

Investigating popular Internet applications as supporting e-learning technologies for teaching and learning with Generation Y

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ABSTRACT

This paper introduces generational theory and outlines the characteristics of Generation Y with a particular emphasis on how these relate to their learning styles, and how these characteristics and learning styles differ from previous generations. It then considers a number of common Internet applications popular amongst this generation in terms of their function, relating these to the characteristics of Generation Y as learners. The effectiveness of these technologies as e-learning tools for this generation is examined, and they are found to offer valuable features to assist learning facilitators.

Keywords: Generational Theory; Popular Internet Technologies; E-Learning Support Tools

INTRODUCTION

The current rapid pace of technological change, and the emergence of the Internet as an indispensable component of aspects of contemporary life is accompanied by the rise of a generation of learners for whom such change and connectivity is the norm (Codrington & Grant-Marshall 2004). This generation, commonly referred to as Generation Y¹ (Markiewicz 2003), has specific characteristics that influence how they interact and connect with and learn from one another, and the varieties of technologies they use to do so. These technologies include: podcasts, blogs, social networks, collaborative editing and live virtual classrooms. Dalsgaard (2006) argues that the desired self-governed learning processes of contemporary learners are supported by personal tools using social networks. As this generation of learners is currently entering tertiary education institutions and the workforce in South Africa, an understanding of these characteristics and technologies could empower teachers and trainers to facilitate more successful learning with Generation Y learners.

GENERATIONAL THEORY

Generational theory began with the anthropological and sociological research of Margaret Mead in the late 1960s and early 1970s, and is a way of making generalisations about people born between certain dates (Codrington & Grant-Marshall 2004). The theory postulates that the state of the world at a particular time in history leads to certain commonalities in the global environment and in the experiences people have in this context, particularly in early life and adolescence, which affect their attitudes, expectations, and values as adults. This allows for the identification of common characteristics in generations of adults that can be used to gain greater insight into how they think and learn. Generational theory may run the risk of oversimplifying groups of people; individuals within a generation are shaped by many factors such as culture and socio-economic background, and even those with relatively homogenous experiences may have characteristics and personalities that are atypical of their generations (Dede 2005; Codrington & Grant-Marshall 2004).

Nevertheless, generational theory is a useful approach to understanding others, particularly when a task involves dealing with a group of people about whom, individually, there is little information, but who are of the same generation; it allows informed generalisations to be made.

The dates prescribed for the various generations are not fixed, and different sources provide not only different dates, but also a greater or lesser number of generational categories. Codrington & Grant-Marshall (2004) suggest dates appropriate for use in South Africa, as well as equivalent dates for other regions (Table 1).

Generation	South Africa	USA	Europe/UK	Japan
GIs	1900 -1929	1900 -1923	1900 -1918	1900 -1925
Silents	1930 -1949	1923 -1942	1918 -1945	1925 -1945
Boomers	1950 -1969	1943 -1962	1946 -1965	1946 -1965
Generation X	1970 -1989	1963 -1983	1966 -1984	1966 - 1985
Generation Y	1990 – 2007...	1984 – 2007...	1985 – 2007...	1986 – 2007...

Table 1: Generations in different countries (Adapted from Codrington & Grant-Marshall 2004)

GENERATION Y

Generation Y refers to those people born after 1990 in South Africa, or born in the mid-eighties in the UK, Europe, Japan and the USA (Table 1). The ellipsis in the Generation Y row of the table indicate that these boundaries are still flexible; different cut-off dates will gradually emerge for different countries/regions marking the end of Generation Y and the beginning of a new, as yet unnamed generation.

Generation Y are also referred to as Yers (Fragiacomo 2004), Millenials (Codrington & Grant-Marshall 2004), the Internet Generation (Strauss & Howe 1991), or the Net Generation (Oblinger & Oblinger 2005). Their tendency to question and not merely accept the status quo, has also led to them being referred to as generation “Why” (Kehrl & Sopp 2005). Some Yers are still at secondary school in South Africa, although others may be entering the workforce. Outside of South Africa most are just concluding their tertiary education, and those who did not proceed directly into tertiary education will have entered the workforce anything from five to seven years ago.

