



Open Research Online

The Open University's repository of research publications and other research outputs

Exploring qualitative analytics for e-mentoring relationships building in an online social learning environment

Conference or Workshop Item

How to cite:

Liu, Haiming; Macintyre, Ronald and Ferguson, Rebecca (2012). Exploring qualitative analytics for e-mentoring relationships building in an online social learning environment. In: Second International Conference on Learning Analytics and Knowledge (LAK12), 29 Apr - 02 May 2012, Vancouver, Canada.

For guidance on citations see [FAQs](#).

© 2012 ACM

Version: Version of Record

Copyright and Moral Rights for the articles on this site are retained by the individual authors and/or other copyright owners. For more information on Open Research Online's data [policy](#) on reuse of materials please consult the policies page.

oro.open.ac.uk

Exploring Qualitative Analytics for E-Mentoring Relationships Building in an Online Social Learning Environment

Haiming Liu^{1,*}, Ronald Macintyre² and Rebecca Ferguson³

¹ Knowledge Media Institute, The Open University, Walton Hall, Milton Keynes, MK7 6AA, United Kingdom

² The Open University in Scotland, 10 Drumsheugh Gardens, Edinburgh, EH3 7QJ, United Kingdom

³ The Institute of Educational Technology, The Open University, Walton Hall, Milton Keynes, MK7 6AA, UK

{h.liu, r.macintyre and r.m.ferguson}@open.ac.uk

ABSTRACT

The language of mentoring has become established within the workplace and has gained ground within education. As work based education moves online so we see an increased use of what is termed e-mentoring. In this paper we explore some of the challenges of forming and supporting mentoring relationships virtually, and we explore the solutions afforded by online social learning and Web 2.0. Based on a conceptualization of learning network theory derived from the literature and the qualitative learning analytics, we propose that an e-mentoring relationships is mediated by a connection with or through a person or learning objects. We provide an example to illustrate how this might work.

Categories and Subject Descriptors

K.3.1 [Computer Uses in Education] *Collaborative learning, Computer-assisted instruction (CAI), Distance learning*; H.1.2 [User/Machine Systems]: *Human factors*; J.4 [Social and Behavioural Sciences]: *Sociology*

General Terms

Design, Human Factors, Theory

Keywords

Online Social Learning, Learning Analytics, Mentoring, Relationships, Learning Network and Ties

1. INTRODUCTION

The Open University (OU) is a UK based open and distance learning provider. It has about 12,000 staff and around 200,000 students distributed across the world at any one time. Like any large organization mentors play a vital role in the professional development of individuals [11]. Mentoring is a social and psychological relationship and typically takes place face to face, where the value is seen to come from those personal interactions. Those type of relationships present a key challenge to a

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. To copy otherwise, or republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee.

LAK'12, 29 April – 2 May 2012, Vancouver, BC, Canada.
Copyright 2012 ACM 978-1-4503-1111-3/12/04...\$10.00

distributed organization like the OU, where students and staff are not necessarily co-located. In an effort to develop a good online or e-mentoring service, we started to investigate how to build up and better support mentoring relationships using Web2.0 technology by creating a platform called SocialLearn (SL). This paper proposes a framework and features that focus on how we might employ transient connections (weak ties) within social media to develop more “meaningful” (strong ties).

2. ONLINE SOCIAL LEARNING

Mentoring is a social relationship. Conole (2008) [5] noted that the real opportunities that Web 2.0 affords is within online social and situated learning. Online social and situated learning focus on learning as social participation and shifting from an individual and information focused learning to an online social learning and communication/collaboration. To foster these relationships online social learning platforms should focus on social interactions through activity streams, following and making connections, to draw users towards content or learning objects. This paper explores these social relations with reference to mentoring.

3. MENTORING

Haggard, et al. (2011) [11] systematically reviewed the mentoring literature between 1980 and 2009. They found over 40 different definitions for mentoring. In this section we explore some of the ways that mentoring has been defined.

