Introducing StoryMaker: an online narrative-creation system for the sharing of workplace knowledge

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About the research

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Building the research capacity of the vocational education and training (VET) sector has been a key concern for the National Centre for Vocational Education Research (NCVER). To assist with this objective, NCVER supported an academic scholarship program, whereby VET practitioners were sponsored to undertake university study at honours, master's or doctorate level. NCVER then releases a snapshot of their research in VOCEDplus.

Stefan Schutt received an academic scholarship in 2009 to assist with his Doctor of Philosophy. His research explores the concept of online narrative sharing and its potential for use by educators. In this paper, Stefan describes the StoryMaker software system he created and trials its applicability with test users from both the VET and higher education sectors. While further refinement and testing are needed, he believes that StoryMaker could play a role in helping VET teachers to reflect on their work practices and to generate discussion with students.

A potential use for this form of online narrative sharing, which I raise here for consideration, is as a tool for VET practitioners for sharing their work. Knowledge sharing is an important aspect of teaching for professionals, whether it is making a piece of work publicly available or inviting comments; this software may provide an avenue for this.

Tom Karmel
Managing Director, NCVER

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Introduction

This paper introduces StoryMaker, a web-based software system designed to help people create, publish and share stories related to their workplace experiences. The current StoryMaker pilot developed out of software that I built for my 'Small Histories' doctoral project, which focused on the online creation and sharing of life stories.

Both the Small Histories and StoryMaker systems are based on the two principles of sensemaking, or the ways in which people make sense of their experiences (Snowden & Kurtz 2003). These principles are:

- the generation of stories (or ordered sequences of events) about past experiences

- the sharing of viewpoints about past experiences.

In both the StoryMaker and Small Histories systems, users upload media items such as texts, images, videos and documents into a personal repository. Next, they create stories by choosing items from their repository, arranging them into a sequential order (by clicking and dragging icons) and selecting a presentation style. The completed story is published on a website and can be further edited, as needed, by the story owners. Currently all stories are viewable by the public, but plans for the next stage in the development of StoryMaker include the provision of private password-controlled spaces.

All uploaded media items can later be used in new stories created by other users. The intention behind this item-sharing feature is to generate multiple perspectives on events, places or situations of common interest or concern. For vocational teachers, this provides a way to bring together and examine responses to current issues or to reflect on events involving a number of people. As an example, a photograph of a particular teaching space may be used to elicit stories about how that teaching space has been used by different teachers and any associated issues.

The development of the StoryMaker and Small Histories systems has coincided with the burgeoning use of storytelling for corporate knowledge management. The term 'knowledge management' refers to institutional strategies for collecting, retrieving and deploying knowledge generated by people in an organisation, especially tacit knowledge that is not recorded (Snowden 1999; Snowden & Kurtz 2003). A number of companies now specialise in corporate storytelling strategies, including the Australian firms, Anecdote (<www.anecdote.com.au/>) and The Babelfish Group (<www.babelfishgroup.com/>).

As I will outline later, the creation of stories through the sequential ordering of events is central to sensemaking, including within organisational settings (Weick 1995; Snowden & Kurtz 2003). However, my PhD research showed that in 2011 few, if any, online systems enabled users to do this purposefully by constructing ordered narratives from constituent media items. This situation has only recently changed with the emergence of systems like Storify (www.storify.com). This is surprising, given the conceptual and technological simplicity of the ordering principle, the explosion in online software tools and services, and the centrality of ordered stories to human beings' sense of purpose and identity (Riessman 2007; Lincoln & Denzin 2003). Most systems designed for story creation and display seem to define a personal story as a discrete, self-contained 'chunk' of text rather than a composite created from sequential strings of content. Furthermore, few systems seem to be specifically designed to encourage divergent takes on story-related topics, apart from a few such as the threaded comment functionality seen on media websites.

Following my demonstration of the Small Histories system at conferences and workshops in 2009 and 2010, a number of commercial and educational organisations expressed an interest in using the system for their own knowledge-management activities. This led to the development of StoryMaker, which in essence aims to be a simplified, easier-to-use version of the Small Histories system.

