

Examining the Educative Value of Person-To-Person Knowledge Sharing on Social Media: The Case of YouTube as a Site of CSCL?

Ilana Dubovi, Ben-Gurion University of the Negev, dubovi@post.bgu.ac.il,
Iris Tabak, Ben-Gurion University of the Negev, itabak@bgu.ac.il,

Abstract: This conceptual paper examines the educative potential of social media as a platform for everyday on-demand computer-supported collaborative informal learning. We propose three dimensions: reliability, learnability and critical-construction, as a framework for investigating collaborative learning within naturally occurring social media. We use YouTube as a focal case. Our review of literature on YouTube as a space for informal peer learning suggests that post-video deliberative comments hold much promise as precursors for co-construction of knowledge. However, questions remain concerning the veracity of user-contributed videos, and the adequacy of this medium for different learning goals. Nonetheless, investigating the educative value of non-formal person-to-person knowledge sharing on social media can be an important direction for CSCL research in its aim to support learners in formal environments for future life-long learning and civic engagement.

Introduction

In this conceptual paper, we examine the educative value of person-to-person knowledge sharing on social media, and propose how it can be a productive line of inquiry in the CSCL community. Web 2.0 offers a platform for both social and informal learning by providing support for user-generated content with features of social networking sites (Duffy, 2008). Interaction with these social spaces is based upon a discovery of new materials in a self-directed mode which is aimed to satisfy different learners with a variety of informal learning goals. A unique feature of learning with social media is that it is mostly motivated by an intrinsic need which is followed by intentional but also by an opportunistic search for information. Though this may start as a solitary endeavor, once the information is located, it can be supported by a collective shared knowledge and shared literacy.

This duality: motivated by a particular authentic need but also supported by a social learning space, offers an opportunity for the CSCL community to better understand how knowledge that is created and shared as part of everyday life routines might contribute to theoretical dimensions of collaborative learning (Dyosi & Hattingh, 2018; Ludvigsen, Cress, Law, Rosé, & Stahl, 2016). More specifically, by unfolding informal collective learning with YouTube as a focal case, we aim to contribute to a deeper understanding of opportunities for collaborative learning. This study is intended to question the social nature of collaboration in such environments (Asterhan & Bouton, 2017; Asterhan & Schwarz, 2007; Kimmerle, Moskaliuk, Oeberst, & Cress, 2015; Cress, Stahl, Ludvigsen & Law, 2015), with the goal of articulating principles that distinguish what constitutes person-to-person knowledge sharing versus collaborative learning, and when and how it is possible to generate situations that constitute collaborative learning.

In the following sections, we review literature on YouTube as a space for informal peer learning. Following, we propose, and apply to YouTube, a framework to evaluate the educative value of social media.

YouTube as a focal case for educative social media

A widespread example of informal learning from the Web 2.0 is YouTube, launched in 2005 to enable any subscribed member to create, upload, and share a wide range of content ranging from homemade video to movie scenes. Yet, YouTube is not merely the second-most popular platform in the world for broadcasting content, but an emblem of emerging participatory culture, which plays a central role in learning on demand that is embedded within social interaction in the form of commenting, seeking and providing information (Tan, 2013). Within this context, the transformation in learners' consumption and participatory practices may alter what and how learning occurs. This social epistemological nature of YouTube facilitates both joint interaction with group members and interaction with broader communities such as citizen science, which might create a need for unanticipated and unexpected learning of new science knowledge and skills (Polman & Hope, 2014).

YouTube is designed as a content sharing site which is mostly based on videos that are used for informal learning tasks and entertainment. The instructional videos on YouTube can be classified through three following main types of learning: First is *procedural learning* that has a motor, visual or auditory components, such as specific troubleshooting of printer jam clearance (Rodriguez, 2002); laptop memory replacement; handheld device assembly (Watson, Butterfield, Curran, & Craig, 2010); learning of technique-based musical objectives (Waldron, 2013); or medical education, i.e., how to step by step perform a lumbar puncture procedure (Rössler, Lahner,

Schebesta, Chiari, & Plöchl, 2012). People are able to develop their procedural motor skills by performing the actions while watching the sequences in motion with actual objects and tools. A second type of learning on YouTube is *informational learning*, such as where to visit when touring a destination, what to pack. A widespread example is when people search for health-related information issues such as immunizations or H1N1 Influenza Pandemic. The rarest form of YouTube learning is the third type, *procedural conceptual learning*, which focuses on how to perform intellectual skills, for example how to analyze risk, how to decide between alternatives based on multiple criteria, or how to decide which statistical analysis is appropriate and how to interpret analysis results.

