

Open teaching and personal learning networks (PLNs) as avenues of enhanced participation and reflection

Maria Victoria Pineda

College of Computer Studies, De La Salle University – Manila, Manila, Philippines
E-mail: mavic.pineda@delasalle.ph

Submitted 31 July 2013; accepted in final form 8 November 2013

Abstract

Student-centered learning is the mantra of most, if not all, higher education institutions. Most of these academic settings have experimented with combinations of learning models to provide different formats of participation to ensure that classrooms would still be the central setting of knowledge creation. Attempts are made to balance the clinging attention of students to technologies that serve as comfort zones of personal knowledge acquisition over the passive experience they go through in a classroom. As most student-centered learning moves towards learning motivated by technology and while higher education is still committed to keeping most student interactions within the confines of classroom settings, be they virtual or physical, this paper provides a case for an alternative open teaching course design. This open teaching approach was experimented and tried in a Social Media in Education class for the junior instructional design students. The strategy was deliberately planned and executed so as to provide a rhizomatic structure of interaction with the use of social media technologies, to introduce the Personal Learning Networks (PLN) as learning strategies, and to underscore the importance of inquiry and intellectual exchange through the use of different social platforms. The case identifies two important areas. First is the rhizomatic design of the course employing different channels for online expression and conversation. This explores the open course's potential to facilitate self-regulated participation. Second is the induction of the personal learning networks that embody the way students learn together with the connections, resources and tools that support their learning preferences. The paper also examines the quality of retrospection generated by the concept and practice of personal learning networks in the students through their PLN maps and explanations. This case study has several significant findings. One is that open teaching is an effective model to employ student engagement activities with the support of social technologies and platforms. Two, the open teaching rhizomatic structure is an empowering avenue for authentic reflection and intelligent interactions. Three, the induction of the Personal Learning Network by the students provides an effective retrospection time to set their goals on the onset of the course. The PLN also provided the students with a way to rethink their long term goals in order to turn the course into an enhancement of their professional discipline. Lastly, the social media technologies were able to provide good ways to encourage effective retrospection among the students. This paper also serves as a reference to open course design and delivery.

Keywords: *rhizomatic learning, open teaching, personal learning networks, Tumblr, participation and reflection, retrospection in learning, open teaching as a strategy*

Introduction

The advent of emerging technologies has led to many questions that challenge student engagement in the classrooms.

“In order to develop engagement, institutions should give students agency as knowledge creators, as content developers, as members of the community, and as course designers” (Kirkwood, 2011). There has to be a reengineering, if not redirection, amongst educational institutions in relation to how they should exploit student engagement.

In practical terms, this has meant a paradigm shift on the part of the teachers and course designers not just to shed part of their role but also to share it with the students. This means

that amongst other things the students have choices on how or where or when to interact with teachers or other students. This also means soliciting input from the students on topics or projects they want to work on and devising an assessment system that will be suited to all course requirements.

Engagement is not an easy task. It is not just a matter of permitting students to do whatever they want to do. It is also a matter of listening, respecting their ideas and having these ideas recognized regardless of how valid they may or may not be. It takes deliberate planning to design a series of events that will subtly encourage expression of well-thought out opinions, exchanging insights, listening and afterwards, reflecting.

The advent of social software tools as one of the components of the Web 2.0 technology framework of O'Reilly (2005), led to the optimistic view that these tools could make a difference in student participation. User-created content, a model of cooperation and sharing and great degree of personalization of tools and applications gave leverage and empowerment to the students (McLoughlin & Lee, 2008).

With learning and participation design centrally focused on the student, this paper presents a case for an open teaching strategy:

1. Carefully plan an open teaching course delivery;
2. Explore a rhizomatic structure of participation in the course;
3. Introduce and examine Personal Learning Networks as a reflective strategy for a professional discipline;
4. Uncover the implications of a rhizomatic structure in participation and reflections and the use of social media technologies in the process;
5. Provide a reference point in delivering open teaching.

This paper also intends to see the impact of having negotiated regulation of the tasks, assignments and projects that will be undertaken; a timeout reflection of the person's learning priorities and preferences and the availability of more interaction spaces.

What is a rhizomatic structure?

A rhizome as a structure is an open ended set of nodes and stems where each of the nodes has the potential to grow and generate more stems or new shoots. This structure embodies a free movement, moving forward or backward or sideways, but the movement is dependent on how

strong the node that links the stems would be. This case envisions a rhizomatic trajectory of interactions that organically encourages students to freely participate and to independently reflect.

The topography of the rhizome is attractive to building small and multiple networks and "a rhizomatic structure should not be thought of as chaotic but rather as a self-regulating structure responsive to the learners' needs as determined by the mechanisms in place" (Lian, 2013). The building of the small or multiple networks represent the student's movement of increasing knowledge in a single or multiple directions. The more the student increases the learning interactions or circumstances, the more the student has better understanding of the individual ability to acquire knowledge and to retrospect on it (Pineda, 2012). Lima (2011) claims that current trends of knowledge-building pushes a modern world inherent of complexity leading to a new norm, a shift from hierarchical configuration to a rhizomatic arrangement of knowledge networks.

Pre-course

In the second semester of 2011, I was assigned to a Social Media course for a class of instructional design students. It was with renewed excitement that I took over and gave it the title *Social Media in Education*. This would provide an opportunity to re-test the concept of personal learning networks that I have been advocating in the training courses that I deliver to pre-service teachers.