The pilot version of StoryMaker was completed in early December 2010. Results of initial trials throughout 2011 showed that the system offers promise for teachers interested in reflecting on their experiences and issues, and sharing those reflections with others. The results of these trials are informing StoryMaker's planned next stage of development. The current trial version, and the associated test stories, can be found at <www.thestorymaker.org/vu> and <www.thestorymaker.org/teachingmen/>.

The StoryMaker system has also been released to the Open Source community through the Open Source developer site Github at <github.com/jcartledge/smallhistories>. This means that other developers can freely download the code, install the system and improve it or customise it as they see fit. The hope is that StoryMaker will remain a living system that evolves over time and in line with the needs of web users. For the technically minded, StoryMaker has been developed using the Open Source PHP development framework CodeIgnitor (<codeigniter.com/>) and deploys the Model View Controller design pattern, which allows for rapid development by separating the software engine and database from its presentation output.

Background

My seven-year experience as a VET multimedia teacher has strongly informed the development of the StoryMaker system. In the department where I worked as both a sessional and contract teacher, professional face-to-face contact between peers was rare due to logistical and resourcing restraints. Yet such contact was extremely fruitful when it did occur. This issue was recognised by the department, which developed an online duty of care feature as part of an integrated online management system for all multimedia staff. Here, teachers could share notes about students in a forum-like environment that could only be seen by other department teachers. This feature proved to be exceptionally useful; the fact that teachers were no longer operating in isolation and could communicate remotely on an officially sanctioned platform led to a much more coordinated and considered response to student management issues. Nine years later the duty of care feature is still in use by the multimedia team and has since been adopted by other VET program areas within the school.

The Small Histories system owes a great deal to online software such as the departmental duty of care feature, which showed how the internet could facilitate shared reflection on common issues. My accompanying research took this idea further by looking at how the internet can facilitate the repositioning and reconstituting of personal identity through the creation and sharing of online life stories. In my doctoral thesis, I proposed that personal histories offer embodied perspectives on the big events of our times and on the histories of others connected to the same events, places or times. These narratives, I posited, serve an important function, in that they provide 'a bridge between the tacit and the explicit, allowing tacit social knowledge to be demonstrated and learned, without the need to propositionalize it' (Linde 2001, p.1). The StoryMaker software that followed Small Histories also deploys this principle, but applies it to the creation and sharing of VET workplace stories. It, like Small Histories, deploys online technologies to make tacit aspects of personal experience explicit by facilitating shared reflection.

Similarly, both the Small Histories and StoryMaker projects explore the principle of sensemaking through the creation of ordered stories. In the Small Histories thesis I proposed that the internet has become an unprecedented catalyst for the production of what I termed 'performances of reconstruction' (Schutt 2011). This refers to a performance of the self in which fragments of the past are excavated, collected, assembled and presented as an imaginative reconstruction of that past. The web fosters this kind of activity because publishing on it involves both an implicit awareness of audience (however nebulous and undefined that audience might be) and the software-facilitated finding and bringing together of digital artefacts such as photos, video, text or scanned documents. Such processes could be seen as personal strategies for creating coherent narratives of identity in an era of fragmentation.

Core aspects of these online meaning-making strategies also apply to VET teachers working to make sense of their identities and roles. As revealed by feedback provided by participants in the StoryMaker trial, the very act of writing down recollections and reflections about teaching events and then ordering them to present as an online narrative led to participants thinking about their practice in new ways. Impressions that would have been otherwise lost to memory were resuscitated, prompted by media items (in this case images and text) that alluded to familiar, or commonly experienced, work events, and places. The process of writing down impressions, then ordering these and related items into a narrative sequence served to generate new perspectives on past events for these teachers.

Making sense of the world through narrative

Lincoln and Denzin (2003) point out that if we are to remember and represent experience, it must be contained in a narrated story. This is because there is no direct access to experience itself; we can only understand experience through its representations, or the telling of stories. Indeed, all storytellers create order from the disorder of experience, giving reality an artificial unity that does not exist in nature or in the past itself (Riessman 2007).

