From Creation to Curation: Evolution of an Authentic 'Assessment *for* Learning' Task

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Abstract: Authenticity is an important characteristic of learning experiences and contributes to transfer of learning into practice but maintaining authenticity as practice changes is challenging. This paper describes action research undertaken to guide the evolution of an authentic assessment task in a teacher preparation course responding to changes in the program and the wider educational environment. As teaching resources have become more readily available online, the task has evolved from one of creating teaching resources to curating and sharing collections of resources that may be adapted or adopted. Lessons learned through reflection during the evolutionary process and prospective developments are discussed in light of the effectiveness of the evolution of the task in responding to the changing circumstances.

Background

Despite 30 years of effort, schooling lags society in adapting to information and communication technology (ICT) (Ertmer & Ottenbreit-Leftwich 2013). Belland (2009) used *habitus* to explain the challenges in moving teacher graduates toward integrating ICT in classroom practice; teacher preparation programs must overwrite understandings of teaching developed during 12 years of learning in conventional classrooms. Ertmer, Ottenbreit-Leftwich, Sadik, Sendurur, and Sendurur (2012) argued that teacher professional development for ICT should be authentic, using the same ICT and pedagogical approaches that teachers are able to use in their classrooms.

The implication is that widespread change in teachers' ICT practices will be facilitated by first implementing changes within programs for teacher preparation and ongoing development. That is, teacher education at all stages should authentically represent the contexts within which teachers will be expected to perform. Authenticity in teachers' learning should facilitate transfer of learning to professional practice. The challenge, in a time of rapid change, will be to ensure that the learning experiences are authentic and meet requirements of teacher education.

This paper describes the evolution of a task that represents a substantial proportion of the assessment for a final year course in an initial teacher preparation program. The task is also a significant learning activity that develops relevant knowledge and professional dispositions. In its recent iteration the task engages students in *curation* as they gather and present online resources using processes analogous to curation of exhibitions in art galleries or museums. It is assessment *for* learning as much as, or more than, assessment *of* learning. The evolution of the task will be considered in the context of the bachelor degree program within which the course is placed.

The activity described may be best characterized as action research undertaken for progressive improvement in pedagogy (Somekh 2006). It involved a series of cycles in which the author's experiences provided the basis for reflection and subsequent action to improve a teacher preparation course.

The changing educational environment

Biological evolution occurs in response to environmental changes. As conditions change the relative advantages of specific characteristics shift and organisms with more favorable combinations of characteristics are more likely to survive and reproduce. Similarly, educational evolution occurs in response to changes in societal and institutional conditions. In this instance some of the key changes that affected evolution of the course assessment included the increasing abundance of information, increasing focus on learning networks as a site of professional learning, emergence of curation as a professional activity, changes to curriculum and its implementation by education systems, and desire of students for more flexible learning opportunities.

Abundance of information

Historically information was scarce and changed slowly. Initially it was stored in human memory and transmitted orally. The invention of writing changed that, but reproduction of handwritten documents was slow and expensive, so copies were rare and information was still conveyed orally by those with access to written copies. Printing made it possible to produce more copies cheaply but it was still necessary to physically distribute them. Traditional approaches to education developed in this context as a *pedagogy of scarcity* (Weller 2011). When access to information was limited, transmissive teaching by lectures and similar methods made sense.

Four technological waves have changed the ecology of information (Albion 2011), which is now expanding and changing very rapidly. Publishing was expensive and restricted to specialists, but in the 1980s desktop publishing enabled almost anybody to print professional looking materials. In the 1990s the World Wide Web made a single electronic copy of a document available globally. In the 2000s Web 2.0 made it easy for anybody to instantly publish material to the world. Now mobile Internet access allows smartphones to access and publish information from almost anywhere.

The *pedagogy of scarcity* was based on transmitting scarce information from teacher to learners and is less relevant in an age when information is abundant and easily accessible to all. What we need now is a *pedagogy of abundance* (Weller, 2011). Unlike material property, the value of information is often increased by sharing and linking with information available elsewhere.