3.1 What is Mentoring

“Classic mentoring” features one to one relationships between a more senior or experienced individual and a less senior less experienced individual. Attempts to create a mentoring typology often focus on formality (formal to informal) and structure (professional competency to unstructured). However, while the degree of formality is a factor, the relationships can be far more complex than this, as it is a personal relationship [17]. Wong and Premkumar (2007) [19] present three mentoring models: The apprentice model, the competency model, and the reflective model. In the apprentice model, akin to traditional apprenticeships, the mentee learns through observing and copying the mentor; in the competency model, the mentors provide

* The author is also at Department of Computer Science and Technology, University of Bedfordshire, Park Square, Luton, LU1 3JU, United Kingdom.

feedback on the mentee's performance; in the reflective model, the mentors focus on developing self-reflection of the mentees.

The different mentoring definitions and models invite us to think about the different mentoring relationships and how the mentoring theories relate to Web 2.0 pedagogies. Within online social learning the focus is on learning by interactions and connections with and through a person or a learning object which is likely to be informal and unstructured. In addition to these mentoring models that focus on the learning process, Haggard, et al. (2011) [11] suggested that we must also consider a range of other personal factors, such as gender, career stage, age difference between mentor and mentee, etc. This suggests that within any online mentoring¹ relationship the ability to be able to “know” something about another person is as important as what they do. A person's profile on a social media sites help us “know” the person. This suggests that we need to create mechanisms that allow people to see others activity and view aspects of their profile.

3.2 Mentoring Motivation

Wong and Premkumar (2007) [19] provided a mentor motivation checklist to illustrate some of the reasons why people engage in mentoring relationship, such as people like the feeling of advising others, they find it satisfying, etc. It is interesting to see that the motivations are associated with engaging in Web 2.0 communities and earning credit and reputation. For example, “generalized reciprocity” [5] in online spaces is widely reported; there is a suggestion that newcomers develop an obligation to help others in the future through the valuable help and advice they receive as newcomers [15]. Allen (2007) [2] found that in addition to the simple motivations cited earlier more complex psychosocial themes emerge. Perceived similarity is a factor – so called similarity-attraction paradigm- where selection is based on the overlaps in interests. Another important factor to consider is mentor and mentee's performance where social exchange theory drives mentor-mentee selection, with mentors choosing mentees with strong performance, high ability and ample willingness - with links to “quality” within social media and again the role of the profile becomes important. Online social learning spaces cannot account for all of these factors, but they inform our thinking. For example, we can account for similarity, allowing users to see a profile and judge similarity, and by using analytics we can make recommendations, we can account for performance, by creating criteria that allow users to display, view, rate and evaluate other users through their profiles.

3.3 Shifting Sense of Mentoring

Our discussions above has shown that “experience” or “seniority” is read in slightly different way between “classic mentoring” and the mentoring in the online social learning context. There is a flatter hierarchy in online mentoring than we see in “classic mentoring” and this is considered to have benefits in terms of student engagement retention and progression. The importance of peer support in learning is also recognized in the workplace. The informal social interaction around shared tasks and challenges is now seen as a vital part of learning at work [9].

Discourses on e-mentoring also destabilize notions of “classic mentoring”. The ability for mentoring to be relatively anonymous

¹ Online mentoring = e-mentoring

and for mentors to be involved in multiple overlapping relationships changes the relationship psychologically and practically. Alevizou (2010)'s work [1] on Web 2.0 argued that the peer interaction and collaboration learning fostered by Web 2.0 is a kind of distributed online mentoring. These opportunities are being realized by several companies that offer secure mentoring services (e.g. Mentor Pro²), and open sites like Horsemouth³. These sites offer a complex range of online mentoring, from career, education, business, to secure services for vulnerable adults and young people, and what might be more accurately termed life coaching.