Narrative is described by Lincoln and Denzin as 'a telling, a performance event, the process of making or telling a story. A story is an account involving the narration of a series of events in a plotted sequence which unfolds in time. A story and a narrative are nearly equivalent terms' (2003, p.240). Here, the 'plotted sequence' aspect is pivotal. Narrative researcher Catherine Kohler Riessman calls this the most important of narrative's essential ingredients and refers to the process of oral storytelling thus: 'a speaker connects events into a sequence that is consequential for later action and for the meanings that the speaker wants listeners to take away from the story' (2008, p.3). In other words, contingency is crucial: 'Whatever the content, stories demand the consequential linking of events or ideas. Narrative shaping entails imposing a meaningful pattern on what would otherwise be random and disconnected' (Salmon & Riessman 2008, p.78). By creating an ordered account of events, stories give shape to life. This principle forms the basis of the story-creation processes within the Small Histories and StoryMaker software systems.

Narrative as performance

The link between written narrative and performance has been extensively explored by scholars. The rise of the internet, with its implications for authorship and audience, has added additional layers of complexity to this exploration. An important factor here is the role of online platforms in undermining the delineation between private and public space. Writing before the advent of the web, McLean (1988) stated that all written narratives are a performance, a 'theatre in an armchair' (p.11) that involves 'submitting to the gaze and measurement of others' (p.xi). This awareness of scrutiny is integral to the experience of creating narratives for consumption by others. However, for creators of online narratives, this gaze and measurement — and the resulting feedback — are different in character from that experienced by writers of paper-based stories, whose stage is the metaphorical armchair. On the web, the interaction is often explicit and immediate, and so is perhaps closer to oral storytelling in some ways. Unless hidden behind a firewall or password-controlled access system, online narratives, and the means to respond to them, are instantly available to a potentially massive (although largely unknown) audience through software tools that let both creators and responders publish onto the 'stage' of the internet with a click.

This awareness of scrutiny was evident in the initial StoryMaker testing I began with an Australian researcher who was working with UK-based VET trades teachers. This first round of testing stalled because the researcher wanted to explore personal information about teachers' male role models; he needed a private password-controlled online space so that he could control access to the narratives for ethical and privacy reasons. However, the StoryMaker system did not let users create private online spaces because the Small Histories system, on which StoryMaker is based, was built on the concept of a public online space for the sharing of life stories.

Our engagement with online media is imbued with choices about who we want to see our information, which is in turn related to our purpose or intent, our choice of publishing platform and our level of awareness of the consequences of our online publishing. The people who create online systems also

make choices about the level of privacy they build into their systems, and StoryMaker is no exception. I have discovered through the StoryMaker development process that offering the ability for VET users to create private spaces will allow for a greater degree of choice and control over their information. It is therefore the priority for any further development of the system.

The 'never-ending story' of the evolving self

One defining feature of today's online narrative engines, including Small Histories and StoryMaker, is that users can add to and edit their stories over time. Unlike narratives on paper (but like oral narratives), people can change their stories of self as they change. It has been argued that not only can a writer change the story, but the story can change the writer: 'identities are narratives, stories people tell about themselves and others about who they are (and who they are not)' (Yuval-Davis 2007, p.202). In other words, the self is a constant work in progress and we actively develop it by reflectively writing about it (Probyn 1996). My hope for StoryMaker is that it will serve as a useful mechanism for facilitating VET teachers' reflections on how they see themselves and their roles, a purpose complemented by the ability to compare their stories with peers' stories on areas of common interest. Evidence from the StoryMaker trials has been promising to date, with two teachers commenting on the reflective potential of the system, and another using it as a reflective tool with students. One teacher in particular mentioned that the act of putting her recollections and impressions into writing, triggered by viewing existing items of media on the system, changed the way she saw herself in relation to the project she was writing about. In future I would like to undertake longer-term studies to see how more sustained structured use of the system over time might influence the development of VET teachers' personas.