The course was planned to have a rhizomatic structure of activities and the course would heavily use social media technologies. An induction to Personal Learning Networks was also included in the plan. The course was designed to flow as shown below:

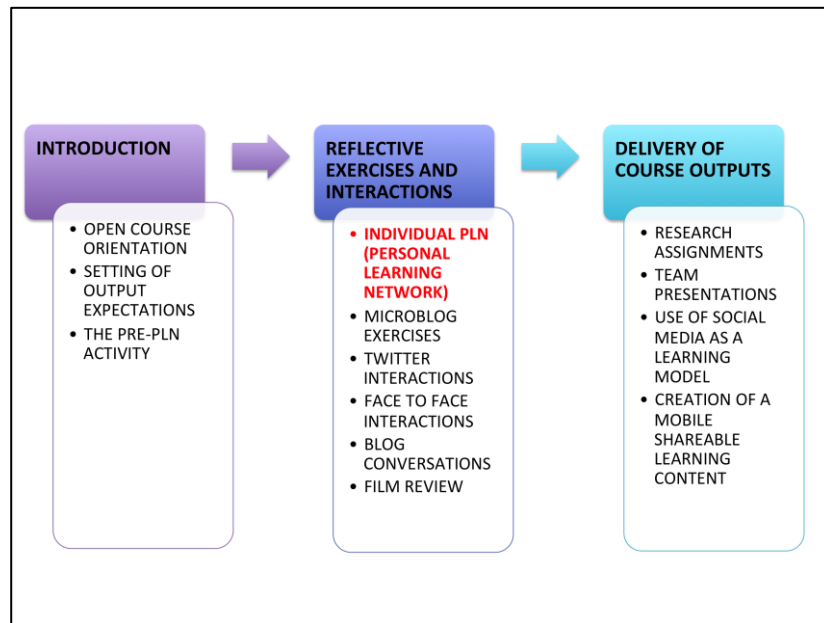


Figure 1 The course flow

Profile of the students

The students in the course were computer science students specializing in instructional systems design and technologies. They were in their junior year and this meant they had gained an understanding of different educational frameworks, and had tested or applied these to different courseware projects used in elementary or high school classrooms. The students also had strong multimedia backgrounds.

There were forty-four (44) students in the class and eleven (11) small groups were formed. Each group was expected to work as a team and be involved in the decision-making pertaining to their tasks. The course ran for fourteen (14) weeks with the last two weeks of the term devoted to project exhibition and presentation.

At the same time, this course gave students an opportunity to become exposed to emerging innovative distance learning formats and self-regulated higher education learning approaches and to acquaint themselves with ongoing developments in the academic arena.

Open teaching

Part of the inspiration for the course was based on an experiment conducted by Alec Couros (2010). He ran an open graduate course in the University of Regina. The course admitted both registered and unregistered students willing to

participate. The course introduced open education philosophies, social media tools and applications for the students to use, and encouraged participation in the construction of digital portfolios/personal blogs, collaborative wiki resources and digital projects applied in the students' professional context.

After setting the course content, I decided to replicate Couros' open teaching model. "Open teaching is described as the facilitation of learning experiences that are open, transparent, collaborative, and social" (Couros, 2010, p. 115). It also emphasizes the "support to the critical consumption, production, connection and synthesis of knowledge through the shared development of personal learning networks" (ibid.).

Critical consumption, creation, usage, aggregation of knowledge and even possible diffusion or distribution of knowledge as referred to by Couros, actually imply an exercise of thought provocation and mindful selection of appropriate activities or relevant knowledge. This means that there should be opportunities for the students to find and decide what are practical research assignments, projects and channels for delivering their ideas. "Practical" in this context means that all the outcomes in the course would be contributing to their prospective careers as instructional designers.

An implied intention was to encourage negotiation of research topics and projects the students (in teams) would work on, which resource and reference materials to use and to be shared in class.

The plan of the course

The course was designed in the following fashion:

First, there was a review of the pre-web learning models such as behaviorist, constructivist, existentialist and social learning approaches as conceived by Vygotsky and Piaget. To complement this stage, the students were given a simple diagnostic exercise on how they perceived the experience of learning.

Afterwards relevant information was provided on how technology was used in the past and how it was being currently used in education. Part of this input introduced the beginnings of Web 2.0 technologies, how it had been foreseen as an empowering framework for commerce but eventually a multi-trajectory impact to different industries and professions including education.

This became the take off point for a discussion of what Web 2.0 technologies were and what Web 3.0 was now. Then discussion moved on to a dialog on social and peer learning, connectivism, rhizomatic education, communities

of practice (COPs) and other open learning models.

An introduction to personal learning environments (PLEs) and the development of personal learning networks (PLNs) were essential conversations and exercises. Adhering to an open teaching would also mean an open approach and strategy. Open teaching leads to open learning and open learning paves the way to one's own personal conscious learning.

The Social Media in Education course had become an open arena where most conversations and interactions were expressed in different formats and channels. Here the activities were either contributed or selected by the students and projects were proposed and negotiated such as the research assignment on technologies supporting distance learning or the mobile, cost-effective shareable learning content and application project.

Along the way the instructor provided an array of alternative assignments and research topics.

Course delivery

Through the open teaching strategy, the class dialogues became a rich source of active interactions that started in the classroom and moved to different facets— in the Tumblr microblog, the blog of the instructor, in the Twitter discussions and others.

