# A transformative framework for social software use in e-Learning
# Um 'framework' transformativo para uso do software social em *e-Learning*

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**Resumo:** Este artigo irá descrever as bases teóricas do uso de um quadro em 3 níveis enraizado nos princípios de aprendizagem social; ilustrar como esse quadro pode ser aplicado a um conjunto básico de ferramentas de software educacional social; e fornecer um exemplo detalhado de como essa estrutura pode ser aplicada a wikis em um contexto de e-learning.

**Palavras-chave:** software social, software educacional, e-learning.

**Abstract**: This paper will describe the theoretical underpinnings of a 3-level use framework rooted in social learning principles; illustrate how this framework can be applied to a core set of educational social software tools; and provide a detailed example of how this framework can be applied to wikis in an e-learning context.

**Keywords**: social software, educational software, e-learning.

## 1 INTRODUCTION

Social Software Learning Environments (SSLEs) are affording new learning activities such as blogging, podcasting, social bookmarking, and sociosemantic networking enabling pedagogical models and constructs that are personalizing, contextualizing, and socializing education (e.g., personal learning environments or PLEs, immersive learning, informal learning, and rhizomatic education) (Sclater, 2008; Cormier, 2008; Frielick, 2004). However it is often difficult to integrate social software tools in e-learning due to the multifunctional and emergent nature of those tools. For example, a wiki can be used in multiple ways including collaborative editing, group discussion, content repository, and course delivery; Skype has evolved from a tool for placing free, online VoIP calls, to a full-featured computer conferencing application; and Facebook now has widgets for adding course spaces and interfacing with traditional LMS (Learning Management Systems) such as Blackboard. Despite the emergent nature of social software, there have been several attempts at classifying social software tools to facilitate their use in educational and non-educational contexts (e.g., Laurillard, 1993; Gunawardena, Lowe, and Anderson, 1997; Salmon, 2004; Obasanjo, 2004; O'Reilly, 2007).

We begin with Laurillard (1993) who classified educational media based on a principled teaching strategy that defines the learning process as a dialogue between teacher and student that embodies the following characteristics: discursive, adaptive, interactive, and reflective. Gunawardena, Lowe, and Anderson (1997) developed a model for examining the social construction of knowledge in computer conferencing environments. The model has 5 developmental stages beginning with the sharing and comparing of information (phase 1), progressing to the co-construction of knowledge through social negotiation (phase 3), and leading to the agreement

and application of newly constructed meaning (phase 5). Gunawardena et al. argue that this model is necessary for the generation of new knowledge in collaborative learning contexts. Salmon (2004) also developed a 5 stage model that depicts how CMC tools can be used to generate varying levels of interactivity to support social interaction and knowledge creation. The stages includes: (1) access and motivation, (2) online socialization, (3) information exchange, (4) knowledge construction, and (5) development. Salmon's model enables participants to gain both technical and e-moderating skills. Web 2.0 classifications include Obasanjo's (2004) five broad classes of social software that enable groups to (a) communicate, (b) share experiences, (c) discover friends, (d) manage relationships, and (e) play games, and O'Reilly's (2007) 4-level hierarchy of Web 2.0 applications that captures how these tools increasingly leverage user contributions to embrace and empower the broader network.

The classification that we developed is similar to the models developed by these researchers in that it is based on the learning affordances of the tools; however, it differs in that it is grounded in the pedagogical ecology of SSLEs, hence it is fluid, dynamic, and transformative. Moreover, it is based on a continuum of social software use in which the user can activate the features of the tool to enable the degree of interaction and sharing desired and/or required for learning. We believe that higher education faculty would benefit from a more applied use framework to help them integrate social software tools into e-learning. Specifically, we perceive social software tools as providing three levels of use in e-learning contexts:

### 1.1 Level (1): Personal Information Management

At the lowest level of social interactivity are people who use social software tools to manage personal information only (both online or offline); they do not activate any of the social sharing or networking features the tools provide, and do not have an observable presence on the "grid", so to speak. Users may "pull in" other people's content but the goal is to create a private learning environment rather than sharing self-generated content with others. The focus at this level is on managing private information for personal productivity or e-learning tasks such as online bookmarks, multimedia archives, and personal journals and writing.

