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Exploring Identities and Patterns of Participation in Virtual Environments

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Abstract

This research examines the patterns of participation that emerge in video games and the participatory affinity spaces that develop around them, to better understand how learning occurs in these informal online environments. This work presents a preliminary social network analysis (SNA) of 838 members in a community group focused on the space flight engineering game Kerbal Space Program. SNA was used to visualize friendships between players and to map individual participation attributes. Findings suggest the importance of designing for intentional whole-group engagement in affinity spaces used for targeted educational goals, such as curating rich modes of engagement, balanced by thoughtful user regulation.

Learning and identity in affinity spaces

As participation in online communities gains increasing prominence in the lives of learners, harnessing the potential of these spaces to offer powerful learning opportunities and transformative experiences has become an increasingly valuable endeavor for educators, designers, and policy makers (Collins & Halverson, 2010). Video games in particular have been lauded for their potential to support student learning and motivation, as players participate, share, and curate game-specific affinity spaces: collections of loosely organized social and cultural settings in which teaching and learning is shared by many participants and across many locations, connected through shared interests and passions in the game and game topics (Gee, 2007). It is through shifting allegiance, access, and participation in specific group practices that players learn and develop affinity identities (Gee, 2000), yet this process has proven difficult to measure as it crosses digital platforms (Lammers, Curwood, & Magnifico, 2012). Consideration is also warranted for the effects of game design (Gaydos, 2015) and affinity space design (Gee, 2018) on players' learning experiences and identity development.

The aim of this research is to examine the patterns of participation that emerge in video games and the affinity spaces that develop around them, to better understand how learning occurs in informal online environments. A secondary goal of the work is to explore how design features of these online environments shape user experiences, to offer targeted design implications for formal educational integration and use.

Kerbal Space Program on the Steam Community Platform

This research presents a preliminary social network analysis of a community group on Steam, an online gaming platform that also houses, promotes, and regulates the development of affinity spaces around online games. The 125 million Steam users may purchase, virtually store, and play over 25,000 games, while the community feature offers collaborative gaming and social network services including friend lists, player-to-player chats and gifts, game ratings and reviews, and user badges and achievements. The sample consisted of 838 members of a community group for the game Kerbal Space Program (KSP), a space flight design and simulation engineering game. KSP is the highest ranked educational game on the site, and the selected group was the largest English-speaking community of voluntary members.

Social network analysis (SNA) was used to explore the relationships between social actors in a connected group (a network), and “what passes through these networks” (Kadushin, 2012, p. 4). Steam makes user data on gameplay and social networks freely accessible for download and analysis through their Application Programming Interface (API), which was used to visualize friendships between players and to map individual attributes (which games users played and how often, users’ earned achievements, and community bans).

Findings

- 122/838 users were friends (sparse network).
- 31/35 friend clusters were dyads (pairs).
- Most dyads were friends before the community was created; larger friendship clusters were newer and likely developed through affinity space participation.
- Most users were active on Steam in the last 3 months, but had not played KSP.
- The range of earned achievements varied widely (0 – over 400) suggesting unique individual goals and affinity identities.
- No users earned community bans, but off-topic participation was visible.

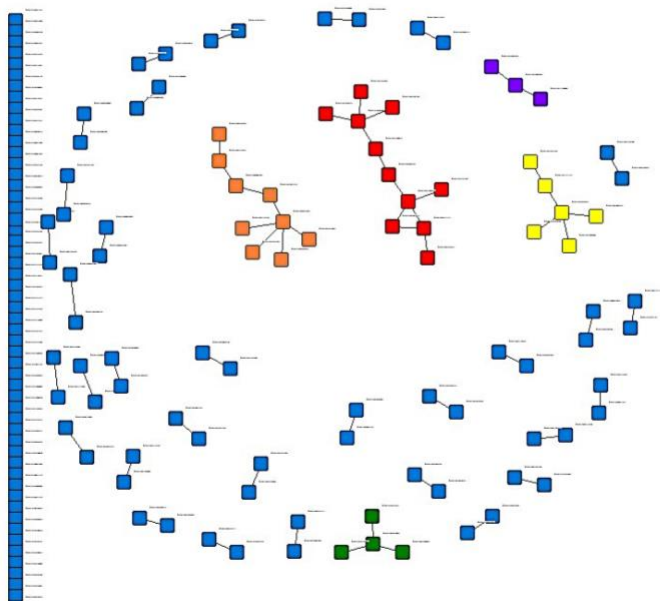


Figure 1. Visualization of friendships in the KSP group.

Discussion and Implications

Findings from an examination of the network of friends in the KSP suggest that the network is largely disconnected through friendship. These patterns reflect existing research on

online participation, such as the “90-9-1” principle, which suggests 90% of members engage passively, while only 1% of the group account for most activity (Nielsen, 2006). Measuring more diverse types of connections between users could provide a richer understanding of group participation, such as records of discussion posts between players. These findings illustrate the need for designers to implement intentional motivational features in affinity spaces to more broadly engage communities with a targeted educational goal. Educators may also need to consider triangulating participation in online learners across different patterns and connections.

Patterns of friendship acquisition suggest that most dyads were formed before the creation of the KSP group, while larger clusters were newer and may have formed as a result of community engagement. Larger clusters were also more likely to demonstrate other types of participation, such as achievement acquisition. This suggests that friendship itself should serve as only a preliminary design goal in the development of educational spaces, as it may serve only as a catch factor to support initial engagement (joining the group). Design attention should be paid to facilitating rich learning experiences, from which user connections may develop naturally.

Finally, KSP group members earned no community bans, despite instances of off-topic or inappropriate postings. While such freedom may encourage broader participation in informal spaces, educators and designers should consider a careful balance between focus on a learning goal, and limiting engagement through over-regulation.

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Author Biography

Amanda Barany is a third year PhD candidate in the Educational Leadership and Learning Technologies program with a concentration in STEM education. Her current research explores the design of online communities of practice to support user identity exploration and patterns of participation to support learner experiences.

Amanda currently works with Dr. Aroutis Foster as a graduate researcher in the Games and Learning in Interactive Digital Environments (GLIDE) lab, which unifies her interests in games, the design of computer-based learning environments, identity, and interest and

motivation in game-based learning. She has 9 years experience studying the design of games and learning.

Amanda's current areas of interest stemmed from her prior research and professional experiences. She earned an undergraduate and master's degree in social work at the University of Wisconsin-Madison, with a focus on psychology and criminal justice. For five years, she worked in the UW Madison psychology department conducting lab studies of college students' developing interest and motivation in science content. From 2011 - 2014, she also served as project manager for the educational game Citizen Science at the Games + Learning + Society research and design lab. Amanda also worked as curricular designer for the game Fair Play, a game that provides immersive experiences of racial bias in higher education environments. Amanda was the co-lead organizer for volunteers at CSCL 2017 and co-editor for conference proceedings for GLS 2016.