Based on a traditional understanding of information it was natural to think of education and learning as being about transfer of information from teacher to learner. A constructivist view of knowledge encouraged us to think of learning as building knowledge by extending on the known (Bereiter 2002). Connectivism (Siemens 2005) suggested that knowledge may exist in the network as much as, or more than, in an individual and that learning is about making connections. The challenge for educators is to be lifelong professional learners using the power of the network to support user-generated learning (Swanson 2013).

Personal/Professional Learning Networks

Whether or not they realize it, people have learning networks. We all learn from others in family, school, or community and they form part of a personal learning network that develops without much conscious effort. Warlick (2012) compares developing a personal learning network to cultivating a garden. Teachers, including those in preparation, need to give serious thought to how to extend and shape a learning network that meets their needs for ongoing professional learning. Their personal learning network will evolve to become a personal/professional learning network (PLN) with interlinking segments related to different areas of interest and blurred boundaries between professional and personal connections. In a world of abundant and rapidly changing information developing an effective PLN is an important strategy for maintaining professional currency. For teachers, a strong PLN is a way to maintain professional links with distant colleagues and engage in lifelong learning.

A network is typically looser than a group or community. It may include people who are known personally as well as others with whom there is no personal contact but who are followed as sources of information without necessarily engaging in direct exchanges. It may begin with people known in the real world and be extended through social networking services like Facebook, Twitter, or Google+ to include people with whom there is no other connection.

Curation

One approach to dealing with the abundance of information on the Internet is *content curation*, a process through which somebody gathers and presents material similarly to how a curator brings together an exhibition in a museum or art gallery. Jarche (2012) linked curation to the processes of personal knowledge management that are essential for professionals working with an abundance of information.

Jarche (2012) and Kanter (2011) described curation as having three phases - Seek, Sense, Share. In the Seek phase topics are defined, sources are organized and scanned, and high quality material is captured. In the Sense

phase a useful artifact is produced by adding annotations to contextualize the selected material and make sense of it in relation to other material. In the Share phase the artifacts are made available to the PLN and comments are offered on artifacts similarly shared by others. Weisgerber (2012) described eight steps rather than three in the curation process – find, select, editorialize, arrange, create, share, engage, track – but her process is essentially similar, especially when viewed alongside the more detailed processes described by Jarche (2012) and Kanter (2011) within each of their phases. Curation as a response to abundance of information is still an emerging practice but the essential features appear to be that it:

1. presents high quality content selected for its relevance to a specific topic (seek),
2. includes description and comment that adds value to the content (sense), and
3. is published so that it is available to, and engages, interested colleagues (share).

As the practice of digital curation has become more common, the processes and tools have evolved. At its most basic, curation could be undertaken using a web search engine and web publishing software to develop and publish a website displaying the curated items. Curators have appropriated tools such as social bookmarking sites, Delicious (delicious.com) and diigo (diigo.com), and media sharing sites, Flickr (flickr.com) and YouTube (youtube.com), to their purposes, adding Twitter (twitter.com) and other channels for dissemination. New tools such as Pinterest (pinterest.com) have been taken up as they have emerged and tools such as Scoop.it (scoop.it) have been developed specifically to support curation.

Implementing new curriculum initiatives

Education systems are changing in response to societal change. In Australia there has been a progression from broad agreement among state and federal governments about goals for education (MCEETYA 1989) toward a national Australian curriculum (ACARA 2011). In Queensland, the State Education Department has responded to the Australian curriculum by developing the Curriculum into the Classroom (C2C) materials (Education Queensland 2013) which are described as a "digital resource that can be adapted to meet different school contexts" but have been adopted rather than adapted in some schools as the definitive interpretation of the curriculum.

The C2C materials are just one, admittedly influential, source of plans available for adaptation, or adoption, by teachers in their classrooms. The Web offers a profusion of sites from which lesson plans and teaching resources can be downloaded by teachers to support their planning. There are marketplaces like Teachers Pay Teachers (teacherspayteachers.com) and others from which resources can be downloaded and adopted or adapted. While some teachers may choose to create their own plans and resources based on curriculum requirements it is increasingly likely that most will prefer to begin with existing materials and adapt them to meet their own needs.

