A Role for Personal Learning Environments in a K-12 Formal Education Setting

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Abstract

The concept of a Personal Learning Environment is explored in relation to the K-12 school environment. Some of the literature around the definition and history of the concept is explored prior to describing a small-scale research project involving 15 high school students. Reflections are made the role of a Personal Learning Environment ecosystem in a K-12 community and a proposal for the development on such an ecosystems is put forward.

A Role for Personal Learning Environments in a K-12 Formal Education Setting

Education is going through a radical shift as technology is allowing schools, teachers and students to approach learning differently. Thoughtful educators are rethinking pedagogy and curriculum and often returning to ideas that were too difficult to manage in an "analogue" environment. Some are using technology to push content more efficiently. MOOCs allow one teacher to share her ideas with thousands of students simultaneously. Kahn Academy provides a library of online lessons that can replace or supplement traditional classroom lectures and demonstrations. Others are using technology to allow students to learn at their own pace and to combine their own skills, interests and learning styles with mandated curriculum (Richardson, 2012). Where attempts to manage truly student-centred learning on a large scale have failed due to issues managing students individually, technology is assisting in streamlining some of the more mundane administrivia making it easier for mentor teachers to manage a larger case load of students effectively.

The technology at the centre of each of these approaches share some similarities but are quite different in their organization. When one teacher is trying to teach the same content to a large number of students, efficient content delivery and quick formulaic assessment is key. The assumption is that all students will progress through the same content in the same order. There may or may not be some flexibility with the length of time each student is given to complete the tasks, but the tasks and sequence are the same for all. In a world where teaching to standards is important, this approach is favoured.

One can say that all learners who have completed the course have met the standards because they have all performed the same tasks and passed the same assessments. The tools that are important in this environment are document distribution systems, video and audio playback software and assessment forms that can deliver and mark tests. This approach assumes that all students can learn in the same manner and is modelled on the same ideas that support our current school systems (Richardson, 2012). Education is an individual's progression through a series of tasks.

The more student-centred approach assumes that each student will have his own path through the curriculum. Personal learning styles and interests will dictate the path that the learning takes and the speed at which he travels. When faced with teaching hundreds or thousands of students the same curriculum, this becomes more problematic, but with the addition of more teachers[1] and better networks, much more effective. The path to learning involves creation, exploration and experimentation and assumes that there are multiple sources of information beyond the teacher and the textbook (Richardson, 2012). The technology that is required for this approach emphasizes creative tools such as text, video and audio editors, social tools such as micro-blogging, texting and conferencing software, and publication tools such as blogs and file galleries (ie. Flickr, Slideshare, Soundcloud).

This type of platform exists in the concept of the Personal Learning Environment or PLE. In fact, the idea of a PLE has been around for a number of years, but the term has been used differently by different people at different times. As most people currently

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[1] The reality is that this concept does not add teachers to the current educational model, it simply redistributes them. The one-to-hundreds approach that is common in MOOCs represents a drastic reduction of teachers as learning becomes much less personalized.

understand a PLE, it is a "loosely joined" group of Web 2.0 tools that allow someone to gather (typically asynchronously) with others around common interests to learn from each other (van Harmelen, 2008; O'Rielly, 2005; Weinberger, 2002). Loertscher, Koechlin and Zwaan claim it has three essential components: the Personal Learning Network or PLN, the folks that are part of the informal learning community; the Portal that is the conduit and filter for all incoming information; and the Portfolio that is the outward demonstration of newfound knowledge and manner of contributing back to the learning community (2011). Others have refinements and extensions of this idea, but the PLN, Portal, and Portfolio model is common to most (Downes, 2006; Morrison, 2013). Perhaps the most common variation on the model is the omission of the Portfolio component. This infers a network that one draws upon but does not, necessarily, contribute to.

These types of PLEs are most common among adult, informal learners. They are excellent tools for people to keep up with advances in their profession or hobby and network with others with common interests (Richardson & Mancabelli, 2011), but they seem to be almost non-existent in formal education settings, especially at the K-12 levels. There has been some research done in the area (Becker, 2013; Rahimi, Van den Berg & Veen, 2012), but PLEs are not commonly implemented at this level. In an effort to discover why this is the case, I worked with 15 high school students to create, modify and reflect on the use of PLEs in formal education. Over the course of 14 weeks, the students were taught the basic concepts of PLEs, encouraged to build them around personal interests and then try to apply them to their formal learning. They were then asked to

help construct a template for a PLE that might be developed for all members of the school community to use.

The PLE Project - Description

The aim of this project was to explore the concept of a PLE within a formal school environment in order to understand potential reactions to the concept by students and to generate ideas for possible larger scale implementation within a particular environment. Fifteen boys (from within a single-gender, university preparatory school) enrolled in grades 8-12 volunteered to participate in the project. They were trained in the use of a number of Web 2.0 tools that formed their PLE. They were encouraged to base the construction of their PLE and PLN on a single personal interest. Their interests ranged from film to food to soccer to musicals.