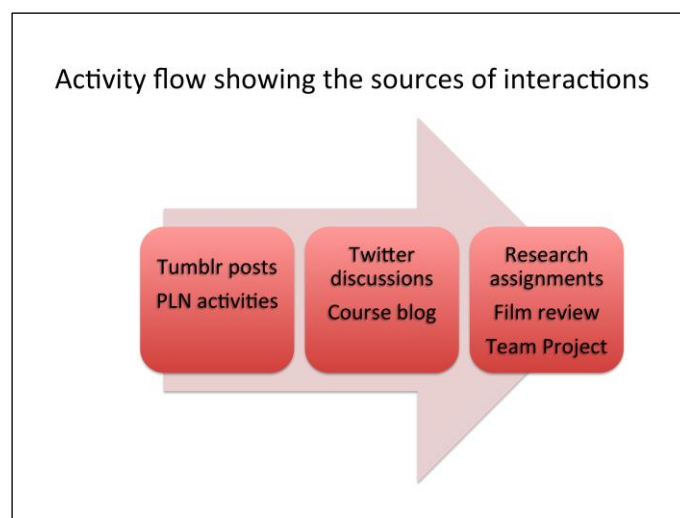


Figure 2 The activity flow of the course plots the sources of interactions and conversations

Face-to-face and online synchronous and asynchronous interactions were held that mirrored continuous discussion of the topics tackled in the class. The following were the sources of interaction:

- a. Micro-blogging of the students using Tumblr. Micro-blogging denotes echoing one's ideas in brief, concise statements. The students were asked to echo and report one learning insight or vision per week. The insight should have been contemplated on and explained in a short paragraph. As there were 14 weeks in the term, each student was required to amplify at least 14 thoughts or visions. The instructor's blog also served as an extension of the classroom for more asynchronous conversations.
- b. Reflection on the individual students' PLNs. The students were oriented about PLNs and each of them drew her PLN map and reflected on it.
- c. Team research assignments. This was a demanding task for the students as a team that prescribed standard academic research, analysis, execution, design of a solution to a societal issue or presentation of the output.
- d. Twitter discussions. Twitter encouraged well-thought insights during real-time discussions held on late evenings or weekends. The students found it to be a different connection and interaction experience.
- e. Review of the Indian film *3 Idiots*. The film review consisted of cultural comparisons, observations of prevailing educational methods in technical courses and sources of motivational behavior.
- f. Final project, a mobile, shareable learning content and/or application. This was the creation of a localized, mobile, shareable learning content as proposed by the student teams themselves.

Induction to personal learning networks

The students were asked at the onset of

the course to draw a concept map of how they thought they learned. This was a simple introspection to determine how they perceived the experience of learning. Most students had devised their concept maps to display their study methods without consideration of resources. This was a pre-PLN activity conducted during the first two weeks of the term.

The students had their formal introduction to Personal Learning Networks after most of the enhanced learning platforms and social media tools had been discussed. Personal Learning Networks or PLNs were conceptualized as the "blueprint of a student's preferred learning connections and learning support tools" (Pineda, 2012). They provided a picture of whether a student did or did not have balanced academic and/or social interests or gave priority to social connections rather than technology tools to support their personal or academic interests (ibid.). So the PLN was presented to the instructional design students and was used to self-assess their learning actions.

The students were asked to use the Mindmeister software to draw their personal learning network or PLN, where the PLN was a map showing their major interests and the pool of resources that supported their interests. It was meant to be a snapshot of their personal learning environment. The questions that guided them were the following:

1. *What are your learning priorities, interests, and activities at present?*
2. *Are you able to use your present connections to support your learning engagements and activities? If yes, How? If not, why?*
3. *What are your present educational goals? Do you see your present goals affected or influenced by your PLN? In what way? Does your PLN support you in your desired learning goals?*

The students were asked to publish their PLNs on the web specifically in their individual Tumblr.com page and to provide explanations on their PLNs. All their tumblr pages were listed in the instructor's tumblr page (<http://ed4all.tumblr.com/studentsinsights>). This time the students were not restricted on how much explanation or reflection they would want to share.

Examination of the students' personal learning networks (PLNs)

Organizing the data

The students were required to publish their PLN maps on their individual Tumblr pages. The instructor's Tumblr page listed all of the students' Tumblr pages. This made it possible to easily visit a student's tumblr page and read all her works—her weekly briefs on learning, her PLN map and explanations of the map, her reflections on cultural impact to learning using the film *3 Idiots* as case material.

All the text data were charted in an Excel table, separating the answers in the three different questions. This tabular data provided a good way of disintegrating the answers of the students from each question including for some who have used tags to describe their PLN.

Analysis and findings

It was evident that the students were very willing to talk about their preferred learning connections as they visually mapped their PLNs with keen details. Drawing a map was also an exercise performed in an open mental space encouraging each of them to fill up the space following the fashion or design the student wanted. The PLN map in itself was a rich source of information about the student's immediate priorities and their special disciplinary interests.

Five is the average number of major connections identified by most of the students. Twelve (12) students could be considered as having a dynamic PLN with more than seven major connections in their PLN maps. (Below are

examples of the PLN maps). While the number of connection branches was not as crucial, it was in fact indicative of the diversity of how the students illustrate their current interests. There were a few instances of the PLN citing spiritual life as a major branch in the map. The prioritization of the spiritual matter in the PLN is quite interesting. It is not certain if this is related to culture but it is deemed that for this cohort of students, the spiritual matter was of great importance.

