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Abstract

The widespread availability of Web 2.0 technologies such as Facebook and Twitter has led to the adoption in a number of community engagement projects. Unfortunately, the breath and depth of these web technologies leads to a disjointed and incoherent adoption. In light of the above, there is a need for a model to structure its planning and execution. In this article, we present a model to assist community engagement projects. The model comprises of four crucial dimensions: functional quality, degree of psychological attachment, hedonic attitude of members and amount of social relationships. We discuss how each dimension can leverage on Web 2.0 technology capabilities in the context of uniS—the Information and Communications Faculty in a leading Australian University. The emphasis on community engagement follows for one, strategic recommendations proposed through Australian Universities Quality Agency (AUQA) reviews. Given this, we discuss two specific initiatives currently in place at UniS that attempts to improve community engagement. The implications of this article are two-fold. For educators, it recommends a set of considerations for establishing and designing community engagement programs and initiatives for higher education. For managers, it proposes a tool for systematically evaluating engagement success of initiatives within a community of practice.

Keywords: Community Engagement, Web 2.0, Emerging Web Technologies, ICT

INTRODUCTION

Community engagement is not just a single event, but often an ongoing, cyclical process, according to Aslin and Brown (2004). According to Hashagen (2002), every community has unique characteristics including its population and socio-economic profile, its history and culture, its level of autonomy or dependence, its level of organisation, its isolation, and many other factors. Engaging with students, for instance, is a key strategy for universities, keen to decrease attrition rates and declining attendance. The situation is exacerbated by the time constraints for students who may travel long distances to university and who are highly likely to be in the workforce. Such students require high levels of support and an enriching environment (AUSSE 2008).

There are a myriad of ways to promote engagement in a community, including leveraging technology. The growing use of an array of Web 2.0 technologies, particularly by the younger generations, offers many potential benefits to higher education in terms of increasing *staff-student-industry* engagement and enhancing community. The increasing use of social networking technologies, often the archetype of Web 2.0 applications, is creating a networked world of constant interaction that provides opportunities for every sector of society(Adler and Kwon 2002) including tertiary education (Mason and Rennie 2008).

In this study, we explore considerations in leveraging Web 2.0 for engagement initiatives within a Faculty of Information and Communication Technologies (ICT) community at a leading Australian University- referred to in this study as UniS. In the above context, we present a model for community

engagement success—*where stakeholders or members in the community are better off*—in an institute of higher learning. Through a series of particular projects currently in place in UniS, we present a set of preliminary considerations for an integrated Web 2.0 community portal, that consolidates these services, to be systematically rolled-out in the faculty of ICT in UniS.

The remainder of the paper is structured as follows. Firstly, we define and contextualise engagement as used in this research. Specifically, we define and investigate the approach for establishing engagement projects in UniS. Next, we propose an approach and model, adapted from (Wang and Fesenmaier 2004), for achieving community engagement success in UniS. The measurement model comprises of four constructs: Functional, Psychological, Social and Hedonic. The implications of this research are (a) for knowledge, it recommends a set of considerations for establishing and designing community engagement programs and initiatives for higher education and (b) for practice, we propose a model for measuring engagement value, in the context of adopting Web 2.0 tool.

DEFINING COMMUNITY ENGAGEMENT

The term community engagement evolves from the interest and research into mechanisms of *public participation* (Thompson, Stenekes et al. 2009). According to Thompson et al. (2009), community engagement is typically defined along a continuum of participation, ranging from the passive receipt of information, through to self-empowered communities that initiate actions independent of external agents. The benefits of community engagement are well cited. For example it is reported that engaging communities in general should lead to better decision-making (Petts 2006), improved quality of policy and service delivery, check reputation and status within the community, (Community Engagement Network (CEN) 2005) and make improvements in economic productivity, social inclusion, public safety and public health (Wiseman 2006). Furthermore, Hashagen (2002) imply that for community engagement, there is a need for members of a community involved in its planning, to think clearly about the community they are working with. This includes understanding its history and culture, the nature of local community organisations and networks, the range of local needs and issues and how they are experienced, the assets and strengths of the community that may be built on, and the nature of existing dialogue and participation in that community.