The participants were first asked to start a blog and introduce themselves and their interests. The blog was the basis for their portfolio and served to provide an opportunity for reflection both on their personal interest and on the PLE project itself. Wordpress, Blogger and Tumblr were all chosen as blogging platforms.

They were then encouraged to read other blogs in their area of personal interest. RSS feeds were discussed and Google Reader was introduced as a platform for keeping track of their favourite blogs. They were asked to write a blog post outlining their favourite five blogs in their area of interest. Google Reader became the beginning of their portal and helped them to begin building their PLN.

Twitter was added to the participants' portal as a way of building their PLN. Different methods of searching Twitter (hashtags, lists, and looking at who others follow)

were discussed. Social bookmarking was introduced (Diigo and Delicious) as a way of

keeping track of favourite static sites and using the power of networks to filter web

searches. Twitter was linked with their social bookmarking tool through Packrati as a

way of automating the collection of bookmarks.

At this point, they had their portfolio (blog), their portal (RSS feeds and Twitter)

and a growing PLN. It was at this point that they were encouraged to explore dashboard

tools such as Symbaloo and Netvibes as a way of organizing all of their tools in one

place. Many of them discovered a gadget for Google Chrome that also acted as a

dashboard. They were then asked to start thinking about how that they might use this

tool set for their schoolwork as they went out on their own. Formal classes and meetings

were essentially over and it was up to the students to motivate themselves to continue to

explore and write about their explorations. They agreed that they would write a goal

setting post and a reporting post each week as they took their PLEs off on Spring Break

and into their third term of school. There multiple times that their ideas were sought

throughout the project through surveys, discussions, blog posts and collaborative

documents. They came together for a final meeting at the end of their 14th week to reflect

and provide feedback.

The PLE Project – Reflection

A number of reflections have been made through the course of this work (some

recorded on the author's blog (Crompton, 2013)). The reflections have been informed by

reading, discussion and the work with the students described above. The ideas that have

come out of the project revolve around the inclination of students to adopt the concepts

and tools of a PLE to their learning, through to the specifics of what tools should be essential to address student needs. It should be noted that the specifics of the group studied and the exploratory nature of the research indicate that any conclusions drawn from this work should be used to inform further research, not as conclusive evidence of anything in and of itself.

The ease of adoption of new tools and the inclination towards regular use became a key issue in the project. While there was enthusiasm for the concept at various points in the project, the measurable activity was at its peak when there was more visible group activity and when a new tool was introduced. Without external motivation to use specific tools, most students found it difficult to build them into their daily routine. Students felt it would be easier to make the use of these tools habit if there was an ecosystem of PLEs within the school that all members of the community used.   There needs to be a certain momentum, both internal and external to the student for the implementation of this kind of tool to take true effect. While individuals may find it easy to find that momentum if there is an easily found community that speaks to a particular passion, there needs to be a critical mass of users that provides the motivation for individuals to participate.

A related frustration that many students expressed was that so few of their teachers were using networked digital tools in their classes (a straw poll of the group indicated an average of two of eight teachers per student.) If the teacher isn't organizing their class online, then it was felt that there is no need for a tool that would bring together connections between these classes, teachers and students. This raised two concerns: 1. If there were to be a larger scale pilot project of the use PLEs in a school community, it would need to involve a core set of teachers with a common student base; 2. Students

seemed to be seeing education as something that was delivered to them by teachers, rather than something that they owned. If learning is still being seen as the teacher delivering knowledge to the student, the entire concept of networked learning becomes a moot point. If education is something that happens to a student, rather than something that a student owns and participates in, then why would there be a need for looking beyond that teacher-student relationship?

There needs to be a period of learning the tools and concepts involved in a PLE if the implementation into a community or into one's daily practice is to be successful. Despite the myth of the "digital native," one cannot assume that students will take to these tools naturally and teachers need to re-vision their teaching practice in order to make easy and efficient use of them. For neither group will this transition be a given. The issues with teachers, many of whom have many years of teaching in a particular manner, are easy to understand. Any time a teacher changes the way she approaches the curriculum involves a concerted effort. This is often done one course at a time as curriculum, textbooks or other external forces necessitate change. The move to a digital base for teaching is potentially asking for reinventing everything simultaneously. The only point in a teacher's career where this typically occurs is when he first starts teaching. Not only would time be needed to make this change, clear rationale for putting in the effort would be essential.