Flexible learning

Most undergraduate students at Australian universities have significant commitments to employment. In 2006, almost 5% worked full-time, 15% worked more than 20 hours per week, and 70% worked an average of 15 hours per week (James, Bexley, Devlin, & Marginson 2007). They include a proportion of mature age students likely to have family commitments. In 2006, 45% of teacher education students were 25 years or older and 10% were at least 40 years old (DEST 2006) and those proportions continue. The availability of students to attend classes is affected by work and family commitments and many choose to study by distance or online in order to achieve the flexibility to meet their other commitments.

Universities use Learning Management Systems to facilitate online access to study materials and learning activities. From 2001 to 2010 multimodal enrolments (mixed on and off campus) in Australia rose from 4% to 8% (DEEWR 2011). At USQ the proportion of web-based enrolments increased by more than 400% from 2006 to 2010 (USQ 2012) and by 2012, up to 70% of students in the 4-year Bachelor of Education studied at least some subjects online. Students enrolled on campus also access materials and activities online. These demographic changes inevitably affect the design of courses.

Evolution of the Assessment Task

A previous paper described the evolution of the course, *EDP4130 Technology Curriculum and Pedagogy*, with respect to how its design might be revised with a more explicit focus on development of pre-service teachers'

TPACK (Albion 2012). *Technology* in the course title refers to the subject specified in Queensland (QSA 2013) and Australian (ACARA 2013) curriculum documents and corresponds to *design and technology* or similar in other jurisdictions. It is more similar to what is widely understood as STEM (Science, Technology, Engineering, and Mathematics) education than to Information Technology, although information and digital technologies do feature in the curriculum documents. This paper focuses on the evolution of the major assessment piece in the course and the contribution that it might make to pre-service teachers' learning specific to the course and technologies education, and to more general development of professional dispositions.

Year 1

Prior to introduction of *EDP4130* in 2011, a technology education course had been offered from 2002 until 2005. Like *EDP4130*, that course was offered in the final year of a 4-year teacher preparation program. The major assessment piece engaged the entire annual cohort (typically 150 students), working in tutorial classes, in collaboratively developing technology curriculum resources and making them available to all cohort members. The approach was based on the relate-create-donate pattern advocated by Shneiderman (1998) and each student completing the course had the potential to acquire a collection of curriculum materials for use in their future classrooms. The task was designed to provide students with a technology challenge through application of the technology design cycle (design-make-appraise or investigation-ideation-production-evaluation in the then national and state curriculum documents). The task also included a requirement to reflect and report on their learning as it related to the technology curriculum. Students appreciated the practicality of the assessment task and the teaching resources that they acquired through it. In some cases that was confirmed by contact from former students a year or more after graduation requesting details of the site where the resources could be accessed.

When *EDP4130* was first offered in 2011 the major assessable task was retained without significant change. A significant point of difference between *EDP4130* and the previous course was the mode of offer. The earlier course had been offered each year to about 120 students on the main campus and a further 30 students on a smaller campus about 400 km distant, with both groups taught by face-to-face lecture and tutorial. By 2011, consistent with the move toward flexible learning described above, all undergraduate courses were offered fully online as well as in face-to-face mode on three campuses. The online class in 2011 numbered about 25 students and was treated as equivalent to a face-to-face tutorial class for the major assessment task. Each tutorial class (or equivalent) was charged with developing a number of sets of curriculum support materials to support 6 to 8 hours of technology curriculum learning over a period of 3 to 4 weeks. The number of sets required from each class varied according to the size of the class, with a set required for every five students. Classes were jointly responsible for negotiating the process of development and typically formed smaller groups and made each responsible for developing a set of materials. As was observed in the previous course, students appreciated the focus on activities that had direct relevance to their professional futures. Management of the development process was generally simple in face-to-face classes that met at least weekly but was more challenging for the online class where communication was mostly by email and asynchronous discussion forums with the option for synchronous links using Wimba or Skype.

