Educator roles that support students in online environments

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Abstract: Potential generative outcomes of participation in online learning communities are documented, alongside inequities in terms of who is participating. We share a blended multi-level approach to identify and explore educator roles played to support 11-to-13-year olds' learning, participation, and development in one online learning environment.

Introduction

As online learning environments rapidly become part of the education landscape, new methods to make sense of what is occurring in these environments are critical. Although web-based systems can automatically collect enormous amounts of user data, there is much we as a field need to understand about what to examine and how to analyze what we see to reveal patterns of learning. Positive outcomes of participation in such environments are documented, but so too are inequities in the ways different populations access and use such online opportunities. In this paper, we present a blended approach of community-level automated analytics and more individual qualitative interpretation to look at educator roles played to support student learning in one online learning environment designed for middle school.

Online learning environments, outcomes, and inequities

In 2010, over six million students participated in online learning at postsecondary institutions in the United States, a ten percent growth rate from the previous year (Allen & Seaman, 2011). Recently, massively open online courses taught through platforms such as Coursera and edX, offer free online classes to students around the world. The rise is apparent for K12 as well. In 2008, an estimated 75% of public schools had one or more students enrolled in a fully online or blended course, and 66% estimated that their online offerings would grow (Picciano & Seaman, 2009). Open source platforms offering teachers a customizable online classroom space are increasingly successful, including Moodle and EdModo.

Learning content knowledge is one potential outcome of participation in online learning environments, as students are introduced to new information and submit assignments. Many environments now incorporate a variety of interactive and social features allowing students to go beyond retrieval and submission of information, moving to collaborative production, processing, and understanding. We refer to these spaces as online social learning networks. Within these networked community contexts, less traditional results have been documented that are believed by some to be important pieces of the 21st century skillset, including managing information, directing learning pathways, collaborating, discussion and critique around common artifacts, and building collective intelligence (Barron, Gomez, Pinkard, & Martin, in press; Jenkins, Purushotma, Weigel, Clinton, & Robison, 2009).

But only a subset of people participates in ways that can lead to these positive outcomes (Hargittai & Walejko, 2008, Jenkins et al., 2009). A new digital divide has been identified not in terms of access to technology, but in terms of who has the opportunities, support, and knowledge to truly participate. A knowledgeable social network is one important piece of this system. Parents and other home connections can be highly instrumental in guiding learning and participation (Barron, Martin, Takeuchi, & Fithian, 2009) but for many families, parent technological knowledge and co-participation is not the norm (Warschauer & Matuchniak, 2010). There is evidence, however, that informal spaces such as afterschool spaces and community centers, can provide knowledgeable social networks for young people (Barron et al., in press). Online spaces have the potential to support and supplement these face-to-face opportunities.

Context: Digital Youth Network

The Digital Youth Network (DYN) is a mix of school, afterschool, and online spaces designed to provide youth with opportunities to develop traditional and digital literacy within a supportive and interactive community. Programming is offered through schools and libraries, specifically targeting urban populations.

Previous research within a school-based implementation of DYN highlighted the central position of DYN educators for student's technology-related learning, experiences, and development, more so than adults at home. Educators were aware of their critical position within DYN and revealed complexities and tensions that went hand-in-hand with this status, including difficulty finding a balance between being a teacher and evaluator alongside being a friend and mentor (Barron et al, in press).

iRemix is the DYN online social learning environment, which has become increasingly central as programming scaled up and face-to-face time has become more distributed. iRemix has an interface and functionality similar to popular online social network communities, and students are able to create a profile

page, link to peers, and share and critique work. Users, including students and educators, share perspectives and create dialogue through blogs, forums, and mediated debates. In addition to using iRemix in classes, students are encouraged to use iRemix as an extension of classroom activities, and personally to develop as individual and collective participants over time. Given the central role of educators and the increasing reliance on interactions within the online iRemix space, we set out to document educator activity online to learn more about what was happening and reflect on potential for redesign.