Related to this are the authentic opportunities of technology available to particular curricula and the natural and effective differences in teaching styles between teachers. One cannot assume that technology will fit into every course or every teacher's manner of thinking and working yet there are ways to leverage PLEs in most situations. A very

traditional lecture-based teaching style can take advantage of the portfolio of a PLE by publishing video or audio recordings of the class lecture or discussion for additional review or for those who may have missed the class. A non-academic teacher can leverage a blog within a portfolio to post notes about a rehearsal or practice-based class or post schedules for upcoming work. While using the teacher's portfolio as a broadcast mechanism, the digital nature and commenting features of a blog can encourage more interaction and the long-term leveraging of the power of connected learning.

The challenges that students face may not be as obvious. While the students of today are defined as "digital natives" because they have never known a world without networked technology, that doesn't mean that they know how to use it or use it well. I have never known a world without cars, but that doesn't mean that I was born knowing how to drive. There were students in the PLE Project that found some tools challenging to set up and use. Many of the students had the same kinds of concerns about privacy that adults express. They thought about the privacy settings in new tools and sometimes used pseudonyms when setting up accounts. This concern for privacy was sometimes expressed differently, but this was more likely because they were teenagers, not because they were digital natives. Communication occurred more through texting and Facebook than email, but thinking about using tools like Twitter for other types of communication with other networks of learners was not a natural concept for them. Certainly, few of the students looked far beyond Google and Wikipedia as tools for learning on the World Wide Web. The Web is seen as a social environment or a commercial environment. Learning how to search the Web, evaluate credibility of the pages found and organizing that information in a meaningful way is as foreign to many "digital natives" as it is to

their "digital immigrant" counterparts. Skills in this realm are usually taught by an adult where purely social networking skills are learned from friends. It seems that, while there are certain technological tools that "digital natives" use on a regular basis, the assumption that they will be comfortable with and have a natural inclination to all forms and uses of networked technology is not as true as some would purport. A period of learning to use the tools is essential to consider in the use of any educational technology, particularly if, like a PLE, it is to become central to their everyday work.

If a formal learning community decides to implement a common method of organizing learning tools, then they need to decide what the essential components of that platform are. Loertscher, Koechlin and Zwaan propose that the core of the PLE is the Portal, Portfolio and PLN (2011, 2012). Based on this model, the author engaged the PLE Project group to implement blogs, an RSS reader, Twitter and a social bookmarking service, while actively growing a PLN around a specific interest. The participants were also encouraged to use a dashboard tool to bring as much of their PLE under one roof as possible under the assumption that if everything is in one place, the user is more likely to make this dashboard a central part of their daily routine. While each of these tools was important to the PLE, it soon became evident that there was an organizational element that was missing. Students in particular wanted to have class schedules and calendars integrated into their PLEs as this would help them to keep track of assignment due dates and major events in the school calendar. Milligan, et al suggest that goal setting tools help to organize the more independent aspects of a students work (2006). We will look at a proposal for what a common PLE implementation might look like in the next section of this paper.

The ideas of student-centred learning and discussion of portfolios often go hand in hand with constructivist ideals in education. If the PLE is a place for building knowledge, and not simply information consumption, then a tool set to facilitate the finding and re-working of that knowledge could be an important part of a PLE. Downes constructed a model PLE as a stand-alone software package that included tools for collection, production, remixing, and publishing of web-based content (Downes, 2013). Certainly, tools that easily assist in the organization of research materials (such as LibraryThing, EasyBib, or Diigo), and the searching for these materials via the web and local library online catalogues would be very valuable.

Others have experimented with the organization of a common tool for the implementation of a PLE across a wider population. Van Harmelen chronicled his journey through the production of four different PLE implementations at the University of Manchester in his 2008 article, "Design trajectories: Four experiments in PLE implementation." The first iteration of this idea was a highly institution based system that was found to be too restrictive for most users. The next step was a highly fragmented organization where any number of Web 2.0 tools could be used to form a "loosely joined" "ecosystem" that would serve the institution's learners. It became evident that this type of a network was highly dependent on the users' technological and organizational skills. While it may have worked well for some, it was not effective for all. They went on to develop a third "throw-away" system that was an extension of the ELGG blog platform and are in the process of building a fourth system that builds on the ideas of the third (Van Harmelen, 2008; Van Harmelen, personal communication).

While the currently popular iteration of a PLE most closely matches Van Harmelen's second phase of PLE development, there seems to be an advantage to the bringing together of these tools under one roof. As the project participants have reported, the concept of a dashboard does have its organizational purpose. It is one part ease of use in that everything is in one place for the user and one part control for the institution administering it. While the author is in favour of keeping a learning network as open as possible for the learner, he recognizes that there is a place for privacy and closed systems. If a PLE concept is to be implemented in a K-12 school environment, there are certainly age groups where the safety of a closed environment is warranted as students learn to work in a networked environment. In the same way that one doesn't take their Grade 1 class to the downtown core of a major city and set them free, one does not allow them unscaffolded access to the World Wide Web. An environment where elements could be turned outward over time or walls could be lifted as students gained experience and maturity would be beneficial in a school-based PLE ecosystem. A digital citizenship programme could be put in place that would allow students to earn greater access to the Web as they reached certain milestones.