How the StoryMaker system works

The StoryMaker system has three levels:

- a public website where stories are published and the public can find, view and comment on these stories

- a password-controlled area where story creators can upload items and create stories

- an administration level where administrator/s (currently myself) can review, edit or delete content.

Anyone with internet access can currently view and read the stories uploaded to the main (public) StoryMaker website and comment on these stories. This is based on the Small Histories site, which is designed for the public sharing of life stories. Forthcoming versions of the StoryMaker software will allow for password-controlled story areas, where all site-related material can only be accessed via an administrator-generated username and password.

The public website

Visitors to the current public homepage will see a link to a list of stories. Clicking on a story link will take the visitor to the story. Comments on stories can be added and read through a tab on the right of the screen; once clicked, the tab expands to allow viewing and/or the adding of comments:

Figure 1   Comments tab expanded
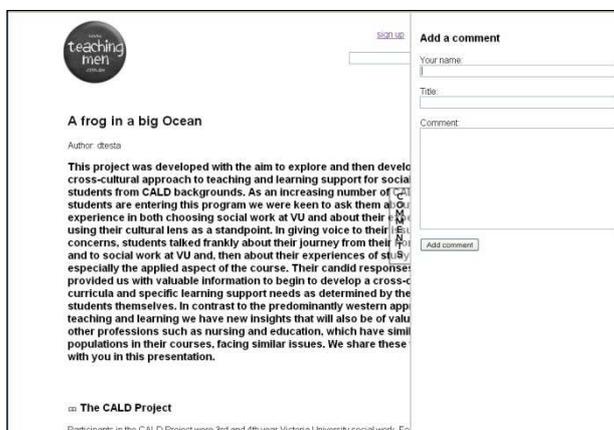
Creating and publishing stories

To create a story, a user will first need to register with the site. Once a member has logged in, they will see a screen containing two boxes: *My items* and *My stories*. This is the 'manage stuff' screen. The *My items* box allows members to view, add, edit and delete items of media including texts, videos, images and documents. These items can be either uploaded to the site or linked from other sites (YouTube, Vimeo, Flickr etc.).

 Once added, these items become the 'building blocks' of StoryMaker stories.

Figure 2   'Manage stuff' screen
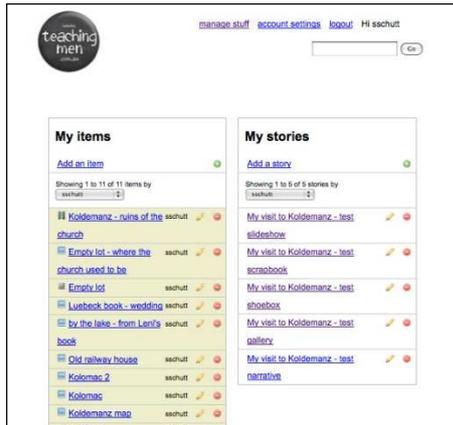
Members can choose to view all items created by fellow members. Any of these items can be used in any new story (regardless of author), but only creators can edit their own items and stories.

To create and publish a story, a member needs to take the following steps:

- *Step 1:* Upload media items (photos, video, text, audio etc.) to the member's repository. These items and their associated metadata — such as date, place and theme — can be edited or deleted at any time. Note that new items can also be added as part of the story-creation process.