On the question "*What are your learning priorities, interests, and activities at present?*" it was observed that over fifty percent prioritized academic goals: to finish and graduate successfully and to deliver a very good thesis.

It appeared that the PLN exercise of the participants provided a way for the students to reflect on the following:

- a. the macro perspectives of all the activities they were undertaking in relation to their goals and priorities;*
- b. their major interests were contributing to their development as instructional designers;*
- c. the extent to which their major interests were an integral part of their priorities.*

The exercise brought a new dimension to academic reflection wherein academic success was a priority that reverberated.

The introduction of the PLNs as a timeout reflection had set the pace and mental ambience to prepare the students for the term's tasks and activities.

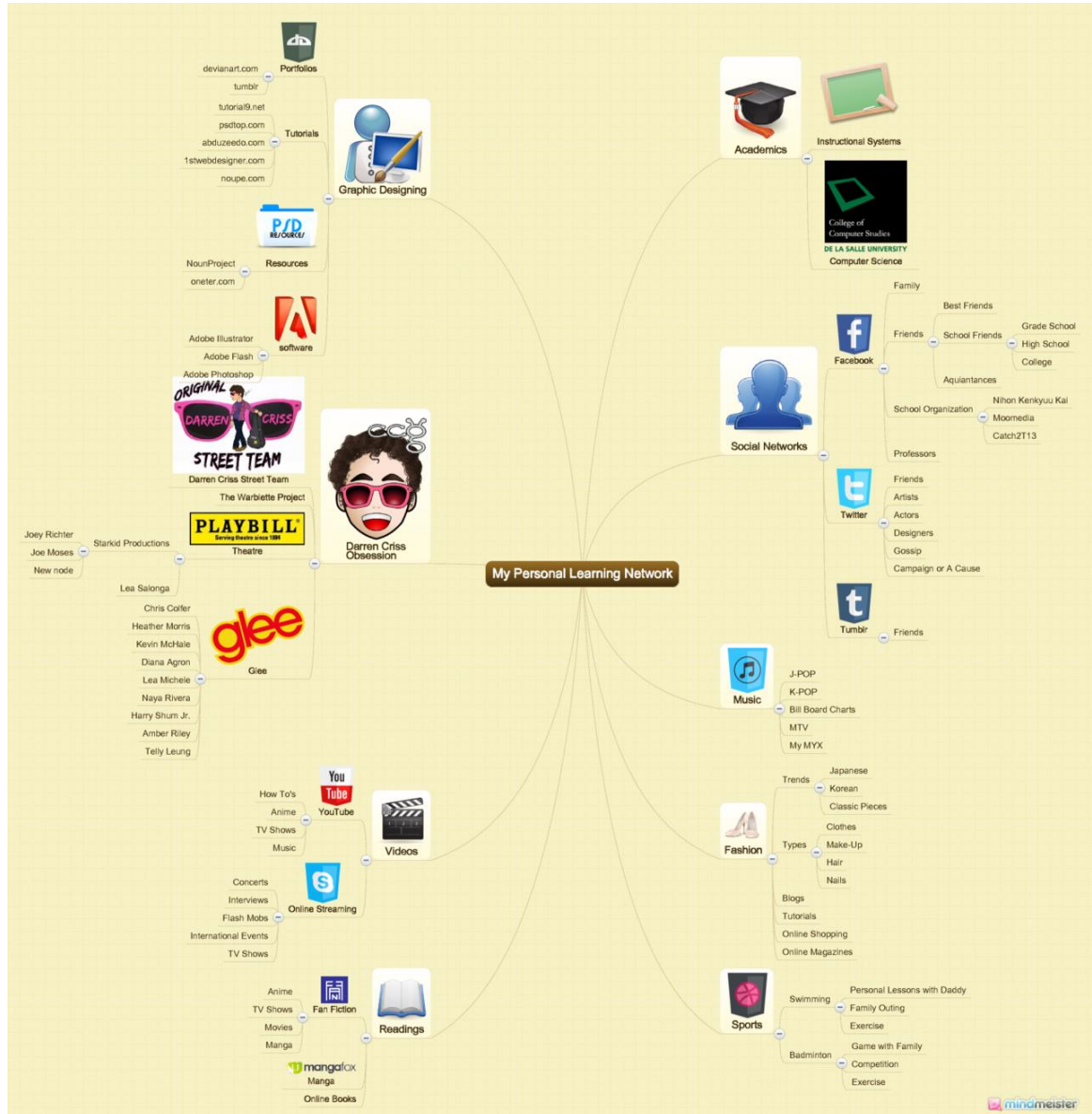


Figure 3 An example of a dynamic PLN map



Figure 4 An example of a dynamic PLN map

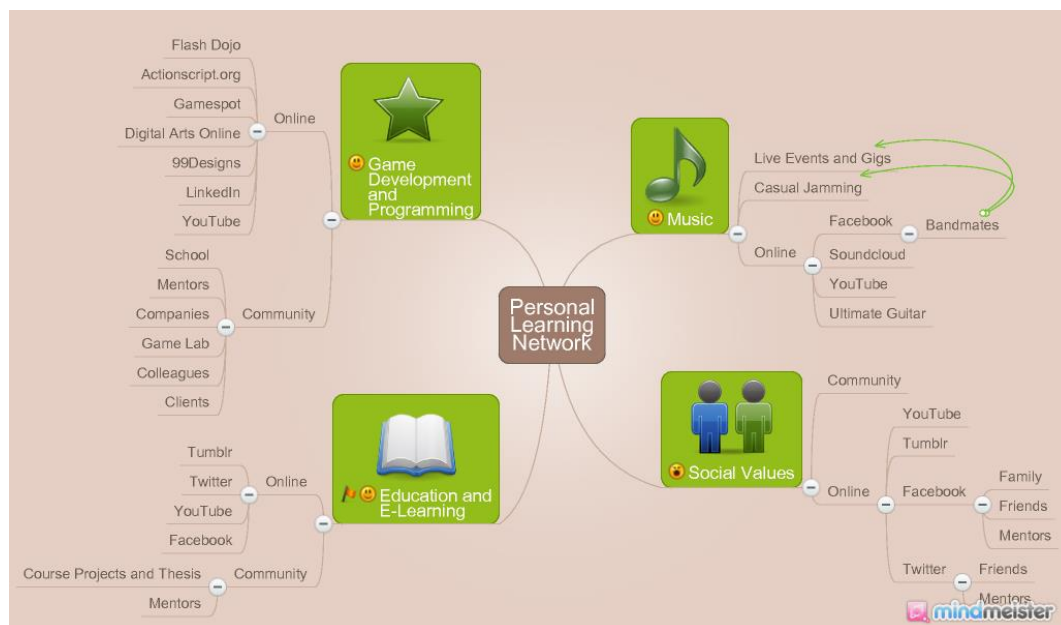


Figure 5 An example of a PLN map with less than five major interests

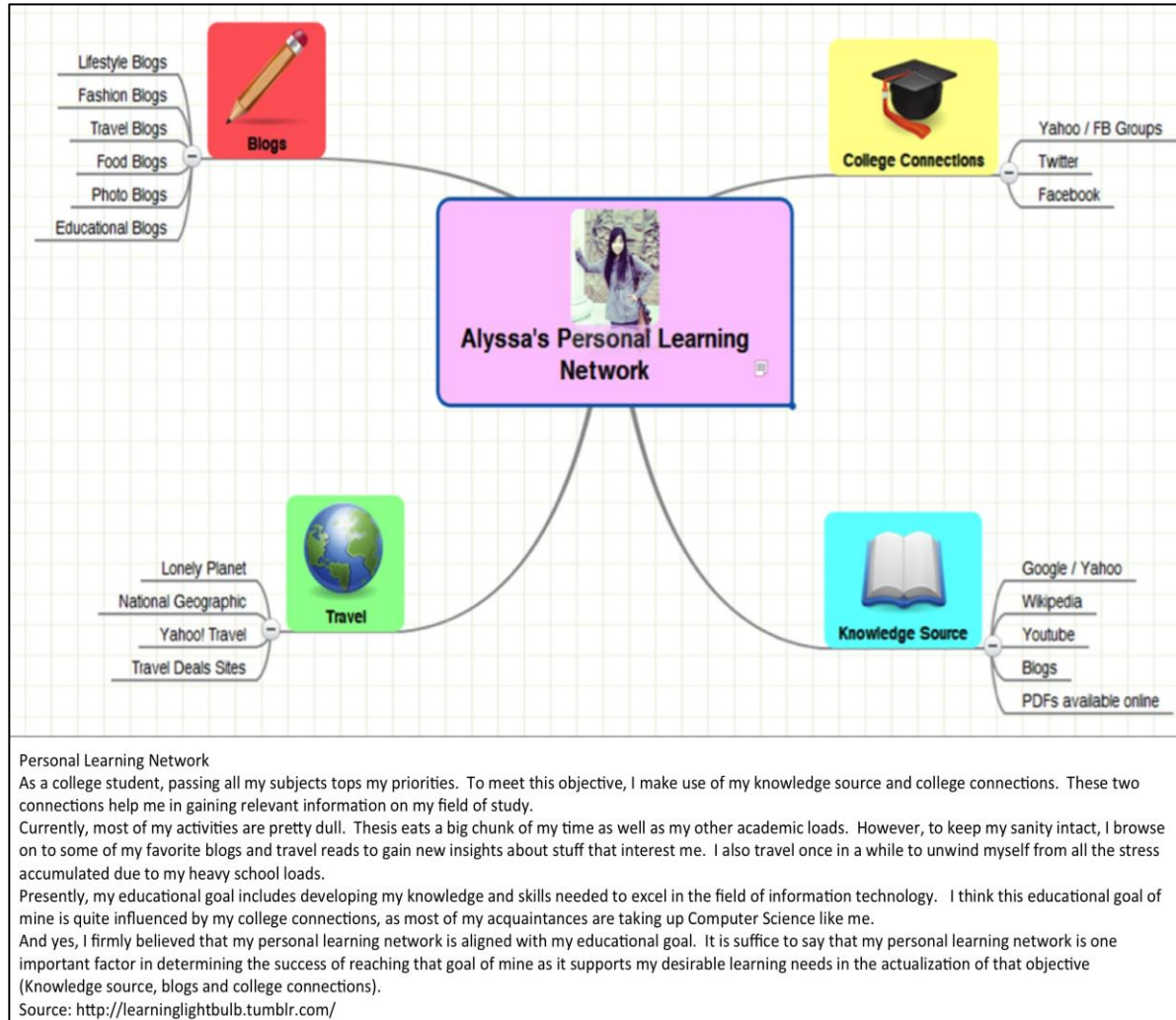


Figure 6 An example of a PLN map with less than five major interests and the explanation of the student's PLN

The annotations given by the students gave more meaning to the PLN maps they created. Here are some of the explanations of the students when asked –

“Are you able to use your present connections to support your learning engagements and activities? If yes, How? If not, why not?”