Although more than 72 hours of videos are uploaded to YouTube every minute, numerous studies have documented severe quality deficits in the information provided, stating that some of the videos' information quality "pose a grave threat" (Rössler et al., 2012, pp. 657). This threat is heightened by the unlimited ability of users to upload open-ended materials which can then be further shared. This suggests that awareness of information accuracy is key in this context (Stadler & Bromme, 2007). However, the content management features such as YouTube channels, a playlist, and measures to assess popularity, enable users to organize, source, and share videos. It thus becomes important for researchers to investigate the nuances and practices in peer interaction and learning in YouTube as a collective knowledge sharing platform. With this aim in mind, we propose three dimensions for examining the educative value of YouTube as a focal social media platform.

Dimensions in the educative value of YouTube

We propose three dimensions: reliability, learnability and critical co-construction, as a framework for examining whether and how informal learning unfolds in YouTube, and whether it can be considered a CSCL environment.

The Reliability dimension. In order for YouTube instructional videos to have educative value the information and procedures that appear in them need to be reliable. Although the question of who determines or sanctions knowledge and procedures is charged, here, we define reliability as information that accords with the consensus in leading scientific journals or central professional organizations (Krippendorff, 2008). The question is what means are available to YouTube users in evaluating the veracity of the content that is uploaded? YouTube includes a number of features that can be considered with respect to this question. These include various measures to assess popularity (i.e., popularity rankings, number of views), the ability to upload an unlimited number of videos, and to post comments, which may further encourage users' discussions and interactions. Some evidence uncovers that these affordances of collective and individual social engagement, support information evaluation and sourcing within social media spaces. For instance, Azer (2012) who evaluated YouTube as a medium for learning anatomy, stated that although only 27% of videos were useful for teaching and learning purposes, the useful videos had a viewership per day on average double that of non-useful videos (38 vs. 16 average viewership/day). Similar results were suggested by Pandey et al. (2010) who evaluated YouTube as a source of information on the H1N1 influenza pandemic. Their findings point out that 61.5% of videos had accurate information about the disease, while the information that was contributed by CDC had the highest viewership share. Duncan, Yarwood-Ross and Haigh (2013) evaluated 100 YouTube channels to assess the quality of clinical skills videos. They found evidence that quality is recognized by the viewers and approval is expressed through the 'like' button on the YouTube site. In this sense, user-to-user to content interactions (i.e., sharing, popularity rankings) creates a collective literacy in information evaluation.

The Learnability dimension. This dimension examines whether and how the form and content of the video mediates learning, and to what degree. It also offers a way to compare the different types of learning discussed above (e.g., procedural versus informational), in terms of what strategies are more effective for each type of learning. As mentioned above, procedural learning is the most popular type of learning with YouTube instructional videos. Some evidence shows that learning with this medium is driven by perceived usefulness and expectations that learning through YouTube would improve their understanding of "how to do something" (Lee & Lehto, 2013). Interestingly, Dyosi and Hattingh (2018) reported that children who watched how-to-YouTube-videos did not realize that they were actually learning and acquiring skills, underlining that informal learning with YouTube can be incidental and unintentional. Unfortunately, there is not much direct evidence in the literature concerning the efficacy of learning with YouTube and similar social media. Although, there is some evidence through self-reports in subscribers' text comments on the posted video that suggests that knowledge and skills were acquired (Hattingh, 2017). One area for future research is to develop specialized methods to elicit evidence of learning from social media that goes beyond self-report measures.