Community engagement is defined differently in different contexts. Vickers et al. (2004) conceptualises community engagement in universities as 'a continual development of a partnership-between pre-service teachers and the broader education community' (p. 131). The study raises mutual interdependencies and connections between experience (agencies) reflection (students) and knowledge (faculty), as the basic components of engagement and learning in universities. The Queensland Department of Emergency Services (2002) charter for community engagement defines the notion as 'a planned process with the specific purpose of working with identified groups of people, whether they are connected by geographic location, special interest, or affiliation or identify to address issues affecting their well-being' (p. 6).

Conceptualising Community Engagement in UniS

We define two pertinent terms used in this report. Discussions covered in this section addresses two important questions: (1) What is *community engagement* and what does it mean for an organization like the faculty of ICT in UniS and (2) What is *engagement success* and how do we measure it.

Before conceptualising the above terms, the demographics of UniS are defined. The UniS community has approximately 2500 students and 70 teaching and administrative staff. International students make up 65% of the total numbers. Domestic students make up 35% of the total numbers. International students originate mainly from India, China and Vietnam. In the 2009 September AUQA review it was recommended that UniS develop student engagement strategies that contribute to the enhancement of UniS as a community.

Given the above, community engagement for higher education, as defined in this study, describes the *process by which internal and external stakeholders of UniS build lasting relationships through a series of approaches including teaching and learning, consultations, participation and collaboration in informal and formal partnerships, for the benefit of the UniS*. The strategic goals of any UniS community engagement initiative must therefore seek to, (1) enhance professional and vocational learning outcomes for its members. For instance; to develop, and trial and/or implement, strategies to improve student transition, engagement and satisfaction, and reduce attrition and (2) to engage its members actively with industry and the wider community. For instance; to maintain and strengthen strategic external relationships, including the industry advisory committees, schools and alumni.

SOCIAL NETWORKING AS A MEDIUM FOR ENGAGEMENT

Social media, including social networking, has developed rapidly and is challenging many models of social interaction. Businesses are using social media to recruit skilled employees, collect information on consumers, and build communities of interest. Research into the potential of social networking technologies for higher education (HE) is increasing as their use becomes embedded in the lifestyle of tertiary students (Mason and Rennie 2008). The challenge faced by universities is how to embrace these technologies and maximize the value to be gained from adapting to new practices and different expectations of the 'Web 2.0 Age' (Barnatt 2009). The outcomes of not engaging with the new perspectives offered are held to be a weakening of ties within a community and a lack of personal connection. This results in declining social capital leading to reduced participation in a community and ultimately to disengagement (Ellison, Steinfield et al. 2007).

Using a range of social networking tools such as Facebook, Twitter and blogs can enhance face to face engagement (Wellman, Haase et al. 2001). In a study of university students in Michigan, Ellison et al. (2007) found that students use Facebook either to maintain existing relationships or to nurture and strengthen newer, tentative acquaintanceships that might otherwise wither through lack of face to face contact. The advantages of building community online through the use of social networking tools such as portals, blogging, wikis, e-portfolios and Facebook are being recognised by organisations such as IBM, Sun Microsystems and Kraft (Jue, Marr et al. 2010).

Therefore, it would appear that there are many advantages in harnessing the technology that students are familiar with to enhance their engagement with the institution and to prepare them for a work environment that is beginning to embrace social media.

Pilot Study on Social Networking Technology Proliferation

In March 2010, a *steering committee* was formed at Faculty of Information and Communications Technology (FICT), UniS to establish how the FICT cohort of students engages with online social networking in terms of types of technologies, usage, and potential for extending these into the university environment. The significance of the project lies in its direct applicability to the initiatives of the Faculty in working towards student engagement and retention. However, the integration of social networking technologies into the tertiary environment is of broader significance to higher education globally and this survey is a step towards establishing a research agenda into this important area. As a pilot study, the steering group undertook a series of independent surveys to canvass interest in a range of related topics including social media trends, social networking application use and requirements gathering for new online presence. A second student-run pilot survey[1] also established how the FICT cohort of staff and students at UniS engages with online social networking in terms of types of

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[1] The survey was conducted as part of a student analytical project for understanding the factors and trends of social networking. Respondents were predominantly friends of the group members and they were notified by email of the link to the survey. We acknowledge Liliana Nunez, Himesha Weerasinghe and Ali Alahbabi for the conduct of the survey.