It also showed that the PLN connections represented a variety of things like social networks, goals, or study provisions. This means that constructing a PLN is a way for students to illustrate their vision of their present dominant learning movements and associations.

Students' unlearning through the reflective exercises

When the course was constructed, it was decided to follow an open teaching approach. There was no conscious structure used to weigh or balance the personal reflective learning exercises and the academic mental challenges. The plan was to employ as many social media channels of interaction as possible in a rhizomatic fashion for the students to discuss, be participative and explore learning connections.

With my current PLN, it supports me in a way that it shows me my learning goals in life and reminds me to try harder and not give up. It also shows that not only do I have to concentrate on my studies, but also to have fun.

It is mostly influenced rather than affected, because through this I can organize my workspace and multitask at the same time. It supports my goals because in this, I can easily share my works and hope to improve through their comments.

I think my personal learning networks is indeed capable of guiding my independent learning goals, and development needs.

My connections help me learn more about my schoolwork like my projects, homeworks and my thesis.

In my PLN, you can see how I study. I am more of a goal oriented than prioritizing games than study.

I am able to support my learning engagement and activities using social networks.

My present connections at present are able to support my learning engagements because they provide me sufficient information and knowledge to enhance my skills.

I am able to use my present connections as a means to support my learning engagements because everything that I want to know more about can be accessed through the use of the Web.

Personally, I think that my present goals are affected by my PLN. I always believe that in setting goals, one thing that should always be considered is your interests.

My online network basically gives me access to anything and anyone, giving me substance and knowledge.

I chose to do something different and start from my interests branching out to the resources that I have for each of them.

Looking at my PLN reminds me of what it is I wish to achieve and brings back the feeling of wanting to achieve it.

Figure 7 Some answers of students on the second question

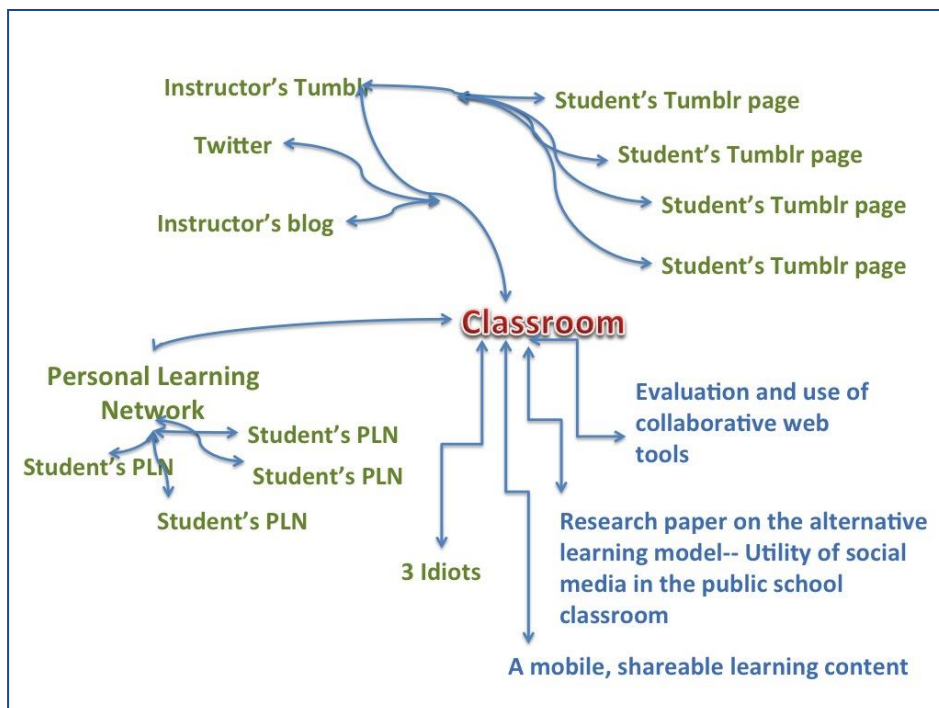


Figure 8 Map of the open course activities: blue connections are academic mental challenges and the greenconnections are reflective learning exercises

The summary of the activities shows that a very considerable amount of reflective exercises and interaction settings were exploited in the delivery of the open course. The blue connections represent rigorous academic mental activity whereas the green connections represent reflective exercises and interactions.

The mapped connections, in many instances influence each other. While some students for instance performed the prescribed blue connection activities, these blue connections

became inputs into their learning insights portfolio. On the other hand, the green connections provided a mindful thinking process in the delivery of the blue connections.

The open teaching strategy elicited many healthy exchanges of ideas and opinions that would not have happened without social media technology. Here are some examples of the comments generated from the instructor's blog (<http://convictionsandfreethoughts.wordpress.com>).