Methods

Participants

The DYN instance presented here blended face-to-face school day classes and online participation for three sixth grade classrooms (N=79 students, 46% female) at a public charter K-8 school. The school was located an urban environment, with 725 students, 99% of whom were African American, and 86% of whom were receiving free or reduced lunch benefits (one measure of socio-economic status). The DYN classes focused on traditional and digital literacies and were taught by two teachers who specialized in reading and writing and two teachers who specialized in media arts. All of the educators and students involved in the classes were required to spend time on iRemix in addition to their face-to-face classroom time. Two additional adult mentors were responsible for online interactions only (i.e. they were not in the classroom). In all, there were six educators (50% female).

Coding framework and analysis

Our framework for educator roles online is based on work by Barron et al. (2009) that used case studies of eight highly technologically engaged middle school students from Silicon Valley to identify influential roles played by parents. These roles included: Teacher, Collaborator, Learning broker, Resource provider, Learner, Non-technical support, Employer, and Monitor. Together with DYN educators as our design partners, we examined and discussed these roles in the context of DYN. First, DYN educators shared verbal examples and reflections from their own online and face-to-face interactions with students. Next, archived digital histories of DYN educators were explored on iRemix, excerpting screenshot examples and discussing as a group. Through several cycles of collaborative review and discussion, and category refinement, a set of learning support roles that apply to adult educators within an online social learning network were defined. These included the existing roles of Learning broker, Monitor, and Resource provider, and the new roles of Audience, Encourager, Evaluator, Friend, Model, and Promoter. In addition, we slightly reconceptualized the role of Teacher and defined an Instructor role. The full set of roles is summarized in Table 1. The roles of Collaborator (play a role on a group project alongside youth) and Learner (learn from youth) were important face-to-face interactions discussed by mentors and will be incorporated into the coding scheme if evidence is found online.

iRemix was intentionally designed to collect and report use data, including logins and particular actions (including *read* (viewing work or posts), *create* (posting media or starting a blogpost), *comment* (adding a comment to posted work or discussion) and *rate* (formally assessing posted work)). Authors determined what pre-existing logged actions could be automatically coded as a role and what needed to be interpreted by hand. All instances of educators *reading* a student post were automatically coded for the role of Audience. Educator *comments* on student work and educator posts to the site were automatically logged but needed human interpretation of the content to determine the type of role evident.

For this study, we looked at the online educator activities on the iRemix space during a three-month class unit, from March 17 through June 20, 2012. There were 2221 actions logged as adult roles during this time; 1824 actions were automatically coded and 397 actions were determined to need human interpretation. Two co-authors coded a subset (25%) of the actions that needed human interpretation (educator comments and posts) and reached reliability of 86.4%. Coding discrepancies were discussed and agreements about coding were reached to mediate ambiguity in the coding scheme going forward. A FileMaker Pro collaborative database with a portal into iRemix was used to code the activity instances.

Table 1. Coding scheme for adult learning support roles online. (A) Indicates automatically coded actions. (H) Indicates actions that require interpretation and were coded by hand.

Role Definition	Examples from iRemix
Audience. View what youth are doing online	(A) View or read student work
Encourager. Encourage youth about work or participation	(H) Comment: *Jamie this is pimp, the details from the shoes to the chain are nice. Great Job!!*
Evaluator. Provide grades, ratings, badges, or other formal assessments	(A) Rate student work (A) Award or create badge
Friend. Exhibit personal approachability/ friendship/mentorship, including social posts, off-topic conversation	(A) Post a status update (A) Edit/create profile page (H) Comment: *LOL! I love Boondocks, too!*

Learning Broker. Connect youth with learning opportunities (people, activities, etc.)	(H) Comment: *check [how to do this] with Ms. Ammond or Mr. Vireo.*
Model. Share own creative work/process	(H) Blogpost: [Animation created by educator]
Monitor. Impose or suggest rules of behavior online	(H) Comment: *This is not appropriate and I don't expect to see content like this anymore. If I see it again you will lose your privileges permanently!*
Promoter. Showcase youth participant work	(A) Feature student work on front page of site (H) Blogpost: [Embed class-created e-zine]
Resource Provider. Provide learning resources (how-to guides, links, embedded media, etc.)	(H) Blogpost: *Use this link.* [link] (H) Posted document: *ExportingFromiMovie.doc*
Instructor. Directly teach a concept or skill or provide an assignment. Provide prompts and/or feedback to further student thinking or work	(A) Create a debate (H) Blogpost: *Create a story based on a character's trajectory of choices. It must be 3 paragraphs and include character names, settings and a creative plot.* (H) Comment: *I'd love to see a step by step on how you made this piece.*

Preliminary results

Educator logins ranged from 19 to 97, with an average of 58 logins during the three-month period. The number of logins was not an indicator of number of activities enacted with the space. Although we are still working on hand coding the full set of comments and posts, we provide initial findings to date.

