

Knowledge Building in the Open: Constructing a Knowledge Building Experience on the Web

Introduction

Knowledge building has been demonstrating significant potential to enhance K-12 education since it was first conceptualized by Scardamalia and Bereiter in the late 1980s. Similarly, the iterations of Knowledge Forum software and its predecessor CSILE have demonstrated equal successes in supporting knowledge building pedagogy in K-12 classrooms since the early 1990s. Despite the fact that many of the successes of knowledge building and Knowledge Forum have taken place in Canada, larger scale and longer term implementations appear to have taken deeper root elsewhere. In addition, the explosive growth of the Internet in general and collaborative Web 2.0 applications in particular over the past five to ten years have contributed to a massive global networked culture in which sharing and collaborating online is the norm. The intersection of this new, networked culture and education would seem to create new possibilities for knowledge building as an educational practice at the same time as it calls into question the closed “walled garden” of a Knowledge Forum database.

Based on an intense one-year (2007-2008) project entitled *A Living Archives* in which junior high school students on Prince Edward Island researched and created an online gloss for historical references from L. M. Montgomery's *Anne of Green Gables*, this paper will describe the extent to which knowledge building principles informed both the pedagogy underlying the project and the Drupal-based software environment developed to support it. It will then outline some tentative lessons,

some “improvable ideas” that the knowledge-building community may wish to think about.

A Living Archives Overview

The result of a one-year partnership between the University of Prince Edward Island, Canadian Heritage, and the Public Archives and Records Office, Department of Education, Foundation of Museums and Heritage, and three school boards of PEI, *A Living Archives* celebrated the 2008 centennial of the publication of *Anne of Green Gables*. In the words of the project tagline, the goal was to have “Island students bring the past to life using the tools of the future” by collaborating to create a website which would provide a high-quality historical context for period references from the *Anne* text.

Three grade 7-8 classes participated, two English, one each from a rural and an urban school, and one French from a rural French first-language school. The classroom teachers developed the project curriculum based on provincial standards during a workshop with the project team during the summer of 2008. Building on themes of “The General Store”, “The Horse and Transportation”, “Acadian Life”, and “School Life”, the curriculum integrated field trips for information gathering to the Public Archives, the Artifactory (a Charlottetown warehouse which preserves artifacts from P.E.I.’s history), and the historic Orwell village, with skills training sessions in videography and interviewing, writing etexts, and archival procedures. Based on their field research, students planned, recorded and produced short

videos, selected archival photographs and documents, and wrote explanatory etexts to accompany them.

While the teachers managed the majority day-to-day operation of the project, they had neither the expertise nor the time to provide specialized training. Outside experts—a professional videographer, the Provincial Archivist, and an L.M. Montgomery scholar who also had expertise in constructing etexts—therefore provided workshops focusing on their areas of expertise for teachers and students. Follow-up to the workshops was provided by email and Skype videoconferences.

The glue that held the project together was a custom developed Drupal database. While Knowledge Forum would have been the preferred collaborative tool of one team member, the remainder of the team had a variety of reasons for preferring another option. Some of these reasons might be traced back to philosophical differences, lack of exposure to knowledge building and Knowledge Forum, and the consequent varying conceptions of software design to support iterative and intentional collaboration to produce a specific product, but at least two other perhaps more pragmatic reasons also came into play. First, one of the project goals was to create supports for processes that could be replicated in other contexts. An empty clone of the Drupal database developed for the project could be (and was) provided as a free download from the project website for anyone who wished to try a similar project. Second, an essential element of the partnership with Canadian Heritage was the requirement for a website that could showcase the student work.

Canadian Heritage also had very specific requirements for any website they funded. While Knowledge Forum is excellent for working with knowledge, it is less than ideal for presenting it. The *Living Archives* Drupal site was designed around a series of password protected blogs in which students could work on successive drafts of their contributions. Upon reaching a satisfactory level of quality, a student's work could be made "live" on the public site with the electronic equivalent of flipping a switch, with the same look and feel of the rest of the site.

Two final pieces rounded out the *Living Archives* project. The first was the creation of the "Virtual Island", three early 20th century P.E.I. houses in a virtual 3-D navigable world. Developed with Open Sim, open source software that sought to replicate the functionality of *Second Life*, the Virtual Island allowed the students' digital photographs to be displayed in a manner similar to how they might have been in Anne's time. It also allowed visitors to the site to use an avatar to move through this world. The second piece was a set of classroom resources authored by BEd students at the University of P.E.I. Faculty of Education and intended to help junior high social studies teachers who were interested in integrating the *Living Archives* into their courses.

With school-based work beginning in the fall of 2007 and despite many of the setbacks and obstacles one might expect in working with sixty-odd twelve and thirteen year olds on a long-term and complex initiative with tight deadlines, exacting third-party standards and software being developed on the fly, *A Living*

Archives was launched at a public ceremony at the Confederation Centre in Charlottetown, P.E.I. in June, 2008.

Elements of Knowledge Building

The tagline from the project website quoted above emphasizes the fact that the production of a high-quality digital artifact, not knowledge building. Despite this, threads of the knowledge building principles twine their way through *A Living Archives*. The following table summarizes them briefly.