The degree of critical co-construction and interdependence dimension. This dimension represents the degree of interaction and interdependence among consumers of the shared media, and between the consumers and the subscribers who create and share the media (Cress et al., 2015). This is the dimension that is most critical to the CSCL community, and for determining whether the learning context can be considered a CSCL environment. YouTube and similar social media might generate situations that make collaborative learning possible, and as

such, there is a great potential for learning. Though the structure of social media is designed to support sharing of knowledge and ideas, the process of critical evaluation, refinement or improvement of ideas is not guaranteed, and consequently, there is no guarantee that collective knowledge construction will take place. For example, Asterhan and Bouton (2017) investigated secondary-school students' interactions with social media, and found that their communication was mainly characterized by peer-to-peer exchange of information and knowledge sources, and not by in-depth, peer-guided, knowledge co-construction. They further argue that the notion of *knowledge sharing* is a more accurate depiction of this type of social knowledge-based activities than co-construction or collaborative learning.

Online knowledge sharing is a well-known construct in communication, business management and information sciences (John, 2013). Knowledge sharing refers to activities in which individuals make their own internally stored knowledge and/or external knowledge sources that they have at their disposal accessible to others. In the majority of cases, there is no direct reward for making one's knowledge available. Knowledge sharing requires time and effort to assemble and share online, and involves letting someone else have something that you have, often without knowing who benefits from this knowledge. Despite its pro-social value, Asterhan and Bouton (2017) caution about the educative value of online knowledge sharing, because the ease with which one can consume knowledge that is produced by others, forfeits important individual learning activities (e.g., summarizing, highlighting and integrating information) that are essential for skill development and knowledge growth. They posit that the lack of these pivotal attributes can be explained by the discrepancy between the underlying values that characterize social networking versus formal learning environments, such as promoting pro-social behavior versus assessment and evaluation based on individual performance.

In the Asterhan and Bouton study the most common platform studied was WhatsApp, other studies that evaluated YouTube suggest that it may offer more potential for deliberation and knowledge co-construction. For instance, studying comments on videos concerning climate change, Shapiro and Park (2018) reveal that though there were no moderators to guide the interaction, an argumentative discourse took place. Interestingly, though the post-video comments were not necessarily related to the corresponding video's content, the argumentative communication was supported by users who posted some scientific evidence, and by other subscribers who questioned that evidence by providing counter claims and citing academic sources. Another potential avenue for co-construction in YouTube is through interaction between those that post the videos and their audience. Hattingh (2017) describes how, in a subsequent video post, the presenter referred back to questions he got from subscribers and explained concepts with which they had struggled. Deschamps (2014), proposed that those comments present an opportunity for users to "transform the narrative by presenting new information... by challenging arguments, relaying new ideas, offering counterfactuals or by attempting to re-frame the discussion" (pp. 345).

Some studies have analyzed *coherence* in video-related comments on YouTube. Coherence refers to connections between ideas that appear in different individuals' comments (Bou-Franch, Lorenzo-Dus, & Blitvich, 2012). Bou-Franch and her colleagues (2012) analyzed two samples of 150 consecutive comments and found that the comments included many coherence-forming linguistic devices. This suggests a degree of attention to the content of one another's comments that can be a productive pre-cursor to the type of critical co-construction that is essential to transformative CSCL interactions. However, such coherence was produced by a minority of users, so it is not clear what impact such processes might have on the majority of users.

Is there an educative value?

While most CSCL studies deal with learning within specially designed environments to support collaborative learning, the current conceptual paper concerns the landscape of spontaneous and non-formal interactions that emerge as part of the social epistemological nature of YouTube. These everyday, self-regulated, informal learning opportunities that are driven by an authentic need, offer, as shown above, precursors for collaborative learning through deliberation in the post-video comments. There are a number of open research questions to explore. First, the educative value of YouTube hinges on the reliability of its content. While ranking markers for the video itself seem to pose a fairly good indicator of reliability, such formalized and aggregating ranking markers do not exist for in-comment reactions to other comments. Thus, the reliability of the post-video deliberation, and the ability to gauge reliability need further research. In addition, aside from self-reports, there is a paucity of measures for documenting evidence of learning, especially for procedural conceptual learning, which has received little, if any, attention in the study of social media. We see this line of research as an important goal for the CSCL community, because a key role for contemporary formal education is to prepare learners for future civic participation (Gratton, 2010). Therefore, knowing how to design intentional learning environments that support future public use of informal networked learning-on-demand platforms will be central to fulfilling this role.

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