### 1.2 Level (2): Basic Interaction or Sharing

This level embraces the users' capacity for communication, social interaction, and collaboration. Most social software tools provide a public and globally accessible interface and a variety of built-in features that enable social interaction through various strategies such as expressing individual identity, establishing relationships, forming groups and reputations, and sharing experiences and resources publicly (Sessum, 2006). At this level, customization prevails and users manually configure the look, feel, and function of their tools. Collectively, this behavior helps foster a nascent culture of knowledge sharing and can spawn relatively small common interest networks and groups. This level is also about using social software to foster learning by increasing or improving users' capabilities for aggregating various types of digital resources into the e-learning experience. Examples of such resources include open educational content, traditional learning objects, micro-content like tags, SMS, or collaboration objects from various online learning systems and social activities.

Folksonomic activity is a prime example for this level. Folksonomies or grassroots taxonomies as described earlier in this chapter are an emergent property that results from the aggregation of social (public) tagging activity. Another example of level 2 activity involves RSS-based syndication services. RSS (Really Simple Syndication) can open up the collaboration space to wider public audiences by notifying subscribers what others are doing and by redistributing content from individual or group collections. RSS expands the functionality and broadens the user base of traditional learning object repositories such as MERLOT (merlot.org). The RSS redistribution capability makes it easier to bring learning objects or open educational resources into (and out of) course tools via RSS feeds. Moreover, third-party

meta-information aggregation web services like Technorati, Digg and Rollyo provide differing strategies to enhance the overall process of redistributing, republishing, and remixing educational content and social information. User friendly customization capabilities which provide the impetus for individual members to engage in social interaction also drive the aggregative activities that can lead to the formation of novel systemic behavior as the scale of interaction intensifies (WILEY & EDWARDS, 2002).

### 1.3 Level (3): Social Networking

Social networking corresponds to the highest degree of social interaction. We perceive this level as somewhat resembling O'Reilly's (2007) concept of "Web 2.0-ness" which stems from the application or tool being usable solely online where it can leverage the power of network dynamics. The mechanism that directs this process is known as the network effect: when enough people begin using a particular social software tool, or interacting (sharing and aggregating) in an online community, the value of the network increases for everyone involved and a multiplier dynamic can set in that escalates the benefits of the service for all. Social software mediates the learning process at this level by filtering it through the collective intellect which in turn reshapes meaning for social software tool users.

While these levels apply to all types of social software tools, Table 1 illustrates how this continuum of usage applies to a core set of educational social software tools such as weblogs, wikis, social media archives (e.g., Flickr, YouTube), RSS readers, and bookmark managers (e.g., del.icio.us).

**Table 1:** Social Software Use Continuum

| Levels of Use / Tools | (Level 1): Private Information Management ➔ | (Level 2): Basic Interaction or Sharing ➔ | (Level 3): Social Networking ➔ |
|---|---|---|---|
| Common Tool Features for Each Level | • Setup for private use/ personalization<br>• Disable search engine indexing | • Enable public view<br>• Setup personal profile<br>• Configure tool for resource sharing | • Configure to pull in other people's knowledge or content via comments, RSS feeds, etc.<br>• Enable information "push" via subscription, follow, watchlist, notifications, etc.<br>• Build tool-based communities / groups / collections<br>• Employ promotional activities<br>• Setup multi modal, two-way communication pathways |
| Weblog | • Use as private online journal | • Create multimídia blog posts<br>• Enable Blogroll | • Dynamic access to related/ recommended content, e.g.,Trackback<br>• Enable comments, Trackback, RSS feeds<br>• Add blog to RSS aggregation services – e.g., Technorati |
| Wiki | • Use as private content management space | • Password protected collaborative editing & commenting | • Public collaborative editing & commenting· Enable users view history/recent changes |
| RSS Reader (Bloglines) | • Private news/ media feed archive | • Enable personal archive sharing | • Access social filtering features to network with like-minded tool members or discover content via recommendations |
| Social Bookmarking (del.icio.us) | • Private bookmark archive | • Personal and collective tagging | • Create/join user networks to access other people's links<br>• Use group tags; subscribe to tags |
| Social Media (Flickr, YouTube) | • Set-up private media archive or channel (consume only) | • Create/add media content and apply Creative Commons licenses | • Create/join public user groups or channels |
| Start Pages (iGoogle, PageFlakes) | • Private multimedia information management web pages built on widgets | • Enable subscriptions | • Invite / enable group or open editing of content |
| Social Networking sites (MySpace, Facebook) | • Privacy controls available but public access the default | • Add contacts, friends, etc. | • Enable a range of conversation/ chat, comment, discussion management services (e.g., wall graffiti) |

