some cases) is as important as the organization of the people. Indeed, the interaction between the two is crucial. Using the term *group* overstresses "membership" at the expense of the structure of the space and the way the space and people interact.

In earlier work, we outlined features that indicate a PAS (Gee, 2004; Gee & Hayes, 2010, 2011). However, these features, which we discuss below, are not absolute. In most cases, a PAS can reflect the "ideal" or prototype to a greater or lesser extent. There are many types of affinity spaces on the Internet and in the real world (Shirky, 2008, 2010). Some are inclusive, supportive, and nurturing, whereas others are not. PASs and other kinds of interest-driven groups can give people a sense of belonging, but they can also give people a sense of "us" (the insiders) against "them" (the outsiders). People can cooperate within these spaces, but they can also compete fiercely for status. They can communicate politely and in a friendly fashion, or they can engage in hostile and insulting interaction.

The list below shows the set of features associated with The Sims' PASs we studied in Gee and Hayes (2010). These features are not easy to achieve, even in a nurturing space, and they can deteriorate over time. However, we have also seen these features in other passionate affinity spaces. As we list these features, it will become apparent how far apart these spaces are from schools and colleges. If human learning and growth flourish in a PAS, especially a nurturing one, then it is of some concern that schools have so few of these features.

1. The space is defined by members' passion for a common endeavor, not their race, gender, age, disability, or social class.

2. Participants share a common space regardless of age, experience, expertise, or goals.

3. Participants can produce—not just consume—content. New content is judged by the standards of the space.
4. Social interaction transforms content.
5. The space encourages the development of broad, specialist, individual, and distributed knowledge—creating a new view of expertise as collective.
6. The space facilitates dispersed knowledge through access to off-site sources.
7. The space honors tacit knowledge (such as knowledge attained through trial and error) and encourages explicit knowledge (such as the codified knowledge found in tutorials and forums).
8. The space offers different ways to participate, and different routes to status.
9. Leaders are seen as resources. Roles shift frequently, as leaders become learners, learners become leaders, producers become consumers, consumers become producers.
10. The space supports and encourages producers by providing peer feedback and/or a consumer audience.
11. The space promotes an idea of learning as a proactive, self-propelled process that may require group resources and may involve failure.

In the world outside formal institutions, people are becoming experts without credentials. They are producing and not just consuming, participating and not just spectating. They are solving problems and preparing themselves for future learning. They are engaged in finding and refining their interests and growing passions that lead to persistence and mastery. Often they are also gaining status—a sense of counting and mattering—outside of markets and jobs (Reich, 2007).

Accountable Talk and Accountable Learning

In the popular-culture out-of-school GAP learning I have discussed here, talk and interaction are inseparable from participation in a passionate affinity space and from production, not just consumption and spectatorship. Standards are set and negotiated within a group that often aims to compete with "experts." Articulation in speech and writing is tied to the appropriate registers (social languages) and is based on situated meaning. That is, language is tied to images, actions, goals, experiences, and dialogue, not just other "texts." Talk, interaction, and production are in the service of learning, and "transfer" is defined in terms of how far one can contribute to an affinity space and how well one can enter new related ones for lifelong learning. Teachers do not ask for evidence; rather, participants adhere to evidence because they need to produce things that work and meet agreed-upon standards. They have come to hold themselves accountable.

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