We need to account for “classic mentoring”. However, in Web 2.0 discussions on online mentoring is a diffuse relationship. It is seen as part of the democratization of education where “communities” support each other to create, understand and share resources [6]. This means classic mentoring theories are not enough to explain different types of e-mentoring relationships that might evolve. We wanted to explore how the form of online social networks informed the development closer relationships.

4. SOCIAL NETWORKING

Granovetter (1973) [10]'s work on social ties explores the role that weaker ties have within networks. Strong ties are those things that bind groups (strong ties have overlapping network and interests), while weak ties (casual contacts) allows us to connect with other networks and open up new areas to explore. Sites like LinkedIn⁴ and Academia.edu⁵ operate on this principal. Haythornthwaite (2002) [12] investigated the relationship between latent (he inactivated weak ties), weak and strong ties and different communication media. She found that new mediums of communication layered over existing ones can help strengthen weak ties. In addition, a new communication medium can turn latent ties into weak ties. This suggests that online social media can play a role in activating and strengthening ties. Our reading of networks and ties is not one where networks and ties only exist between individual, we recognize that they also exist between what we call mediating objects (people, images, groups, event posting, etc.). While people can and do connect “with” each other, that connection is often mediated through a mediating object [8]. Without these mediating objects it is difficult for people to form connections [14]. Our imprint on those objects helps us connect “through” the mediation objects “with” other people and learning objects. These social traces help us make sense of the online world, and as we make sense of it our tracks help others.

Returning to mentoring, the suggestion here is that an e-mentoring relationship can be built up from a general connection to a mediating object. The ability to connect with and through rich content that Web 2.0 affords can play a role in developing and maintain communities that support online mentoring [16]. We can activate those latent ties. If we then harness some of the motivational cues identified earlier in mentoring, for example, similarity or performance, then we may be able to turn some of those weak ties into “strong ties”.

² <http://www.e-mentoring.org/>

³ <http://www.horsemouth.co.uk/>

⁴ <http://www.linkedin.com/>

⁵ <http://www.academia.edu/>

5. PILOT STUDY AND QUALITATIVE ANALYSIS RESULTS

The data we draw on in this paper is from a six months pilot study that looks at how, and what kinds of work based learning SL can support. SL is a web2.0 online social learning platform and tool kit developed by the OU.

Twelve members of staff occupying a range of positions participated in the pilot. Each participant attended a two-hour initial workshop, which provided an introduction to the pilot study and to SL and offered hands-on experience. Participants' activities on SL were screen captured using Camtasia software⁶. During the sessions they were asked to narrate their journey. Thematic analysis has been applied to the screen captures and audio scripts. We used semi-structured interviews to explore the theme analysis results in more details. Nine out of twelve original participants were interviewed. The interviews were transcribed and coded to identify dominant themes. The qualitative thematic analysis was also employed for analyzing the interview script. The qualitative analysis results show that whilst the participants see SL's potential as: a complement to existing work-based learning tools; a way of supporting flexible work-based learning; a way of building learning networks; a way of bringing resources together; a way of providing training and support for staff and employees based in the regions and nations, they also look for particular kind of mentoring functions to support their online social learning.

Our wider reading and observations of e-mentoring systems indicated that while our system could readily support "traditional" mentoring, it also has the potential to support more diffuse relationships that would support a sense of community and "generalized reciprocity". We found that confident social media users were already doing this. During pilot they filled in their profile and quickly began to establish connections, they then used those connections to locate and make other connections. What also became clear in the interviews (even before the launch of Google+⁷) is that people wanted to be able to differentiate between different types of connection. This has been found in informal work related online networks [18], and it is our sense that this will be important in the workplace. Our solution is to allow users to connect in different ways, for example follow, and to be able to add tags that specify the type of connection, for example adviser or even mentor.