technologies, usage, and potential for extending these into the university environment. The second pilot survey consists of 15 general multiple choice and short answer questions, seeking the trends of social networking media use. The questions covered: features they interested in, access method and frequency of access, usefulness and effectiveness of social networks and reason for using social network. The pilot survey as administered through an online web survey instrument. The sample size for the survey was *64*.
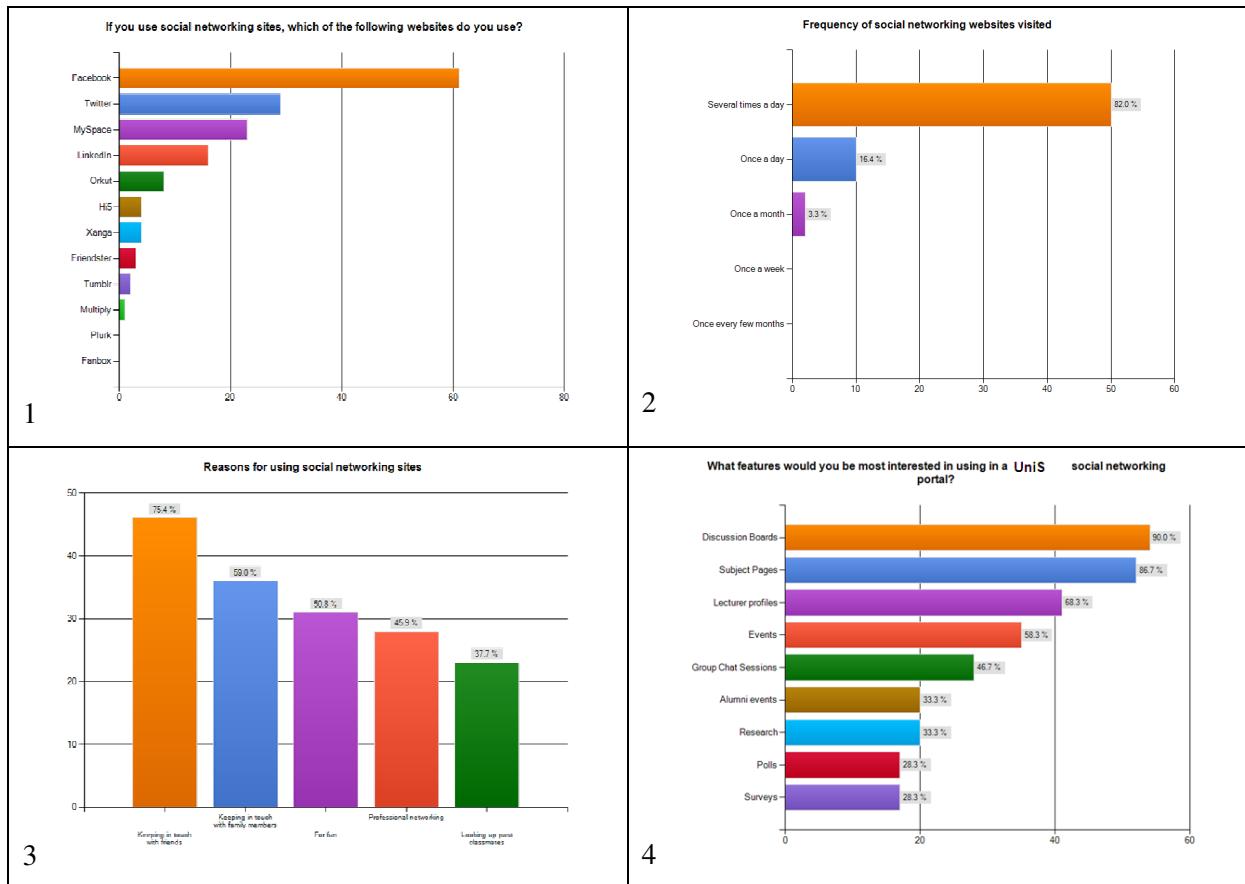