Figure 3   'Add an item' screen
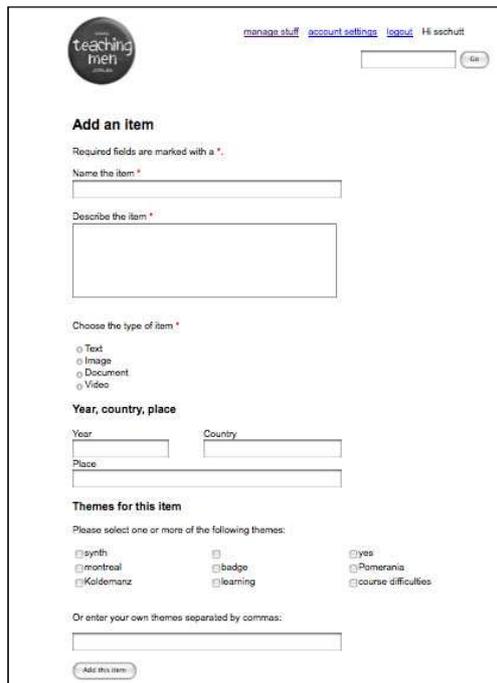
- *Step 2:* Click the 'Add a story' link and give the story a title and description.

Figure 4   'Build a story' screen 1 — title and description

Once the title and description have been added, click the 'now add items to your story' link. A new screen appears. Drag the items to be included in the story from the left-hand box to the right-hand box and arrange them in the desired order.

Figure 5   'Build a story' screen 2 — adding item to story

- *Step 3*: Choose layout style:

StoryMaker currently features five presentation formats, ranging from largely time-based to largely space-based — and some in between. Within this range, the level of sequential ordering varies from the strictly sequential to the visual and associative, with users choosing their preferred mode of presentation.

– The *narrative* format was designed to replicate the number of online stories currently presented; that is, text, images and other material scrolling down the page, then continuing on the next screen. This way of presenting material is fundamentally time-based and sequential.

– The *gallery* format, which uses horizontal scrolling, was inspired by an online art gallery created by Bosnian artist Nebojsa Seri, otherwise known as *Shoba* (1998) to mimic walking through a physical gallery and discovering the works of art on the wall. It combines sequential presentation with visual discovery and has been taken up by online storytellers such as Jonathan Harris (2007), where it is used as a visual timeline device and described as a 'filmstrip'. It seems to work most effectively with visual material, so I have limited this format to the presentation of images and videos only.

– The *slideshow* format allows items to be displayed one at a time with forward and back buttons.

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- The *shoebox* format presents material in a randomly layered fashion. This format is inspired by Andy Warhol's *Time Capsules* (1973—87), sealed cardboard boxes where Warhol kept objects such as letters, papers, toys, souvenirs and tickets. The shoebox format abandons ordering altogether in favour of visual discovery as random as the layering of items on the screen. All users can click on items to view them and move them around the screen.

- The *scrapbook* format is similar to the *shoebox* format, where items are layered on top of one another and dispersed throughout the screen area in no particular order. However, while the shoebox feature lets any web page viewer drag these items around the screen, the scrapbook feature lets story creators arrange items and then lock these into place. The displayed items will then be seen in their locked position by viewers and cannot be moved. The *Scrapbook* format allows story creators to tell their stories in visual collage-style narratives and is inspired by work such as the autobiographical diaries of photojournalist/artist Dan Eldon (accessed 2010).

Testing StoryMaker

During 2011, the StoryMaker system was tested by five educators in a variety of contexts, both in VET and higher education, using the following steps:

- a short guided overview of the StoryMaker system given by the author. This was undertaken in person, except for one instance over the phone due to geographical distance. This process was kept deliberately brief and general because a primary design aim of StoryMaker is that it should be easy to use by novice users. This testing approach was influenced by the concept of 'hallway testing' (Spolsky 2000), where a person with no prior experience of a software system is asked to undertake particular tasks.

- individual user time within StoryMaker to experiment with uploading items and creating stories. The user then provided feedback to the author about any issues or difficulties.

- author follow-up with the user to gather feedback on how useful they found the system and any further feedback on issues encountered. This was undertaken either in person or by telephone from one to three weeks after the beginning of individual experimentation.

It should also be noted that:

- Testing occurred throughout 2011, and was planned around the availability and individual needs of the user.

- This form of individually directed, one-on-one usability testing with a small number of users is based on the methodology of web usability specialist Jakob Neilsen, who found that a usability test involving five users will usually uncover 80% of usability problems (1998, 2000).