15 Responses to *Bringing teachers' digital literacy to a competency level*



[Anne Gabrielle Guzman](#) says:

[February 6, 2012 at 4:13 pm](#)

I just realized the vastness of a teacher's responsibility. More than that, I am astounded by the idea that one should never stop learning. Because of technology, there is only little time for dilly-dally. The state of change in development triggers such an amount of information explosion that a teacher's work that is merely to educate is not enough. A teacher must be able to adapt in different contexts in terms of the students he or she is teaching as well as the technology available.

[Reply](#)
[mobilemartha](#) says:

[February 8, 2012 at 3:31 pm](#)

But maybe we should not put the bulk of responsibility to our teachers. Maybe the instructional designers can bridge this gap of the teacher expected to adapt in different contexts. Maybe instructional designers provide solutions for teachers and students to become adaptive, teachers in their teaching occupation and students in their learning undertakings. Maybe adaptive instructional systems can help.

My two cents. Have a good day!

10 Responses to *Re-imagining the 21st century graduate*



[John Anthony Berbaño](#) says:

[February 6, 2012 at 5:58 pm](#)

I agree that the 21st century graduate is prone to experiencing information overload and communication overload. With all the technologies available, students tend to spend too much time in front of the computer or with their gadgets. I'm not saying that this is totally a bad thing because it also provides advantages especially in learning, but moderation should be observed. I can't help but compare 20th century graduates with 21st century graduates. Both have a lot of similarities and differences, but one major factor that sets them apart is technology. Acquiring information before must have been tedious because one had to refer mainly on books. But today students can refer not only on books but also on the web which can provide information in a very short span of time. 21st century graduates are more technologically adept and can keep up with the rapid advancement of technology.

I also agree with the important skills/intelligences that are needed to be acquired by the students in this century, especially with Informational Skills, Content Producer, Ethical Literacy, and Crisis Skills.

[Reply](#)
[mobilemartha](#) says:

[February 8, 2012 at 3:21 pm](#)

The rapid acceleration of technology & the adeptness of present students to technology now prescribe management of the knowledge, information, interests, connections and other learning sources. Our old model of having specific sources of information, primarily from our teachers and experts may not fit. We must have an architectural meme of some sort to effectively pull, push our learning artefacts, maybe even reuse or remix & reproduce them. And maybe we have to start from our own learning engagements.

Figure 9 Examples of students' comments in the instructor's blog

The students were asked to express or translate their insights in the dialog activities and to make them explicit in their individual Tumblr pages. It was also observed that there has been a generous amount of ideas delivered by the students

in the Tumblr micro-blog. Utilization of different content formats such as drawings, images, videos were selected to enhance self-expression. Here are some examples of the weekly contributions:

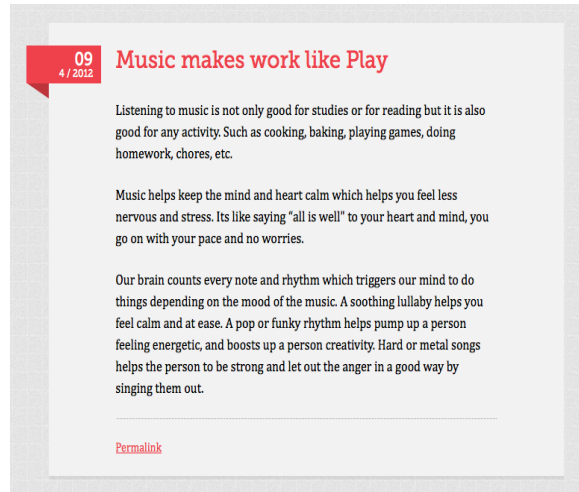


Figure 10 An example of a student's Tumblr pag with the weekly insight



Figure 11 Another example of a student's Tumblr page with the weekly insight

Lessons learnt from open teaching

Academic success can be greatly supported both in the short and long term by having many instances and variants of reflective interactions.

Planning opportunities for interactions must also be a conscious effort and there are many technologies and tools that could support this intention. The microblog Tumblr provided an

online portfolio hub for the students' individual insights. Tumblr pages exhibited a degree of ambivalence or seriousness by the students toward the course and toward their work. The extended conversations in the instructor's Wordpress blog and the open discussions in Twitter made it more comfortable for the students to further echo their thoughts on issues and changes about the topics pursued in the course.

The social media technologies were helpful as students were very keen to use them and felt that the technologies enhanced the whole self-expression exercise.

Toward the ninth week, the course discussions in the classroom became more dynamic because students tended to have developed familiarity with the topic, increased interests in the activities and ease in delivering their ideas in a free format.

Benefits and functions of the personal learning network (PLN)

The Personal Learning Network is a very rewarding instrument, providing a timeout reflection performed in the first part of the course. The PLN sets the pace for rationalizing the whole perspective of the disciplinary fluency direction of the instructional design students. Such retrospection exercise led to more comfortable, participative, self-expression in the succeeding activities. This was observed in the students' mode of expression in their individual Tumblr pages, in the face-to-face interactions in the classroom and in the blog and twitter conversations.

The PLN likewise provides a way to discover what individuals naturally do and serves as a springboard for rethinking for how passionate they are about the things they do well or how much they wish to become excellent.

Conclusion

As issues on student participation and engagement in their learning are currently being debated and deliberated in many academic settings, this paper identifies a possible answer to this issue through open teaching. In this experiment, open teaching is a strategy that utilizes technology enhanced reflective exercises and

Last, student engagement places high demands on teacher engagement, an unspoken cooperation of a shared action and understanding. Careful planning of the interaction settings and

interactions that bring about relevant retrospection of the academic discipline involved. Social media technologies play an important role in the facilitation of the open teaching activities.