Table 1: Trends in Social Network Technology Use

Table 1 illustrates the preliminary descriptive statistics of trends in social network technology use. Panel 1 illustrates the popularity of social networking applications amongst the community members. Panel 2 illustrates the frequency of use (as a proportion of a member's daily routine) of social websites. Panel 3 summarizes the motivations for using these applications. Panel 4, though not directly related to social network trends, summarizes the members' needs for a proposed online engagement portal. Referring to Table 1, results illustrates that, (1) facebook is the most popular social media networking site of choice at the moment, (2) students logon to social networking sites for several times a day, (3) and they do that to keep in touch with friends and lastly (4) if there were a portal, most students would prefer it as an instrument for engaging in discussions. Although the preliminary results are not surprising, they provide potentially interesting feedback to the proliferation of Web 2.0 technologies already within FICT. This sets the impetus for a more penetrating survey. Given the substantial influence of Web2.0 and social media in general, we restrict our sample to specific stakeholder cohorts and workplaces, in light of the impact of the applications on them. From here, we will focus on how Web2.0 automate requisite work process, while allowing latitude for value-added functionality.

Toward a Web Based Community Portal

Our preliminary observation of the survey results suggests that members of the faculty, including students, administrative staff, researchers and lecturers are keen on having a community portal, to increase the engagement of students with UniS and to prepare them for the workplace by developing

their awareness of the role of online social media. Further analysis of the survey data will contribute towards an Information Systems Group within UniS initiative to introduce an online portal for IS students. The process for the portal—proof of concept—will be developed as an exemplar for a larger UniS portal. The secondary aim of this project is to investigate the effects of social networking, as a dimension and antecedent of social capital, and its impacts within higher education. This early work formed the foundations for a recently approved faculty research grant that funds research into the uses of social networking technologies amongst our students. The findings of this funded research will be used to inform the ongoing development of the portal as a service to other community projects.

Furthermore, there were a number of potential risks identified for the proposed UniS community portal. A risk mitigation plan that outlines the risks that was developed- to consolidate and address the impact on the UniS portal functions. Following identifying of risks, the next step is to prioritize and provide ratings for each risk. The ratings will serve as a key driver to prioritize the risks that will be considered for mitigation. As the likelihood of a risk increases the impact is severe. If the likelihood is low—as opposed to medium and high—then the impact of the risk is low so the risk is low and to mitigate the risk is lower and easy. We summarize these risks in Appendix A. The plan, in appendix A ranks the Potential Risks, outlining their Threat Source, Vulnerability, and scores their Likelihood to happen, Impact level and Risk Level.

Given these challenges, the steering committee (for UniS portal project) hopes in the longer term, to gather external interest in the portal for strategic and collaborative research interests. The objective is to develop a *community portal that aims to service all community engagement initiatives in UniS*; provide for its members current and relevant industry reports and technology news, details of interesting projects developing and ongoing, concise descriptions of short courses and related academic materials, and student and staff social activities and achievements. In addition, the portal attempts to build a strong sense of belonging and community in the faculty by engaging past and present staff, students and alumni through connections with other intermediaries (e.g. blogs, wikis, facebook, twitter feeds etc.).

TOWARDS A MODEL FOR ENGAGEMENT SUCCESS

Given the objective of the community portal to service all community engagement initiatives in FICT at UniS, we discuss a model and approach to *structure the planning and the execution of such projects and to leverage on the capabilities of Web 2.0 technologies for success*. Measuring success of projects, systems, and programs therefore remains one of the most enduring research topics in many fields Scholars such as DeLone and McLean (1992; 2003) and Seddon (1997) introduced a range of measurement models that benchmark the success of an IS from a variety of perspectives; they adopt a multitude of system, human, organisational, and environmental measures. Adapting the definition of information systems success by Seddon (1997), we refer the success of an engagement initiative or activity within a community as *the measure of the degree to which any person evaluating an initiative believes that the member (in whose interest the evaluation is being made) is better off* .