YERS AS LEARNERS

Yers are characterised by a high level of technical literacy, are fascinated by new technologies, and are accustomed to rapid gratification, expecting up-to-date and accurate information on demand, wherever they are and whatever they’re doing (Oblinger & Oblinger 2005). They are also accustomed to being bombarded with large amounts of information and selectively filter out what does not interest them. They expect learning to be more exciting and engaging than their predecessors, are accustomed to changing their focus frequently from one thing to another and back (multi-tasking), and will not respond to one-sided lecture presentations with digital slides or page-by-page self-paced learning programmes (Lange 2006). A facilitated approach that involves Yers actively in the learning process is imperative to educating them effectively (Kittell & Luebke 2005).

Yers are most comfortable in a learner-centred environment (Ware, Craft, & Kerschenbaum 2007). Their primary and secondary education has focussed on learning in a constructivist and

collaborative manner, with continuous assessment, particularly in South Africa where this is dictated by national education policy (Wilmot 2005). They are accustomed to learning in an interactive and reflective manner, using multiple means of communication, and contextualising problems (Codrington & Grant-Marshall 2004). They are motivated both in work and play by the desire to form meaningful connections; they enjoy working in teams, and have been described by Strauss & Howe (2000) in Oblinger & Oblinger (2005) as gravitating towards group activity. E-learning thus needs to focus on engagement and interactivity to promote learner retention (Lange, 2006).

However, understanding Generation Y as learners is more complicated than this; new technologies are changing the way learning takes place to an extent that some theorists, such as Siemens (2004), believe necessitates completely new pedagogical theory. He notes the shrinking half-life of knowledge and links it to the emergence of a number of significant trends in learning. These include: (1) a change in the role of learning, from something people do less and less as they grow older to something that is, by necessity, continual and ongoing, and which in turn embeds learning inextricably into how Yers work and play; (2) a concomitant rise in the prevalence and importance of informal learning; the majority of learning is no longer formal but occurs through communities of practice, personal networks, and completion of work-related tasks; and (3) changes in the tools used to support learning in the form of new technologies which define and shape learners' thinking.

Taking these trends into account, Siemens (2004) suggests that it is no longer realistic to think of learning as the personal experiencing and subsequent acquisition of necessary knowledge; this is due to the considerable quantities of information available and the breadth and depth to which learners may find themselves needing to be acquainted with any given topic at any given time. Instead Siemens posits Connectivism as a pedagogical theory that conceives of learning as a process of deriving competence and understanding by making connections. These can occur between any available information sources, including individuals, personal networks, communities of practice and traditional learning resources.

Thompson (2007) reports that neurological studies indicate that Generation Y is less able to remember simple information than older generations. This fits with Siemens' (2004) theory of Connectivism, which asserts that Yers make up for this apparent failing by being significantly better at forming connections, and evaluating information to create knowledge, than preceding generations.

MAKING USE OF UBIQUITOUS TECHNOLOGIES FOR TEACHING AND LEARNING

Next-generation e-learning is a term used to refer to e-learning characterised by networked applications and high-bandwidth access, rich streaming media and synchronous Live Virtual Classrooms (LVCs) accessible over the web (Hernandez 2006). It is learner-focussed rather than teacher-focussed and offers a high level of engagement and interactivity.

There are a number of tools that can deliver the high-tech, heavily contextualised, on-demand information and rapid communication that Yers require (Oblinger & Oblinger 2005), and that can thus be used as next-generation e-learning tools. The focus of this paper is on tools of this nature that are already in popular² use amongst Yers both globally and, increasingly, locally, which can be considered as rich e-resources and have the potential to support e-learning.

Some of these are already well-known and have been used in their earlier incarnations for formal teaching and learning with Xers (e.g. Live Virtual Classrooms), whereas others might be

unexpected; social networking tools, for example, which take advantage of Yers' proclivity towards connecting with others and learning and working collaboratively. Such resources do not become learning tools in and of themselves until they are actively put to such use by learners (Dalsgaard 2006). However, knowledge of their existence, their potential uses in an e-learning context, and the features that make them appeal to Yers, can be extremely beneficial to e-educators.