Open teaching is not a panacea to issues of student engagement but it is an emerging, flexible strategy that leads to active learning. If planned carefully, it is an effective strategy that enhances and balances participation and reflection. From this open teaching experience, the following were realized:

First, open teaching may be of value to address classroom passivity and increase student participation. Apart from the social, transparent and collaborative learning exchanges presented by the model, it actually supports a progressive and sustained interest in the topics of the course as evidenced by the energy of the self-regulated drive of students who volunteered their ideas and opinions. Open teaching in a rhizomatic structure also means designing an interplay of activities that empower student agency in terms of shared decisions on negotiated projects and assignment topics, independence in the articulation of the individual Tumblr blogs and freedom to interact in different ways.

Second, a considerable amount of interactions designed through the open teaching strategy paved the way to support retrospection of the purpose of having the activities in the course. The students saw that the assignments and major projects of the course were not prescribed as a way of placing a difficult requirement but significantly, that these projects contributed to the enhancement of their professional discipline. This resulted in very satisfactory mobile learning content and application projects.

Third, the PLN is a schema of learning drives and retrospection strategy to keep apace of one's personal goals. Asking students who are taking their major courses to draw their PLN maps at the start of the term made them rethink their academic goals. The induction of the PLN provided them with an added tool to think critically or maybe even decide to enrich further their skills and competencies as instructional designers. This also led to encouraging the students to profess their disciplinary talents in the Tumblr assignment and in the projects.

relevant materials to be discussed are very important elements of open teaching. All of these suggested topics were primarily selected as these materials interested the students. Teachers who are

to engage in open teaching must have a conscious connected practice of pedagogy and technology.

Taken together these four conclusions provide us with patterns for further experimentation and reflection on the construction of learning systems constructed on the basis of individual personal learning environments. This case further builds on Laurillard's (2008) views that open teaching is a professional practice possessing important essentials such as personal teaching development, complementing one's practice based on the working teaching models of others, the capacity to examine and analyse the outcomes of such designs and to apply and diffuse the resulting outputs.

Acknowledgement

The author wishes to thank the students of Social Media and Education of De La Salle University during the third trimester of the SY 2011-2012 specially the PLN diagrams of Alyssa Basillo, Catherine Graza, Albie Sy, and Kye Valenzuela that were exhibited in this paper. Links to the PLN diagrams may be found in the instructor's Tumblr page, <http://ed4all.tumblr.com/studentsinsights>

References

- Couros, A. (2010). *Developing personal learning networks for open and social learning*. In G. Veletsianos (Ed.), *Emerging Technologies in Distance Education*, 109-128. Athabasca: Athabasca University Press.
- Kirkwood, K. (2011). *Student agency, peer authority and participatory learning*. Proceedings of the 18th International Conference in Learning, Mauritius, July 2011.
- Lian, A. P. (2013). "Reflections on Intellectual and Strategic Educational Development in an Exponentially-Expanding Technological World", a presentation delivered in *The Forum on Strategic Approaches to the Future*, De La Salle University, Manila, Philippines on February 23, 2013. Retrieved from [http://pleandrhizomes.net/2013/05/02/reflections-on-intellectual-and-strategic-educational-development-in-an-](http://pleandrhizomes.net/2013/05/02/reflections-on-intellectual-and-strategic-educational-development-in-an-exponentially-expanding-technological-world-2/)
- exponentially-expanding-technological-world-2/
- Lima, M. (2011). "*The Power of Networks: Mapping an increasingly complex world*", a presentation at Royal Society of Arts (London), December 8th, 2011, *Full audio recording in RSA Events*. Retrieved from <http://www.thersa.org/events/audio-and-past-events/2011/the-power-of-networks-knowledge-in-an-age-of-infinite-interconnectedness>
- Laurillard, D. (2008). Open teaching: The key to sustainable and effective open teaching. In Iiyoshi, T. and Kumar, V., M.S. (Eds.) *Opening up Education The collective advancement of education through open technology, open content and open knowledge*. London, England: MIT Press.
- McLoughlin, C., & Lee, M. (2008b). *Future learning landscapes: Transforming pedagogy through social software*. Innovate, 4(5). Retrieved from <http://www.innovateonline.info/>
- O'Reilly, T. (2005). *What is Web 2.0*. Retrieved from <http://oreilly.com/web2/archive/what-is-web-20.html>
- Pineda, M. (2012). *My students' insights, Musings in Education*. Retrieved from <http://ed4all.tumblr.com/studentsinsights>
- Pineda, M. (2011). *Convictions and Free Thoughts*. Retrieved from <http://convictionsandfreethoughts.wordpress.com/2012/01/31/re-imagining-the-21st-century-graduate/#comment-55>
- Pineda, Ma. V. (2012). Personal Learning Networks (PLNs) as an approach to understanding the rhizomatic learning connections of 21st century students. Proceedings of AsiaCALL2012, the 11th International Conference of the Asia Association of Computer-Assisted Language-Learning. *A special issue of the AsiaCALL Online Journal*, ISSN 1936-9859. Retrieved from http://asiacall.info/acoj/wp-content/uploads/2013/09/Pineda_Ma_V_AsiaCALL2012_Proceedings.pdf