For the above, we adapt Wang and Fesenmaier's (2004) model-which consolidates influences that affect people's participation in (online) communities. The Wang and Fesenmaier (2004) is an appropriate lens as it captures, (1) the influences that affect participation in a community, (2) the socio-needs of participants in a community and (3) the conceptual boundaries of a community. At the central of the model is UniS Community Engagement Success- *the measure of the degree to which the member of the community is better off*. The four dimensions—Functional, Social, Hedonic and Psychological— represent a complete and pedagogical evaluation of initiatives that promote community engagement, hence its' success. Figure 1 illustrates the mapping of Web 2.0 technology capabilities to the participation model by Wang and Fesenmaier (2004). We demonstrate how the characteristics of web 2.0 technologies (adapted from O'Reilly, 2007) enable the efficient realisation of the dimensions of the participation model.
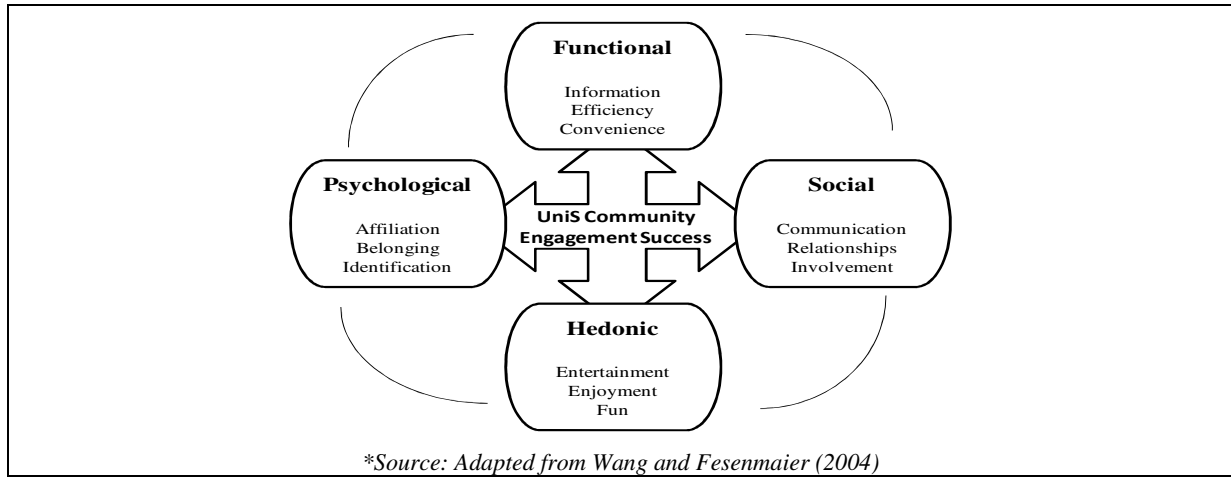
Dimensions	Capabilities of Web 2.0 Technologies
Functional Quality— the extent to which an initiative in a community is able to meet the functional needs of its members.	Accessibility (web browser, mobile phones) Interactivity (AJAX features)
Psychological Attachment— the extent to which an initiative in a community creates an impression of attachment for its members.	Group Identity via theming (blog themes and skins)
Hedonic attitude of members— the overall satisfaction level of the members of the community.	User generated Content and Real time Interactivity including feedback capture
Amount of social relationships— the amount/number of formal and social relationships formed because of participation in a community.	Group creation and management Asynchronous and synchronous communication (real time chat, email, group discussion board)

Figure 1: Enabling Community Engagement Success with Web 2.0 Technologies

In relationship to Figure 1, we discuss how specific capabilities of Web 2.0 technologies can for instance enable the psychological dimension of community engagement success. Studies show that engagement within a community in an online space leads to a sense of belonging and the sharing of information. Wasko and Faraj (2000) research into online communities of practice found that members are keen to engage, share knowledge and to act 'pro-socially' (p.169). These communities or groups would choose to identify themselves via theming mechanisms when retrieving and producing information. Exchanging information may be on a person-to-person basis, but the expectation of reciprocity or 'returning the favour', lies in expectations from the collective community with which participants identified (Kollock and Smith 1999). There are plans for further work to put forward a more comprehensive mapping (see Figure 1), as we only feature a proportion of Web 2.0 capabilities (adapted from OReilly, 2007) to illustrate our approach.

Future Work- Applying the Research Model

Finally, we allude to ongoing work to test the approach and model in an applied context ;where a Web 2.0 portal supports and services the objectives of community engagement initiatives in UniS—the UniS student buddy program, and the UniS Incubation program (see Table 2). The characteristics of these initiatives are they generally (1) leverage on Web 2.0 technology development to promote community engagement between members of UniS, (2) involve a program manager and members of the community, which are either a combination of both domestic and international students, academic staff, research centres or industry partners, (3) are initiatives that could either be software innovations, UniS process change, research projects, professional subjects or student development programs and (4) are middle to longer term-lasting more than 1 year. We note that for each initiative, the *stakeholders*— i.e. the members of the community that is participating in the project—are different. These stakeholders have defined or vested interests in these initiatives.