Likewise, it would be beneficial for the PLE platform to be highly customizable and be built on top of existing, publicly available services. It could house institution-based publishing, creation and information aggregating tools that could be converted to publicly available services when it was deemed appropriate for the learner to "go public." For example, an in-house blogging solution could allow younger students to write for others in their community and learn the skills and behaviours that are appropriate to that kind of publishing. When deemed appropriate, the student would then link a WordPress

or Blogger blog to their PLE allowing them to gain further experience in a global

community. They would be publishing for a much wider audience and potentially gain

access to people with greater experience and expertise in the fields of study. By the time

the student graduated, they would have built a loosely joined PLE that they could easily

take with them into their post-secondary studies or life in general.

It is interesting to note that the PLE concept is often discussed in opposition to the

idea of a Learning Management System (LMS).   An LMS, in this context, is often

school-centred and an efficient tool for pushing out content to students from teachers.

Traditionally, the concept of the LMS represents a unified approach that treats all learners

as having the same needs and learning styles. Downes states it best when he says, "The

PLE is a recognition that the 'one size fits all' approach characteristic of the LMS

(Learning Management System) will not be sufficient to meet the varied needs of

students. It is, indeed not a software application per se, but is rather a characterization of

an approach to e-learning" (Downes, 2007). While PLEs are often offered as a

replacement to the traditional LMS, there is a middle ground that can keep the students at

the centre of learning, yet allow enough ease of use and adaptability to teaching styles to

encourage widespread adoption. The idea of a shell or platform that houses a number of

interchangeable tools that is still situated in one digital space could be that middle

ground. This could be a plug and play environment with interchangeable tools based on

any number of existing and future Web 2.0 platforms.

<u>PLE – a K-12 Implementation Proposal</u>

A clear proposal of what a PLE ecosystem might look like in a K-12 environment is in order at this juncture. As stated above, one person's PLE can look very different than another's and often, people use the tools of a PLE without thinking of how they work together or thinking of them as a unified structure. A number of participants in the PLE Project commented that they realized part-way through the project that they already had a personal learning environment (or at least part of one) but that they'd never thought of the combination of tools that they use in this manner. A great example of the kind of thinking that exists when people do put their mind to their environments is the fantastic gallery of PLE diagrams curated by Scott Leslie (2012).

While the author agrees that a PLE, by definition needs to be a *personalized* space, some degree of commonality between individuals' PLEs within a formal education institution will establish an ease of use for those new to the concept. A common template to start from with a common concept of functionality would permit the community to support each other in the learning of the tool and come to a common understanding of it's intended use. A flexible environment within that template would allow for customization and adjustments to privacy levels and would help both the user and the institution tailor the tool to specific uses, tastes and learning styles.

The first step in establishing a PLE ecosystem is in the recognition that it is a decentralized entity. Like the Internet itself, there is no "home" to the system as a whole. It is not a single web page or site. Individuals maintain their own PLEs using a myriad of services. Only the outer shell would be hosted on a common server or servers. The ecosystem exists in the relationships between the individual PLEs. Each member of the

school community has their own PLE that houses two key functions, the portal and the

portfolio as described above. Each teacher would devote a portion of her portfolio to a

specific course or project. Each student taking the class would subscribe, via his portal,

to the teacher's course/project portfolio. This would allow the student to keep track of

any updates without having to go to the teacher's site. The teacher may have additional

resources or workspaces on the site that is being followed by the student and the student

may need to go to that site to take advantage of these, but all updates would be delivered

to the student directly via an RSS feed. Likewise, the teacher would have a reciprocal

subscription to the relevant portion of the student's portfolio. Students publish their work