Year 2

Review of the 2011 offer noted the challenges that all students had encountered with managing the large group activity and the particular challenges for those studying online. For the 2012 offer the assessment task was modified so that students were required to develop a plan and associated resources for teaching the technology curriculum but had a choice to work individually or in small groups rather than in a class group with collective responsibility. Consistent with the relate-create-donate model (Shneiderman 1998), the materials developed were still made available to all members of the cohort, thereby maintaining the authenticity of developing an artifact of value for a real audience. In order to preserve the benefits attached to working with the larger group, students were required to develop a personal reference network with which to discuss their materials development and to participate in a studio-style environment (Brown 2006) so that their work in progress was open for comment by peers. This Virtual Learning Design Studio (VLDS) was mediated through the ePortfolio environment (mahara.org) provided by the university so that students might develop familiarity with the ePortfolio tools that they would be required to use in the following semester.

Most students engaged effectively with the task, although a small proportion delayed engagement with the VLDS until close to the end of semester, thereby minimizing any benefit from comments of their peers. Working

individually addressed the issues experienced by online students in the previous offer while retaining the benefits of developing and sharing resources. By the time the course was offered in 2012, the C2C initiative (Education Queensland 2013) was being implemented in schools. C2C was confined to English, Mathematics, Science and History, and did not directly affect teaching of technology except insofar as one of its characteristics appeared to be to focus teaching on single learning areas and discourage curriculum integration. However, the emergence of C2C and the increasing availability of other teaching materials rendered the assessment task less relevant because of the move toward adapting teaching materials rather than developing them from scratch. Hence some further rethinking of the task design was required.

Year 3

Revision of *EDP4130* for the 2013 offer was informed by the environmental changes described above. Rather than requiring students to develop plans and teaching materials from scratch, the design recognized the ready availability of plans and resources on the Web and required students to curate digital resources that would support learning in some part of the curriculum. The course design was thereby moved toward a *pedagogy of abundance* (Weller 2011). The requirement to engage with a personal reference network introduced in the 2012 offer was recast around the important role that a PLN plays in curation as both source of items to be curated and destination for sharing. The description of the assessment task began by declaring that the focus for the project was to "**curate a publicly accessible collection of online resources relevant to the classroom implementation of technology education in the Australian context**." That was followed by details of requirements and assessment criteria.

Because some students in the 2012 offer had reduced the value of the VLDS by delaying their engagement with it, the curation task was developed with two assessable phases. The intention was to ensure that students made a start early in the semester and received feedback to ensure that they were on track. The first phase submission was due two weeks into semester, carried 15% of the semester marks, and required identification of a theme for curation, steps toward development of a PLN, selection of tool(s), and presentation of a sample curated item. Table 1 lists the assessment criteria.

Criterion	Description
Theme	Identify and justify a theme for its professional relevance to technology education
PLN mechanics	Explain the choice of 2 or more online services as sources of information for curation
PLN membership	Explain the choice of 3 to 6 experts as sources of information
Curation tool(s)	Explain the selection of a curation system
Curation sample(s)	Provide a sample of a curated item with an explanation of the curation process

Table 1: Criteria for first phase of curation assessment

The final submission was due at end of semester, carried 18% of the semester marks, and addressed criteria related to the content of the collection and its dissemination to a wider audience. Table 2 lists the assessment criteria.

Criterion	Description
Publication	Curated collection published on a professionally presented public site
Content of collection	A number of properly attributed items linked to the collection theme
Value added	Evidence of selection, editorial comment, contextualisation and critique
Curation process	Explanation of the curation process, role of PLN, etc.
Audience engagement	Evidence of efforts to promote the collection and of responses and further dissemination
Professional learning	What was learned and what is the continuing value of curation for professional growth?

Table 2: Criteria for final phase of curation assessment

At the beginning of semester students were provided with task descriptions and marking guides for both phases. The LMS also offered an 18 minute recorded presentation about curation (repeated in class for those attending on campus) and notes addressing the same content. The materials included suggestions about suitable tools. Tools freely available on the Internet (diigo, Delicious, Twitter, Wordpress, Facebook, Scoop.it, Storify, Pinterest, etc.) were suggested but no specific tools were required and students were informed that they could meet course requirements using tools of their own choice, including those provided through the university.

Students were encouraged to sign up to Twitter and use it for dissemination . To provide access to the tweet stream for those with reservations about social media, a Twitter widget displaying tweets with a hashtag, #edp4130, was embedded in the LMS and those using Twitter were asked to include the hashtag in relevant tweets. Similarly the RSS tool in the LMS was used to display items posted to a diigo group.