Table 2 is the authors' summary of the themes characteristic of the manner in which Yers interact with the world that most impact on their manner of learning, with examples of popular technologies that exemplify these traits. As the table indicates, no single technology can be said to exemplify only one particular theme. The focus, in learner-centred, constructivist education, on contextualisation of information and the importance of context in problem solving, has led to a weakening of traditional subject divisions and categories in formal education. The trend has been even more pronounced in terms of the boundaries between activities Yers consider work and play, with fun no longer being a differentiating factor. Yers often learn the use of a tool through recreational activities before using it, either formally or informally, in the service of their education. The design of the most popular Internet and mobile technologies reflects this, showing a tendency for no one tool to be used for a single purpose any longer.

Table 2: Characteristic generation Y themes and technologies

Theme	Example Technologies
Connection Forming	Blogging, Microblogging, Social Networking Tools
Collaboration/Teamwork	Blogging, Microblogging, Collaborative Editing (including Wikis), Live Virtual Classrooms (LVCs)
Up-to-date, Just-in-time Information Access	Podcasting, Microblogging, Live Virtual Classrooms (LVCs)
Mobile Technology	Podcasting, Microblogging, Live Virtual Classrooms (LVCs)
Interactive, Reflective, Learning-centred Learning	Blogging, Microblogging, Social Networking Tools, Collaborative Editing, Live Virtual Classrooms (LVCs)

PODCASTING

Yers are accustomed to task-driven learning. They do not want to wait for courses in order to acquire new skills, preferring to search for and access data where and when they need it, and often selecting only the data necessary for them to understand a task and accomplish a goal (Siemens 2004). The term "podcasting" originates with audio files that were made available for Apple Inc.'s iPod, but rapidly grew to encompass audio and video files, radio/television style content, and chapters/sections of audio or video books produced by both professionals and amateurs (Educause 2005a). O'Leonard (2006) defines podcasts as audio or video files published online, which can be downloaded from the Internet. The files themselves are portable, and depending on their format they can be played back on a variety of mobile devices such as iPods, mobile phones, and Personal Digital Assistants (PDAs). This means that once they have downloaded a particular podcast, Yers can listen to it anywhere at any time, helping them to integrate learning into their busy, multifaceted lifestyles. Syndicated feeds can be used to automatically download new podcasts, allowing Yers to keep track of developments in areas of interest to them and also providing educators with an easy way of disseminating learning materials. Podcasts are usually short in duration, allowing Yers to choose to cover entire topics or merely select task-appropriate information as they need it. Their popularity is such that a number

of tertiary educational institutions including Stanford, Berkley, Purdue and Duke Universities have introduced programmes to support existing courses with podcasts (Berger 2007).

BLOGGING

The word blog is a shortened form of “web log” (Bhatt 2005) and refers to a website where a particular person or entity (such as a company or organisation) hosts their writing (and sometimes other resources like photographs) on the Internet. Many blogs take the form of online journals or diaries allowing for a wide scope of content, while others are more focussed forums for the expression of the blogger’s thoughts and ideas on a particular topic. Blogs allow information to be easily entered and instantly published onto the web, making them ideal for communicating or publicly recording ideas, opinions and thoughts (Bhatt 2005). They can be professionally hosted (by companies such as Vox.com or Blogger.com) allowing users to simply create a profile and sign up. Alternatively, applications like WordPress³ offer users the option of choosing a hosted blog or hosting the blog themselves.

Blogs can be used educationally by course facilitators to encourage extended dialogue about important course issues, or to reflect on course issues. They are often suggested or required for learners as learner-centred e-learning tools which can be used to document progress, share information, or reflect on learning. They appeal to Yers in that their use acknowledges the importance of social and peer interaction in learning (Glogoff 2005). Stoerger (2006) asserts their importance from a pedagogical perspective due the manner in which they foster collaboration, as collaboration is a process emphasised as vital to extending and developing learner’s abilities in Vygotsky’s Social Constructivist theory (Kearsley 2006) and is also Yers’ preferred manner of working. Stoerger (2006) also highlights their value as tools that support the development of reflective learning (believed to be vital to knowledge construction according to the Constructivist theory of learning (Jonassen, Peck & Wilson 1999)) and encourage learners’ ownership of the learning process.