Knowledge Building Principle	<i>A Living Archives</i>
Real Ideas, Authentic Problems	The heart of the project was to create a publically accessible archives to provide a deeper context for historical references in <i>Anne of Green Gables</i> . The authentic problems engaged by the students were those dictated by the stringent, non-negotiable standards of an external agency.
Improvable Ideas	The bounded nature of the project allowed for ideas and their expression to be improved up to the point that they went live on the Web. At that point they became published and static. Again, the website itself, not the ideas shared in the website, was the focus of the student work.
Idea Diversity	While the project's curriculum-related themes were chosen by the participating teachers, students were free to explore whatever ideas and historical artifacts related to those themes that interested them. Student work in the Provincial Archives in particular often led to new ideas.
Rise Above Epistemic Agency	Rise above and epistemic agency were probably the two knowledge building principles least evident in the project. While improvement of individual student commentaries was expected and evident during the prepublication process, there was no emphasis on synthesizing deeper understandings. Moreover, because the project was running on a tight timeline, students had little opportunity to reflect on how the processes of their work might be improved.
Community Knowledge,	The collective responsibility to complete the website was the foundation for the project. All students contributed, and all

Collective Responsibility	worked to get their contributions to the required high standard.
Democratizing Knowledge	The project was based on the idea that junior high students could be engaged in the production of a sophisticated, real-world knowledge object. Their contributions were equally important as any of the adult experts involved.
Symmetric Knowledge Advancement	As the students' knowledge of P.E.I. history increased, and their skills with the resources they had for exploring it, so did the knowledge about what students were capable of increase in the adults involved. Further, the knowledge gained from the community by the students was returned to the community via the project website.
Pervasive Knowledge Building	Although the project did not explicitly focus on knowledge building, it's use of multiple resources external to the classroom was an implicit demonstration that knowledge building reaches beyond the classroom to include the community.
Constructive Uses of Authoritative Sources	The Provincial Archives, field trips, and interviews were all constructive uses of authoritative sources.
Knowledge Building Discourse	Knowledge building discourse occurred in the <i>Living Archives</i> blogs with respect as part of the revision and rewriting for publication. It did not, however, focus on knowledge building explicitly.
Embedded and Transformative Assessment	The blogs of the <i>Living Archives</i> Drupal space and the feedback of peers, teachers, and external experts for the specific purpose of achieving a sufficient standard for inclusion in the public site provided an integral and meaningful assessment process.

Discussion and Conclusion

From the perspectives of virtually everyone involved, students, teachers, outside experts, and the research team, *A Living Archives* was a huge success. For example, one of the three project teachers had had almost no previous experience with digital technologies—not even an email account—and was nearing retirement yet became one of the project's greatest supporters and, in fact, the lead teacher for SMARTBoard support in his school. He finished the school year asking if there was any way the project could be repeated the next year, a question that was echoed by

one of the external experts. A second teacher referred to the project as the highlight of her teaching career to that point. In the closing focus group, all three of the teachers remarked on the quality of their students' engagement and largely unprecedented willingness to revise and rewrite multiple drafts based on the feedback of the project's text advisor in order to meet Canadian Heritage's exacting standards for web presentation. One of those students stated that her engagement in the project had led her to want to become a historian. Possibly the most telling evidence, however, came from one of the schools' principals. Highly respected and experienced, and recognized with a national award for his educational leadership, he commented to one of the project's co-principal investigators that he hadn't originally believed that the Grade 7/8 students working on the project would ever have been able to rise to the standard expected of them. He was delighted to have been wrong.

Yet despite its success, the project was another one-off. Although the skills and technological resources were still in place and many of the obstacles to the previous year's work addressed, the coordination and funding that had facilitated integration of such things as the field trips and other external resources had been exhausted. A lack of leadership, or perhaps a sense of agency, or self-confidence at the school level meant that it did not move into a second year. Although *A Living Archives* had been successful from many perspectives, not the least in terms of those who had participated, perhaps it was just too far from the norm to survive without external intervention.

In terms of knowledge building and the knowledge building community, *A Living Archives* suggests that knowledge building principles may contribute to K-12 pedagogical innovation without an explicit emphasis on knowledge building. If the project had moved into a second year and beyond, the elements of those principles could have been used with the teachers involved to refine and improve the first year successes. Similarly, like any number of open source Web 2.0 applications, the Drupal instance created as a part of *A Living Archives* was able to provide rudimentary support for knowledge building practices, but without an explicit, principle-based framework and the time for experimentation and adaptation, it remains an orphan. In terms of both its processes and its supporting technology, *A Living Archives* illustrates that while an inductive, emergent approach may facilitate an initial engagement with aspects of knowledge building among those who might be scared off by a more principled approach, time and explicit guiding principles are essential for sustainability.

As opposed to much of the current focus on personal learning networks, which seem to revolve around “What do I want to learn and who can help me learn it?” *A Living Archives* revolved around the question of “What do we need to know and who can help us find out in order to create and publish high-quality knowledge artifacts to be shared?” It was a good place to start, but without a longer-term process and a reflective knowledge building focus, it was not sustainable.