in their portfolio and the teacher automatically receives an update. This relationship is
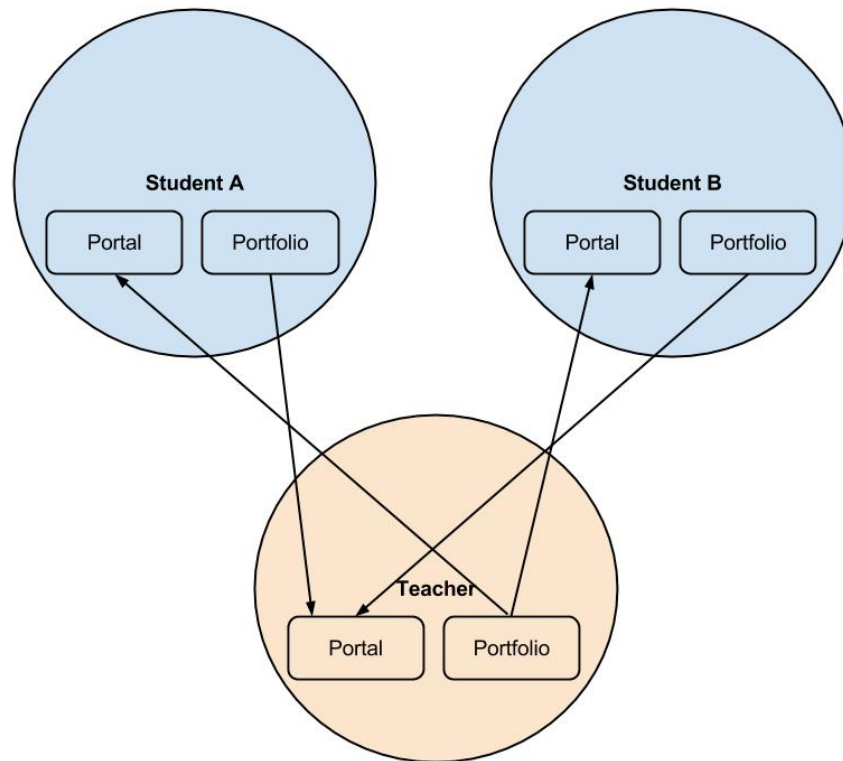
shown in Figure 1.

Figure 1

On a two-person level, this is simple. Let's look at how this scales. The typical

class model is of one teacher and multiple students. The teacher maintains the same

system as described above, but there are now 20 students subscribing to the teacher's

class portfolio. The teacher is now subscribing to 20 feeds from each individual student.

From the student's perspective, it is equally simple. Rather than subscribing to one

teacher, they are subscribing to all teachers who they are taking classes with. All of their

course updates come to one place. It is conceivable that there would be some flexibility

to the organization of the portal feeds so that course updates could be kept separate or all

rolled into one feed, depending on the user's preferences. There might also be a system

of categorizing types of posts in a feed. Teachers might be able to label certain posts such as assignment updates or assessment notifications.

Looking more closely at the individual level of the PLE reveals a tool that looks much like what has been described in the description of the PLE project. The personal environment centres on the portfolio that houses a blog as it's key tool. For more advanced students, this blog could be any one of the popular blogging platforms available, such as Wordpress, Blogger, or Tumblr. The blog could be established as a single blog with tags for specific course; multiple pages within a blog, each focusing on a different course; or a separate blog for each course. Any structure could work as long as a single RSS feed could be generated from it. Likewise, most of these platforms allow for the housing of additional files or links if extra resources need to be stored for access. At younger grades, an education specific blog platform like Edublogs could be used to ensure that students are allowed some level of privacy as they learn the skills and ethics of publishing in a digital environment. If the entire system is modular, the more advanced and public tools could be plugged in as the students are ready for them. Figure 2 shows how a variety of services might be "plugged in" to the primary functions. While an in-house blog solution or education specific micro-blogging platform might be the only option for younger students, older students would be encouraged to open up their world with similar solutions that would be open to the web and useable tools beyond graduation.
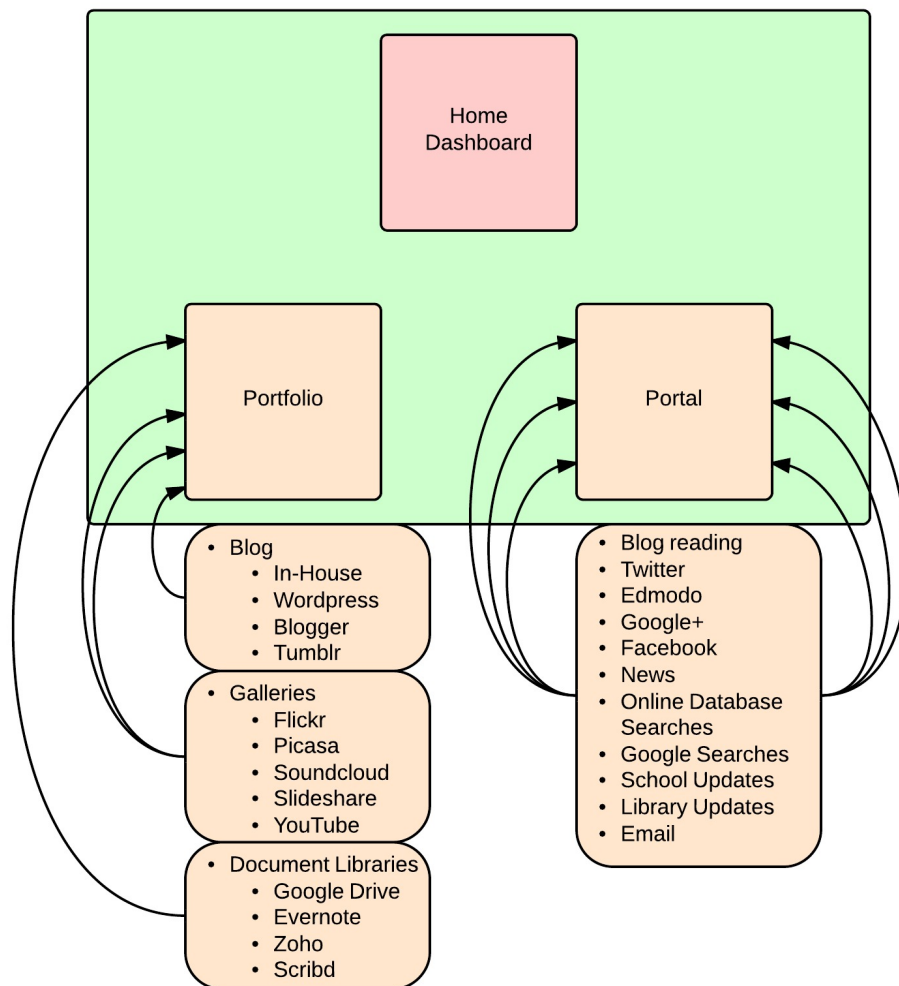
Figure 2