The table on the following page summarises the testing undertaken:

Table 1   StoryMaker test results

User	Use case	Testing environment	User responses
Building design teacher (VET)	The user deployed StoryMaker to reflect on a technology-innovation project with which she was involved. The user made use of items previously uploaded to StoryMaker by the author as prompts for reflecting on her project experience with students and an external technology team.	Author-led 'walk through' of system, followed by individual user experimentation and testing.	In subsequent in-person feedback, the user commented that the StoryMaker system was a useful way to gather and elicit feedback and responses and she would be keen to use it again.
Construction teacher (VET)	The user made use of items previously uploaded to StoryMaker by the author as prompts for reflecting on his involvement in a virtual world-based technology innovation project.	Author-led 'walk through' of system, followed by individual user experimentation and testing.	The user found the process useful as a tool to trigger reflection on the process of involvement over time in the project being discussed. However, the user cited a lack of time in uploading reflections to StoryMaker directly. Instead they chose to send reflections to the author via email, which the author subsequently uploaded to the StoryMaker system.
Social work teacher (higher education)	The user created stories within StoryMaker as a way to prompt discussion with students about critical class issues. Students did not create their own stories but commented offline (in person) on teacher stories.	Author-led 'walk through' of system (on the telephone), followed by individual user experimentation and testing.	The user deployed StoryMaker during 2010 and throughout 2011 in her classes, and commented that it was a useful tool and easy to use compared with other online tools (such as the university-sanctioned WebCT LMS). The user was able to solve one technical issue herself, by switching browsers, and referred to the author on other technical issues.
Researcher (higher education) working with UK-based vocational trades teachers	The user planned to use StoryMaker as a platform for UK trade teachers to generate/record interactions/reactions about their professional male role models.	Author-led 'walk through' of system, followed by individual user experimentation and testing.	The user's deployment of StoryMaker with VET teachers did not proceed following individual experimentation, due to the system's lack of private password-controlled story-creation spaces. These were deemed crucial for continued use of the system, which would have required further technical development and delayed delivery of the UK-based research program.
The author (VET and higher education)	The author has deployed StoryMaker to record and display key items of media related to specific projects, and as an online display format for conference presentations involving video, text and images.	Ongoing development of the StoryMaker software based on own use and feedback by other users.	The author sees the potential use of StoryMaker as broader than initially envisaged, as seen in its use by other users. However, further development of the system is needed in order to make it more flexible and customisable to individual use.

Discussion

My initial round of StoryMaker testing with educators suggests that the system has the potential to become an effective tool for supporting teachers, both in reflecting on work practices and in working with students. However, further technical refinements are required for it to fully achieve this potential.

In terms of StoryMaker's projected use, feedback from users has confirmed the usefulness of its functionality: the ability to elicit and structure reflective thought on teaching practice through the process of viewing others' material on the same topic and responding to it by creating one's own ordered narrative responses.

In terms of overall ease of use, users found the StoryMaker interface reasonably easy to operate, although, as noted previously, one user preferred to send in his reflections via email because he felt too pushed for time to learn a new system and upload his story items to it. Another user commented that seeing and responding to others' uploaded items helped her to remember, structure and clarify issues encountered in the development of a past project. For this user, the process of using StoryMaker augmented her project memory through its elicitation and recording of lessons and experiences that would otherwise be forgotten, and could be retrieved and reviewed later.

Also emerging from the testing was that, even when piloted with a small number of users, StoryMaker was deployed in ways for which it was not originally designed. Interestingly, this was also true for me, the system's creator and the person who has used it the most. Over the last year I have deployed StoryMaker as a repository for article ideas and to structure a forthcoming conference presentation on memory, history and the internet, as well as, on the suggestion of a colleague, a platform to present that same paper. Another teacher used StoryMaker to upload and present important social work issues to her class in order to generate discussion and debate. This suggests that the system could well develop and evolve in unexpected ways as, and if, more people engage with it in new ways.