The use of the profile and activities to connect and make sense of SL, along with issues raised in interviews highlighted the importance of users' profiles and making connections visible. This links with the similarity attraction paradigm in mentoring and also touches on aspects of trust. Trust is important online forums, as we often lack the normal cues that allow us to assess whether to trust another person, or source of information. Research on large online forums has found trust, or the cognitive decisions we make around how credible a source is based on our perception of how honest and reliable the source is, our sense of what the intention is, and competence [3]. Online we use social factors (rating and voting) to assess reliability, the users profile and badges to demonstrate competence.

⁶ <http://www.techsmith.com/camtasia/>

⁷ <https://plus.google.com/#>

One of the key functions of any social site is the ability to connect with others. We noted earlier the role that instant messages sites like Twitter play in connections and establishing ties. While "following" is essentially a weak tie [4], coupled with other channels of communication these weak ties can become strong ties. While our early build did support connections, the sense of sharing the space with others appeared to be absent. It appears that users need to be able to see others (through their activities), and be able to understand and interpret what others were doing. While this highlights the importance of the profile and activity streams, it also asks us to consider how we "push" content to users. In our framework (Figure 1) we suggest that users connect with learning objects and people, and through those they can in turn connect to other learning objects and people – this is what they "pull" towards themselves. However, it became apparent that users also wanted us to "push" content and people to them.

6. BUILDING ONLINE MENTORING THROUGH CONNECTION AND RECOMMENDATION

In this section, we explore how connections are made with and through mediating objects and how that informs the content we "push to" (recommend to) users and the way users can "pull" (search) content to themselves within the framework (Figure 1). Following work on the role of learning objects in mediating social interactions online [8], we extended the notion of networks and connections from people to what we call mediating objects. While we recognize that users will connect and interact with learning objects and people in different ways, we consider these ties are important, and just like our connections with other people the strength of our ties will vary. This is important to our understanding how people connect with and through people and learning objects, and thus an important factor in understanding how the people use connections in online social learning.

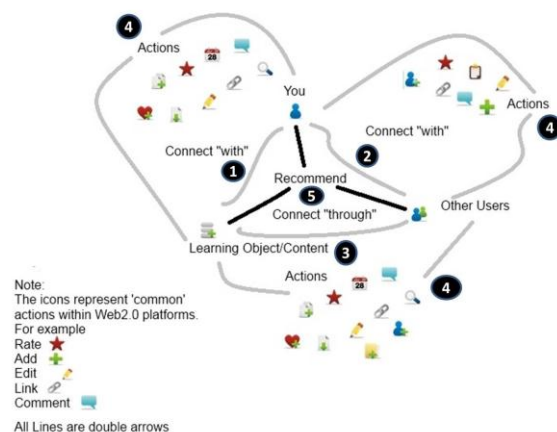


Figure 1: Connection and recommendation framework for building online mentoring relationships in a social learning environment

The framework indicates that users connect "with" other people and content (key 1 and 2), as they build up those connections, they leave traces that allow them and other users to connect "through" to more people and content (key 3). Further, the users'

connection behaviors through actions (key 4) will contribute to develop recommendations for the users (key 5).

7. CONCLUSION

What we describe here is not “classic mentoring”, and we did not aim to merely illustrate “classic mentoring” online. Instead we took some of the key elements of mentoring and reflected through social learning and Web 2.0. We found that many of the tension and difficulties that arise in online mentoring relate to attempts to see it only in relation to “classic mentoring. Mentoring online is ambiguous and opens to multiple interpretations [11]. Our proposed online mentoring tools do account for “classic mentoring”. However, our main focus is the underlying psychosocial factors and Web 2.0 connections. We have found a great deal of common ground with research on social learning and Web 2.0. For example, the importance of performance criteria and being able to select people based in similarity within mentoring [2], is mirrored by the need to see and know about others online [13] before developing connections and trust [3]. In this model of mentoring (closer to peer mentoring or peer support in work-based learning) the relationships are likely to be more diffuse and feature connections that vary in frequency and intensity. Here we drew on and developed the work of [10] on the strength of weak ties (see also [12]). We know that these weak ties are important in accessing new knowledge and information [10], and that Web 2.0 tools (e.g. following in Twitter/Facebook) are effective at creating networks of weak ties [4]. We explored this in relation to people and learning objects [8], and the role that ties played in developing a sense of place (for example [7] on Twitter), and how that sense of commonality fostered “generalized reciprocity”. Clearly this is only one of the ways that users may develop online mentoring relationships. One to one relationships or the allocation of mentors is far more common in the workplace, and over the next few months we will be developing those types of tools and pilot and evaluate the updated specifications.