SOCIAL NETWORKING TOOLS

Boyd & Ellison (2007) define social networking tools as “web-based services that allow individuals to (1) construct a public or semi-public profile within a bounded system, (2) create a list of other users with whom they share a connection, and (3) view and traverse their list of connections and those made by others within the system. Social networking tools display these connections publicly (at least to some extent), facilitating the traversal of the network-graph by users, and most provide mechanisms to allow users to communicate with one another by leaving comments (Boyd & Ellison 2007) or sending email-like private messages. Beyond these basic elements, functionality varies between different social networking tools, and can either incorporate or link to other popular technologies like podcasts and blogs. Dalsgaard (2006) argues that social networking tools are ideal to support the interactive and constructivist approach to learning that Yers prefer. These tools provide the functionality Yers need to form and become engaged in social networks, which in turn support collaboration and help Yers to locate and access useful resources (Dalsgaard 2006).

LinkedIn and FaceBook are examples of the social networking tools that have proliferated on the Internet in recent years. LinkedIn is specifically geared towards career networking, and does not include personal details such as favourite movies or music (Grude, Scholl & Thompson 2007), making it a very Boomer-oriented tool, and fostering a different type of interaction to that which FaceBook engenders. LinkedIn’s professional focus may alienate some Yers, lacking the element

of fun present in all their preferred applications, but may appeal to others by providing an avenue by which they can organise the sort of professional mentoring they crave (Beard, Schwieger & Surendan 2008, McIntosh-Elkins, McRitchie & Scoones 2007).

FaceBook has emerged as the clear leader in the social networking tool arena; with an active membership of over 34 million (Downes 2007) its popularity is firmly established (Educause 2007a) particularly amongst Yers. FaceBook offers a plethora of ways to interact with others, including the usual social networking “friending” and friend’s-network-browsing features, a mini-feed which shows all activity in a user’s network of friends, and functionality to allow users to leave messages on friends’ walls. Users can also use the status feature to comment on their current status and report what they are doing or thinking or feeling.

FaceBook has been criticised by Rubel (2007) for providing extremely limited public search listings available to people who are not logged in (Fung 2007), providing limited blogging functionality, and encouraging superficial communication (Educause 2006). Its myriad webs of connections attract connection-driven Yers (Siemens 2004) who run the risk of allowing connection forming to become their predominant task, instead of focussing on gleaning value from connections (Educause 2006, Siemens 2007).

Educators seeking to introduce learners to social networking software need to be cognisant of the aforementioned considerations when recommending a social networking application. However, most Yers will require no introduction to social networking software, and as many of them already have experience with FaceBook, educators and Yers alike are already benefitting from the use of this engaging tool (English & Duncan-Howell 2008, Childs 2008, Schroeder & Greenbowe 2009). The functionality to create groups on FaceBook can be used for interest groups, study groups and task-team groups – groups even exist for educators using FaceBook where educators making use of the application can connect and share best practices. Groups can keep Yers connected in a space in which they already feel comfortable, and allow them to post data relevant to the group, thereby facilitating learning. As FaceBook’s Application Program Interface (API) has now been opened to the public, any number of applications supporting e-learning and education can be developed for use in the FaceBook environment, opening the way for the tool to become increasingly useful from a pedagogical perspective.

APPLICATION CONVERGENCE

The integration versus separation of tools is discussed by Dalsgaard (2006) with argument for and against single stand-alone systems such as virtual learning environments (VLEs) and the more flexible approach of allowing the use of independent distributed applications for different purposes. Given the emergence of social software, Dalsgaard (2006) questions the continued use of highly controlled and managed integrated VLEs, and advocates that the chosen pedagogy should dictate the extent to which social software applications become integrated in VLEs or remain separated as independent applications. In fact, the convergence of the social software tools themselves has provided increased opportunity for their deployment in teaching and learning.