Wikis epitomize the social constructivist idea that knowledge derives from social interactions since it is a social software tool that makes it easy for multiple users to create and edit web pages collaboratively. A wiki provides the shared interactional space or platform that fosters collaborative knowledge construction. This collaborative space mediates the online interaction of users through what Perkins (1991) called a "rich learning environment" — with tools for offloading memory demands, managing tasks, accessing information, and building modular content structures. Wikis allow their owners to manage public access. Additionally, the interface is designed to permit the public or registered users to easily edit content. In this way, wikis are inherently designed to support all the levels of the social software use continuum.

For example, at level 1, a wiki could be used as a private or personal online workspace in a manner similar to how one works offline with word processing software. In an e-learning context, an instructor can suggest to students who do not have a word processor, or, who are busy travelers and need to access all their learning content online (mobile learners), to use one of the free, commercially hosted wiki tools such as Wikispaces.com. This way students can self manage their documents online and they do not necessarily have to share their work. Level 2 usage takes advantage of wiki features that activate the possibilities for collaborative space. Such features include inviting new members, adding comments, and enabling RSS feeds for each content page. In an e-learning context, instructors can encourage students to form independent groups using wikis to work on collaborative projects. Students can compile project content in a public area, edit documents collaboratively, and invite the instructor, experts or peers to comment on their content. Instructors can also manage multiple group projects via RSS at this level making it easy to provide feedback and monitor learning progress. Also, at level 2, the collaborative space established naturally progresses to a higher level of experience sharing and content aggregation due to the accumulation of users' digital resources and use of wiki features such as RSS feeds and widgets. In an e-learning context, an instructor can use a central wiki for several classes enabling a learning community that builds reusable knowledge on an area of study. With their familiar webpage structure, wikis are one of the most versatile social software tools for assembling content of various types.

Finally, at level 3, use of wiki would involve large numbers of learners who participate by contributing content, commenting, or participating as site gardeners (weeding content), or even as consumers only – thereby contributing to the popularity of the site and the network effect. Wikipedia is the prime example of the power of level 3 social networking use that elearning could aspire to accomplish. Of course, this is not easy to achieve, and the size of the network, in addition to institutional restrictions, pose limits for academic course applications.

## 2 CONCLUSION

Social software is the realization on a *web-based platform* of the fundamental principles of social constructivism. As we argued in this chapter, the pedagogical ecology of social software harnesses the principles of social constructivism in an unprecedented fashion. Social software tools are enabling the design of SSLEs that are stretching the scope and deepening the interconnectedness of learning activities leading to the "globalization" of e-learning and the "flattening" of our world as Thomas Friedman purports. Knowledge in SSLEs is perceived as belonging to, and distributed in, communities of practice or "environments of participation" in which the learner practices the patterns of inquiry and learning, and the use of shared resources is part of the preparation for membership in a particular community (Firdyiwek, 1999). This is an exciting time for e-learning. Instructors and faculty in higher education contexts can leverage social software use to design SSLEs that truly foster or instantiate communities of learners. Higher education institutions should seriously consider the impact of SSLEs and adapt to the fact that Web 2.0 levels the playing field between the wisdom of the crowds and traditional authority.

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