8. REFERENCES

- [1] Alevizou, P. 2010. Distributed mentoring: peer interaction and collaborative learning in P2PU. *Seventh Annual Open Education Conference* (2010).
- [2] Allen, T.D. 2007. Mentoring relationships: From the perspective of the mentor. *The handbook of mentoring at work*. B.R. Ragins and K.E. Kram, eds. Thousand Oaks, CA: Sage. 123-147.
- [3] Casalo, L.V. et al. 2011. Understanding the intention to follow the advice obtained in an online travel community. *Computers in Human Behaviour*. 27, 2 (2011), 622-633.
- [4] Chen, G.M. 2011. Tweet this: A uses and gratification perspective on how active Twitter use gratifies a need to connect with others. *Computers and Human Behaviour*. 27, 2 (2011), 755-762.
- [5] Conole, G. 2008. New schemas for mapping pedagogies and technologies. *ARIADNE*.
- [6] Conole, G. and Alevizou, P. 2010. *A literature review of the use of Web 2.0 tools in Higher Education*.
- [7] Dunlap, J.C. and Lowenthal, P.R. 2009. Tweeting the Night Away: Using Twitter to Enhance Social Presence. *Journal of Information Systems Education*. 20, 2 (2009), 129-135.
- [8] Engeström, J. 2005. Why some social network services work and others don't - or the case for object-centered sociality.
- [9] Eraut, M. et al. 2002. Learning from other people at work. *Supporting lifelong learning*. 1, (2002), 127-145.
- [10] Granovetter, M. 1973. The Strength of Weak Ties . *American Journal of Sociology*. 78, 6 (1973), 1360-1380.
- [11] Haggard, D.L. et al. 2011. Who is a mentor? A review of evolving definitions and implications for research. *Journal of management*. 37, 1 (2011), 280-304.
- [12] Haythornthwaite, C. 2002. Strong, Weak, and Latent Ties and the Impact of New Media. *The Information Society*. 18, (2002), 385-401.
- [13] Hew, K.F. and Hara, N. 2007. Knowledge Sharing in Online Environments: A Qualitative Study. *Journal of the American Society for Information Science and Technology*. 58, 14 (2007), 2310-2324.
- [14] Keitzman, J.H. et al. 2011. Social media? Get serious! Understanding the functional building blocks of social media. *Business Horizons*. 54, 3 (2011), 241-251.
- [15] Mathwick, C. et al. 2007. Social Capital Production in a Virtual P3 Community. *Journal of Consumer Research*. 34, (2007), 832-849.
- [16] McLoughlin, C. et al. 2007. Peer-to-peer: An e-mentoring approach to developing community, mutual engagement and professional identity for pre-service teachers. *Australian Association for Research in Education Conference* (2007).
- [17] Santos, A. and Okada, A. 2010. The role of mentoring in facilitating the process of repurposing OER. *The seventh annual open education conference* (2010).
- [18] Tang, L. 2010. Development of Online Friendships in Different Social Spaces: A case Study. *Information, Communication & Society*. 13, 4 (2010), 615-633.
- [19] Wong, A.T. and Premkumar, K. 2007. *An introduction to mentoring principles, processes, and strategies for facilitating mentoring relationships at a distance*.