The first project—Student Buddy Program—through its student buddies have not only alleviated some of the isolation, cultural and academic issues new and international students faced. But students'—domestic and international students from both undergraduate and postgraduate disciplines—have also expressed the reciprocal desire to *give back* to the student community and make a difference to their fellow students. In this sense, we hypothesise further that the initiative has encouraged the growth of *sub-communities*, for instance informal and formal study groups, amongst students from different cultures & IT courses. This is an encouraging and an early indication of the sense of attachment that students develop to the community through the program.

The second project—Start-up Incubation program—offers members of UniS an opportunity to extend its social and working relationships beyond an existing community. The program specifically targets members of external communities and convince them to share their knowledge within UniS. This extension is enabled through common interests and interestingly, for the incubation program, social media. This allows UniS members to build a larger community engagement web, yet contributing and learning within its own community.

Student Buddy Program	Web 2.0 Start-Up Incubation Program
The *Student Buddy program* was launched in March 2010 by the Student Engagement Officer for UniS. A Student Buddy is a student volunteer who understands the feelings, issues and practicalities of being a student. Currently the Student Volunteers are divided into 2 teams - Team A and Team B. New students to the Faculty are matched to a student buddy in Team A. They become "friends" with the new student, take them out for a chat, alert them to relevant reading, study groups, and provide general orientation to University Life during the semester. Team B students are working closely with the Student Engagement Officer in enhancing the student experience through organizing and participating in social and academic activities. 85% of all students involved in the buddy program showed improvement in their grade point average for the units they were requesting help.	The *Start-Up Incubation program* launched in early 2010 is a new venture that provides young companies (with a focus on mobile technology) access to office space and more importantly opportunities to collaborate with both students and academic staff. This initiative is primarily motivated by the need to provide access for more entrepreneurial students the pathway to work and learn from these young companies. An early success of this venture at UniS is Longweekend LLC[2], a real world startup, where 4 students are working as interns.
What UniS program manager says: The Student Buddy Program is seeing the organic growth of informal and formalised study groups. Students are now integrating with different races, cultures and students from various IT disciplines	What UniS Manager says: students have contributed and learnt, similar to IBL. An interesting and unexpected side effect is that physically locating the company within the University campus resulted in a number of social conversations that resulted in 3 research projects being started within the first three months of the company being setup to work on the University premises.
What Recipients say: With the help of my buddy I have managed to pass all 4 of my units this semester. It has taken 1 ½ years to finally make it and I am so pleased with the result	What the Startups say: This has provided us an opportunity to speed up the delivery of two products that we have in the pipeline. We are also excited by the research opportunities that we were unaware of—before working on campus—in our work
What Buddies say: I had a healthy relationship with my buddy through our meetings. I have enjoyed improving a students time at UniS.	What the Interns say: It has provided us the conditions needed to learn a new and emergent platform (iPhone/ Mobile device software development) and understand the business pressures faced by a startup.

Table 2: Context of Model Testing

CONCLUSION

The widespread use of Web 2.0 technologies such as Facebook and Twitter has led to the adoption in a number of community engagement projects. On the other hand, the breath and depth of these web technologies leads to a disjointed and incoherent adoption. In light of the above, we present an approach and a model to structure the planning and the execution of such projects. In the model, we demonstrate

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[2] Started in 2009, Longweekend LLC is a software development organization focused on creating valuable and long lasting user experiences on mobile devices. (http://www.longweekendmobile.com)

how the characteristics of Web 2.0 technologies enable the efficient realisation of the dimensions of the community participation model (by Wang and Fesenmaier 2004).Through particular projects currently in place in UniS, we argue the aptness of the model and its value for evaluating similar projects. Furthermore, we present a set of preliminary considerations for an integrated community portal, to be systematically implemented and rolled-out in UniS. Future work into the portal was proposed, including the risks involved in such a portal. The contributions of this article are two-fold. For educators, it recommends a set of considerations for establishing and designing community engagement programs and initiatives for higher education. For managers, it proposes a tool for systematically evaluating engagement success of initiatives, serviced by Web 2.0 technologies, within a community of practice.

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