SOCIAL NETWORKING APPLICATIONS AND BLOGGING

There is an increasing trend towards the convergence of social networking applications and blogging applications into single solutions. The first and thus probably most developed of these applications is LiveJournal, which began as a blogging application in 1999 (Paolillo, Mercure, &

Wright 2005; Boyd & Ellison 2007). Unlike most blogging applications which are intended as ways to publish information publicly, LiveJournal was initially designed as a journaling application and so made provision for the fact that some data requires privacy. This developed into a comprehensive system of privacy levels, both for posts and for responses. Like most blogging sites, LiveJournal also offers Really Simple Syndication (RSS) feeds of public posts (LiveJournal 2007).

Although it appears on the surface to be primarily a blogging tool, LiveJournal fits the definition of a social networking tool as well (Boyd & Ellison 2007), incorporating social networking principles by allowing users to create lists of other users of their choice. Lists can include those who do not have a LiveJournal at all but use a different blogging application, as long as these users have an OpenID (described as an “open [source], decentralized, free framework for user-centric digital identity” on the OpenID website⁴). These users’ public entries, as well as any restricted entries that they are given permission to see, appear on their Friends page without their having to go and check each “friended” user’s actual journal. RSS feeds can be added to a user’s Friends list, and their content will then also appear on their Friends page. Unlike the FaceBook mini-feed, the LiveJournal Friends page does not have a cut-off length, allowing users to read as far back as they desire and removing the sense of urgency to check the page so as not to miss important data.

When users create blogs for a particular purpose with traditional blogging software they commonly need to create a number of different blogs in order to reach and not bore their target audience. Some blogging software allows users to create a single blog and then create tags for which they can set up specific RSS feeds, allowing people to subscribe to only the feed that interests them. LiveJournal goes a step further, allowing users to create custom groups to restrict content to particular subsets of readers on their Friends list. This makes LiveJournal an attractive tool for Yers as it allows them to take advantage of both its social networking and blogging features, making it easy for them to work and learn with it as well as play. Integrating these activities as just another part of their lives fits with Yers’ existent attitudes to work and learning (Codrington & Grant-Marshall 2004).

The functionality to create and manage communities is useful to Yers working together on a particular research project or task-team, particularly where the details of their work should not be publicly accessible until the conclusion of the project, or perhaps ever. Communities act like users in how they manage content, responses, feeds, and privacy levels) but differ from users in that they allow more than one user to post content to them, and are generally moderated by the owner (or owner-delegated moderators) to ensure that their content remains relevant to their theme.

LiveJournal thus offers social networking with much greater control of blogging features than FaceBook or even many other hosted blogging sites, thus providing rich possibilities to both learner and educator as an e-learning tool. LiveJournal has been criticised by users for conflating the concept of those whose pages a specific user can read with those who that user wishes to allow access to their own content, as well as for length-limits on usernames, entries, comments, and polls. An application called Dreamwidth⁵, using the LiveJournal source code, is under development with a view to addressing any shortcomings users have identified with LiveJournal so as to provide an even more user-friendly alternative application.

MICROBLOGGING

Microblogging is a form of blogging in which extremely short blog posts are made (Faulkner & Watson 2007). It began in March 2006 with the advent on the Internet of an application called

Twitter, which remains the dominant Microblogging application despite the rise of other applications (such as Edmodo and Shout'Em) offering microblogging capabilities (Belshaw, 2009). Created and run by Xers and Yers, Twitter also combines blogging and social networking, with the added benefit of SMS-style and Instant Messaging (IMing), to connect users (Educause 2007b). Twitter allows users to create a profile (for which very little data is required) and then post entries as they would with a blog, although limited to 140 characters (the same length as a standard SMS). They can add other users by choosing to follow their updates, and be added in turn, thus collecting networks of followed users and followers. Once a short blog post, or "tweet", is made, it is visible on a user's account home page and on those of their followers, unless they have chosen to protect their updates in which case only those users they approve of will be able to see that post (or any others).

What makes Twitter very different to a blog is that it allows short posts to be made from IMing clients and from cellular phones. Cellular phones can also be used to receive Tweets if the user selects the phone radio-button option, instead of merely appearing on the web (Educause 2007b; Faulkner & Watson 2007; Middlebrook 2007). This is particularly powerful as it effectively extends the reach of an Internet application directly into the user's life and pocket, which is highly attractive to Yers. Twitter can also be used in the same way as an SMS or MMS messaging group set up on a cell phone, to send messages to the cellular phones of all a user's "followers" from the web without having to send an SMS. During classes Twitter can be used to provide a backchannel for communication, allowing learners to share links to relevant resources and comment on the class.