Audience for student work

In today's classrooms, teachers need to deeply understand not only the content, but also the personalities, interests, and abilities of their students (Darling-Hammond, 2008). DYN educators used iRemix as a window into student work and what students they were doing outside of the classroom. An overwhelming majority of the actions logged by educators online reflects the Audience role (1812 instances across educators, representing 82% of the total role actions logged), including viewing student-created media assignments, profile pages, personal blogposts, and interactive discussions. What is not yet clear is the extent to which students were aware of their adult audience and if it motivated participation on the site.

There were only 12 instances of automatically coded roles that were not Audience. The Friend role occurred eight times, reflecting educators updating their profile page or posting a status updates. The Instructor role occurred two times, reflecting educators creating debate activities. The Evaluator role occurred twice, reflecting both creating a new type of badge and a formal rating of student work. These results indicate that although features exist in iRemix designed to promote and support student and teacher interactions around learning roles, such as a "Feature" button to push student work out to the home page, these aspects of the site were not frequently being used. Further research is needed to determine why. Educators may not have been aware of certain features or may have made deliberate decisions about interaction, such as believing evaluation of student work to be something best done face-to-face.

Connections with individual students

The online social learning network offered opportunities to support students individually, something that has been documented to be especially important in urban schools (Brown, 2004), but that is often difficult within the real-time complexities of the face-to-face classroom environment. Reading student work (Audience role), providing formal assessments (Evaluator role), and commenting on student work (multiple roles) represent roles played by an educator for an individual student as opposed to the entire group. Although there is evidence of educators enacting roles for a group of students, such as submitting status updates and posting an assignment or a resource for the class, the vast majority (97%) of the actions logged online were targeted toward an individual. Even when the Audience role is removed from the count to reflect those roles that are more interactive, roles played for individual students remain the most common pattern in the online space (87%). Although we have not finished coding the comments, the subset that we have coded span seven roles and the majority of comments reflect two roles in particular: 83% had a segment of the comment coded as Instructor and 55% had a segment coded as Encourager. A common interaction involves a student posting work and an educator responding with an encouraging statement followed by suggestions or prompts for additional work or thinking, as in the example below:

> Student post: *Theres nothing as great as a dear old sunset / setting in the west / its as beautiful as a rainbow / the sun is so close to the ground / yellow orange pink purple blue / it is so pretty / you know that night is coming / a sunset is a sign of night / sunset...*

Mentor comment: *I really like how you compared a sunset to a rainbow. You should add more descriptions. Describe how the day is different during sundown. Very nice job, so far.*

<u>Gender patterns</u>

Though we have a small sample, patterns were visible that need to be explored in more depth. Female educators evidenced more online actions counted as a learning support role. Males ranged from 66 to 276 role actions (*M*=168.70 *SE*=117.61) while females ranged from 164 to 783 (*M*=574.67, *SE*=117.61).

Implications and future work

This work is part of a larger initiative to understand interactions between members of an online social learning network over time and we believe findings will be generalizable beyond iRemix. This first study specifically looks at the different roles that adult educators play to support students in an online environment. After hand coding logged actions that need human interpretation and running analysis on the full dataset we intend to compare patterns of educator and student activities to explore impact of adult roles on student work and participation and look at variation between educators.

We see important implications for research, design, and practice. Understanding of the roles that are being played and not played and different generative outcomes that emerge from these direct actions can help us to design online supports for desired actions and outcomes. This work also offers a language and framework to share ideas and findings with practitioners during professional development sessions, aiding in discussing and understanding the complexities of taking on multiple roles intentionality around enacting certain behaviors at key moments to achieve certain instruction and/or interactive goals. Above all, it is an exploration of the online learning environment as a space that can provide youth with a knowledgeable social network to support their learning and development.

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