The portal side of the environment would be focused on an RSS reader much like the soon to be retired Google Reader. An interface that would allow a user to embed and organize feeds in a single, easy to read space would provide the convenience of a single tool for all information to pass through a folder or filter structure that allows sorting by course or topic. A student could have a folder that would put all of his English course material in one place and keep updates related to a school team that he is on in another.

Figure 3 shows one look to the Google Reader page. Note the way that specific feeds are organized into folders on the left. Figure 4 is one layout of a Feedly page. Likewise there is an organizational panel on the left and a column of highlighted material on the right. Feedly currently has 4 different layouts to choose from and multiple ways of combining collections of RSS feeds to be viewed in a single stream. It is important to note that RSS is not only used to keep track of blogs, but web search results, updates in online databases, new channels from major news broadcast networks and much other constantly changing web content.
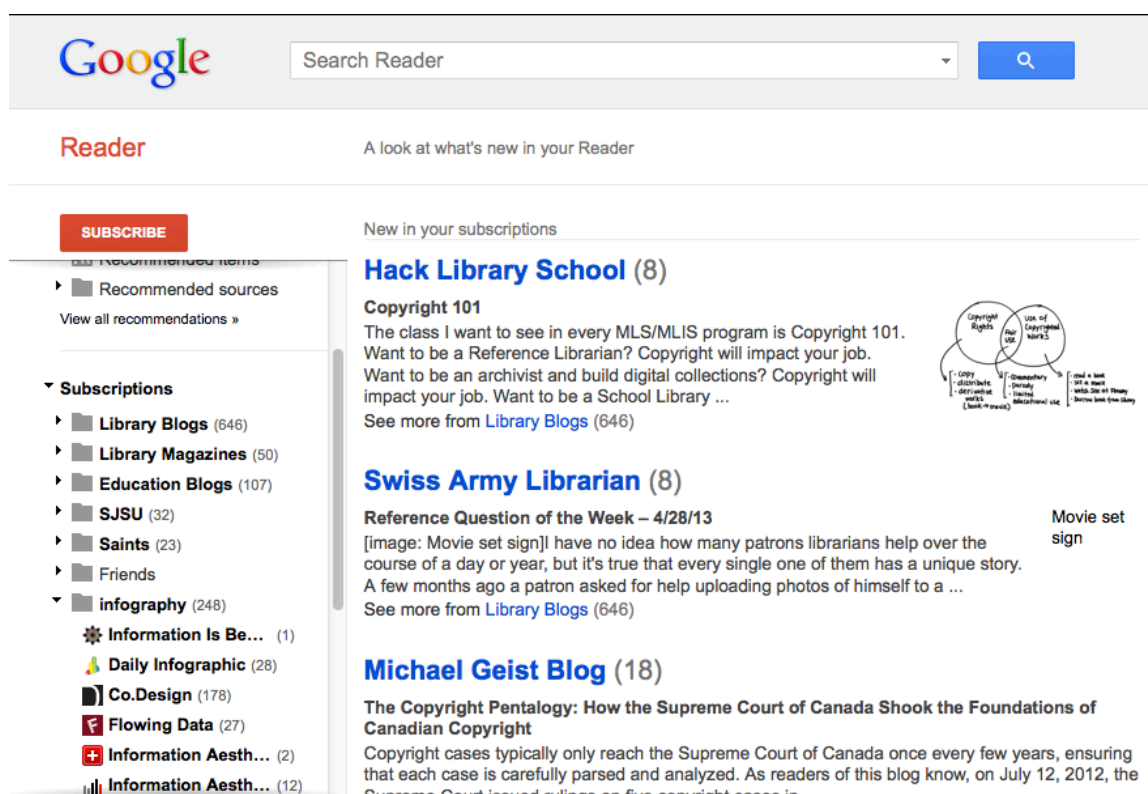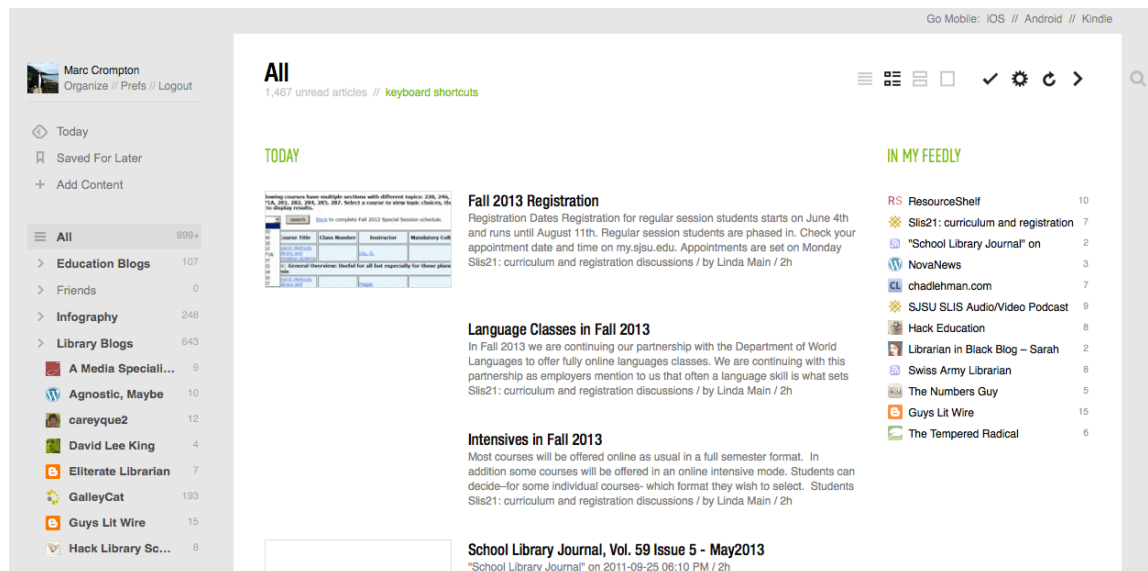