Student Response to the Curation Task

Student submissions for the first phase confirmed the value of including it as a check on directions. Despite the clear course focus on the *Australian Curriculum: Technologies* document (ACARA 2013) several students declared themes, and provided examples, directed toward ICT integration rather than technologies curriculum. Feedback advised those students that ICT integration was important but not the specific subject for the curation task and, in most cases, that clarification assisted them to better direct their work for the second phase. The idea of a PLN and processes for developing it had been discussed in class but some students identified their PLN with a specific page on a website rather than the network of contacts linked to that page. Again they were provided with feedback to refocus their efforts. The most popular curation tool was Scoop.it, which had featured in examples provided to the class, but others selected by students included Pinterest, Facebook, pages in their ePortolio (mahara.org) and websites developed using Weebly (weebly.com), Wix (wix.com) or other tools. Issues included doubtful relevance of curated items, and comments that did not link curated items to curriculum or classroom application. Some students using blogs and simple websites did not use features such as tagging and categories to organize access to their collections. Feedback provided guidance to assist students with better meeting the task requirements in their submissions at the end of semester.

In the submissions at the end of semester it was evident that most students had benefited from feedback on the first phase and had made appropriate adjustments. Most of their sites were well presented but some students failed to include sufficient information about themselves to enable a user of their site to confirm their credibility as a source. That would not reduce the basic utility of the curated items but gave no basis for confidence in comments they offered. The comments by student curators on their selected items varied from a perfunctory ‘Great resource’ or similar to identification of specific sections of curriculum documents and suggestions for use in teaching.

All but a very few students met, or slightly exceeded, the target of one curated item per week, but most of the tools used for curation included indications of the dates on which items were curated and it was clear from that evidence that almost without exception students had engaged with the activity in the first weeks and again in a burst late in semester. There was little evidence of a sustained pattern of curating across the semester. Dissemination to their PLNs was similarly concentrated in two periods of peak activity with little sustained effort across the semester. There was some evidence of linkages formed among the students with items curated by one being picked up by others and some students had clearly developed extended professional links with practicing teachers or other professionals via Twitter and other channels as a result of engagement in the curation and PLN activity.

Where students wrote about their learning through the task, most offered positive comments about its value for developing a collection of teaching resources curated by themselves and colleagues. Some of that might be attributed to writing what they thought would please a marker but much of it appeared to be genuine appreciation of the value of the task, and especially of a developing PLN, for their future as professional educators. A check conducted on a selection of curation sites three months after the end of the assessment task found no activity beyond the required period, suggesting that they were not continuing the activity or at least not in the same spaces.

Conclusion

The curation task was intended to provide students ongoing access to collections of ideas and resources to support classroom learning linked to the *Australian Curriculum: Technologies* and assist them in developing an active professional learning network with a life beyond the course. They should have enhanced their professional Web presence and developed enduring professional links within their own cohort and beyond.

As noted above, the quality of the curated collections varied – both in the selection and curation of items with

comments and in the actual presentation on the websites. This probably resulted, at least in part, from lack of exposure to suitable models of curation. Although the desired qualities were explained in course materials and in classes, some students evidently had not internalized the appropriate standards for their own work. One possible approach to improvement would be to engage students in reviewing a selection of curation sites and discussing the merits of their content and presentation. Such a learning activity early in the semester should help to build consensus about the qualities that make some curated collections more valuable than others. Students could then apply that knowledge in developing their own collections.

Engagement with a PLN is most effective if it is consistent. The pattern of peaks in activity observed around assessment dates indicated that students were not consistently engaged and unlikely to develop an habitual pattern of interaction with their PLN. One possible solution would be to require that the curation activity demonstrate consistent engagement over the semester. Because students' other commitments vary and a steady stream of curatable items on any topic cannot be guaranteed, there would need to be some flexibility but it would still be possible to require demonstration of activity across the semester as part of the assessment.

These changes based on experience will prompt evolution of the assessment task toward a form that is more fit for the prevailing environment. As the environment continues to change it is unlikely that it will ever be a perfect fit but continuing reflection on the environment and experience will ensure that it remains authentic.

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