In terms of issues, the one that loomed largest was privacy. As seen in one user's decision to forgo using StoryMaker with a group of UK trade teachers, a priority in terms of further technical development is the ability to create private spaces where teachers can discuss issues frankly and without fear of being judged by others outside the trusted project group. Closely allied to this are comments from teachers that they would like a greater degree of control and ownership over their story-creation environment — the 'stage' for their online performances of workplace identity — suggesting that personalisation and customisation options (such as allowing the uploading of logos, changing of colour schemes and setting of administrative access levels to individuals) should be built into any future iteration of the software. This in turn leads to the observation that building software requires a degree of ongoing resourcing so that the system can improve and respond to changing needs over time.

Lastly, it appeared to me that the teachers I worked with were sometimes more motivated to use the StoryMaker system in a guided, focused context than individually in their own time. While there could be any number of reasons for this, it suggests that perhaps a system like StoryMaker could be most effectively used within a workshop context with groups of teachers exploring common issues. This opens up interesting future possibilities, including running reflective narrative workshops, with online systems like StoryMaker deployed as in-workshop tools to generate and record workplace narratives, followed by later elements of individual reflection.

On a broader level, the kinds of online practices I have explored cannot be defined purely in pre-web terms. Instead they are constantly emerging and evolving through the adaptation, mutation and hybridisation of existing narrative practices with new communications technologies. They are manifestations of what Ulmer (2003) calls 'electracy', a new kind of literacy that deploys networked technologies to build on previous literacies, particularly in the area of harnessing collective intelligence, a theme also developed by other educational theorists such as Jenkins et al. (2006). Ulmer sees this as part of a widespread transition in society, with new technology acting as catalyst for new kinds of interactions, much as the development of the alphabet was previously:

> What literacy is to the analytical mind, electracy is to the affective body: a prosthesis that enhances and augments a natural or organic human potential. Alphabetic writing is an artificial memory that supports long complex chains of reasoning impossible to sustain within the organic mind. Digital imaging similarly supports extensive complexes of mood atmospheres beyond organic capacity. Electrate logic proposes to design these atmospheres into affective group intelligence.
>
> (Ulmer 2007, p.49)

One of the central arguments of my doctoral thesis is that a close interaction exists between the creator, the consumer, the content created and presented on the internet and the technology deployed to make this happen. Unlike book publishing, the creation of web-based content and its publication are not largely separate stages, but intimately interwoven. For online narratives, the technology is both stage and director: the narrative performance is largely shaped by the technology's power structures, workflows and assumptions — and therefore by the software creator/s, the silent co-directors of the performance and the author (Laurel 1991). During the system's development process this has become very apparent to me as the creator of the StoryMaker system and has led me to believe that a system like StoryMaker is most probably never finished and will need ongoing feedback by users to become (and remain) truly useful and usable, as expectations, technologies and online practices evolve.

Conclusion

My initial testing with a small group of educators suggests that further work on the StoryMaker system is worth undertaking. As well as identifying some important areas of improvement to the system, this testing supported the central rationale behind StoryMaker's creation: that we write ourselves and our identities through narrative and that a system like StoryMaker could be usefully deployed to help VET teachers remember, retain, examine and make sense of workplace experiences. Further testing involving both group-based and individual use of the StoryMaker system is now needed to see if this continues to be the case with an expanded number of users.

In trying to determine how and where the StoryMaker system would be most effectively used, any future testing should also be expanded to include an examination of the context in which the StoryMaker system is deployed. This consideration emerged consistently throughout the recent testing. Teachers were most engaged when I worked alongside them in developing their online narratives, as opposed to leaving them to use StoryMaker in their own time when they were possibly distracted by other tasks and priorities. Perhaps, then, the most effective use of StoryMaker will involve its deployment as part of focused workshops with groups of people developing their stories in conjunction with a facilitator, possibly to be followed by further individual use. But this hypothesis will need to be tested and so facilitation contexts like the one above will need to be built into any further evaluations. This would then provide further data on how StoryMaker might best meet the sensemaking needs of VET teachers and thereby pave the way for the next step: its targeted use in VET program areas as part of staff development activities.

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