Figure 3

Figure 4

Beyond the key features of a portfolio/blog and portal/RSS feed organizer, there are a number of other tools that would play pivotal roles in a PLE. Micro-blogging tools, such as Twitter and Edmodo, can be used for quick sharing of links, promotion of blog posts and more social interactions. Anyone who has spent much time on Twitter knows that it is a great tool for building one's PLN. The ability to see who follows who, who is in which lists and who is retweeting what, allows a person to find others with common interests to educate and inspire them. There are ways of embedding Twitter streams into other pages or creating RSS feeds from Twitter streams to put in the portal/RSS organization tool.

A key aspect of an institutional PLE ecosystem that isn't present in the more typical, informal PLEs, would be the inclusion of an organizational and information management tool set. While this tool set may not be seen to be directly related to the

learning itself, it does play an important role in helping one to learn. Search engines could be built that would be embedded in either the portfolio or portal functions of the PLE as widgets. These search engines could offer searching of school databases, the school library's online catalogue and other digital resources or the web at large. They would be paired with access to a citation management tool and a social bookmarking tool. Through these combined services, students could find information and organize the information that they found. Potentially, other curation tools like Scoop.it!, Pinterest, and Flickr could be embedded to allow different media types to be organized in different ways.

Other embedded organizational tools such as syncable calendars, todo lists, email and contact lists could also be embedded to help students to keep organized.   In more student centred learning environments, van Harmelen suggests that an overt expression of personal learning goals would focus the organization and use of the PLE (2008). And, a mobile app would allow this ecosystem to be tapped anywhere and everywhere.

The Next Steps

There remains much work to be done in this area. There are many questions that are unanswered and many ideas proposed within this document that require more rigorous testing to validate. Within the context of the specific school environment that the project was carried out, there are further steps that can be taken to further explore the effectiveness of the PLE concept.

Many of the student participants are excited by the possibilities generated by their involvement in the PLE project and are anxious to be involved in the development of a

prototype. There will likely be a team that will work over the coming year that will develop the modules and overall architecture for a school-wide PLE platform. The current thinking is that this will be web-based with a companion mobile app method of delivery.

Simultaneously, there will be the re-introduction of a senior level independent inquiry project as a course option for grade 12s. It is the author's current thinking that a PLE ecosystem based largely on the ideas explored here will be an essential part of keeping a disparate group of individuals in communication with one another while documenting their progress and giving them a platform for publishing their work. While serving a specific need with a small group of students within the larger community, ideas addressed in this document can be further explored.

Within the context of the present research, many ideas need further exploration. The test group was a small group of teenage boys attending a university preparatory school. A larger, more inclusive test group would be required to begin to make any kind of significant generalizations. At many points, the present research seemed to contradict the ideas purported by leading thinkers regarding the comfort level current youth have with technology. It is not possible to know how much of these contradictions are due to faults in the circulating popular thinking and how much of them are idiosyncrasies of the population studied. Are the students studied more aware and concerned about their personal privacy online than most students or are general assumptions ignoring these trends in the youth population at large? Do "digital natives" truly feel more comfortable working in a digital world or is there a significant population of youth who would rather

work with pencil and paper? Is this simply a matter of learning a new way of doing things or is it indicative of natural inclinations?

Bigger questions remain if PLEs are truly going to become actively implemented in the K-12 environment. Most work on PLEs to date has explored post-secondary and adult use of these environments. Is this because there is something about a PLE that doesn't work at a younger age or is it simply that this area has been neglected for other reasons? Are privacy issues a significant barrier to introducing a PLE concept to younger students? Are there practical ways of dealing with these issues? More of a concern is the questions around the effectiveness of PLEs in a traditional school environment. As some of the participants experienced a lack of motivation due to the fact that they didn't feel much need to use their PLE for their school work. What has to change in the school environment to make PLEs effective? In a paradigm where the teacher is responsible for feeding a student information, the network doesn't need to expand beyond those two people. In a paradigm where the student is put at the centre of his learning and is encouraged to draw on any number of resources (human, digital, and physical), organizing that network is crucial. Is there a transitory point where a PLE can serve both paradigms in an authentic way? Can a PLE still be effective when only a portion of the school community participates?

There potentially needs to be some discussion as to when a PLE ceases to be a PLE and is something else. Much of the literature speaks of a PLE as being an open system built by the user for the user. It is a response, in some ways, to the structured uniform approach of the LMS. In an attempt to build something that is uniform enough in design and approach to be used effectively within a formal network of younger

students, what level of customization is needed? If the answer is that a user shouldn't

need to do to much to make the PLE space their own, then is it still a PLE or is it an LMS

or something in between? Does the name matter?

It is the author's belief that PLEs have an important place in the future of K-12

education. It is clear to most that education is not about simple transfer of content and is

more about developing meta-cognitive skills and dispositions. It is more important to

learn how to learn than it is to learn about any one particular topic as our society

continues to change at an increasingly rapid rate. Technology is allowing us to move

beyond the walls of the classroom and the bell system so that students can tailor their

learning around specific interests and learn, to a point at their own pace and on their own

schedule. Classroom organization is a management technique, not an educational

philosophy. PLEs can offer a key organizational structure that can help education break

free of the current limits of the classroom.

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Appendix A

Web 2.0 Tools Referenced in Article

Blogger - blogger.com
Diigo   - diigo.com
Delicious - delicious.com
EasyBib - easybib.com
Edmodo - edmodo.com
Edublogs - edublogs.org
ELGG - elgg.com
Evernote - evernote.com
Facebook - facebook.com
Feedly - feedly.com
Flickr - flickr.com
Google+ - plus.google.com
Google Drive - drive.google.com
Google Reader - reader.google.com
Kahn Academy - khanacademy.org
LibraryThing -librarything.com
Netvibes -netvibes.com
Packrati - packrati.us
Picasa - picasaweb.google.com
Pinterest - pinterest.com
Scoop.It! - scoop.it
Scribd - scribd.com
SlideShare -slideshare.net
SoundCloud - soundcloud.com
Symbaloo - symbaloo.com
Tumblr - tumblr.com
Twitter - twitter.com
Wikipedia - wikipedia.org
Wordpress - wordpress.com
YouTube - youtube.com
Zoho - zoho.com

Appendix B

PLE Project Web Based Documentation

The teacher kept a page in his blog as a central portfolio of material relevant to the progress of the project. The students could refer to this page to find determine their next task. This page also lists all student blogs involved with the project. http://marclibrary.wordpress.com/ple-project/

The teacher's blog was also used to publish reflections on the progress of the project. http://marclibrary.wordpress.com/category/ple-project/

A template was discussed and played with at the mid-point of the project and constructed as a mind-map. http://www.mindmeister.com/265758208/me