Twitter makes it easy to communicate anywhere and at any time, to organise meetings, broadcast important information (e.g. changed deadlines for assignments), share ideas and resources (e.g. links to useful websites), request resources, provide a backchannel for communication during formal teaching and learning (Young 2009), or simply to develop relationships or provide one another with moral support. It is being actively used by educators in teaching and learning, both at a secondary level (University of Minnesota 2009) and a tertiary level (Holotescu & Grosseck 2008a, Holotescu & Grosseck 2008b, Smith 2009, Rankin 2009). Educators can set up Twitter profiles to keep in touch with Yers without much difficulty, and can draw on a number of online guides (Parry 2008, Plybon 2009, Wheeler 2009) for ideas on how to make use of the application in their professional practice.

COLLABORATIVE EDITING

Collaborative editing can be defined as the process by which several people have concurrent editorial access to a document, and is described as a "functional hybrid" of wikis (collaborative websites which can be edited by anyone with access to them) and IMing (Educause 2005b). Platform specific software is available to facilitate this process (Educause 2005b), but free web-based applications like Google's "Google Docs" are emerging at an increasing rate, making collaborative editing platform-independent. Being both free and web-based, such software can be used widely, enabling collaboration between people without requiring them to purchase or install anything on their PCs. Software, like the open source PengYou⁶, is available to plug into regular office suites like OpenOffice.Org and Microsoft Office, to allow these tools to also be used for collaborative editing if users prefer to stick with more familiar applications. Collaborative editing tools can be used anywhere with an Internet connection, from Yers' homes, school/university dormitories and offices, to right inside university lecture venues or corporate meetings, allowing Yers to work together taking notes for formal classes or meetings, or even using a collaborative document to brainstorm ideas.

Collaborative editing connects Yers and allows them to work and learn synchronously over the Internet in their preferred manner – with others (Codrington & Grant-Marshall 2004; Oblinger & Oblinger 2005; Windham 2005; Brown 2005). It has been credited with creating new and exciting dynamics for group work, and contributing to the formation of a sense of community amongst team members and editors that would not be possible by simply passing the document back and forth (Educause 2005b).

LIVE VIRTUAL CLASSROOMS

When a number of synchronous applications (usually including a minimum of one audio and one visual component) are combined to facilitate teaching and learning, they are collectively referred to as a Live Virtual Classroom (LVC). Accessible over the Internet, LVCs combine the benefits of traditional face-to-face classroom learning with the sophistication of Internet technologies such as video streaming and Voice over Internet Protocol (VoIP) (Van Dam 2004). Most LVC applications are proprietary and expensive, and therefore unlike the other technologies mentioned, these may not have been commonly encountered by Yers. However, many educational institutions and corporations have access to a LVC, and within these environments Yers frequently have access to these applications and make use of them. Some open source LVC applications (such as Webhuddle⁷) are still under development, thus the large scale popular use of the technology in the ways discussed below could be a reality within the next few years. The component technologies making up LVC solutions are also available individually, meaning that Yers could combine familiar applications with new ones to create their own hybrid distributed LVCs on the web, a solution likely to appeal to Yers when organising their own learning.

LVCs facilitate the sharing of single/multiple software applications or even entire desktops, making them ideal for hands-on lab-style formal teaching and learning. Informally LVCs allow Yers to meet, chat and interact synchronously, independently of place. LVCs allow Yers to contact team members or peers whenever desired and use VoIP or text chat to discuss and brainstorm ideas and problems. Whiteboard facilities for the development of ideas allow pictures and diagrams to be uploaded and annotated on the fly, aiding Yers who tend to think visually (Kittell & Luebke 2005). Resource materials can be pre-uploaded into LVCs and shared, and created materials (e.g. whiteboards used in brainstorming sessions) can be saved. All of these functions appeal to the contextual just-in-time flexible learning needs of Yers.

LVCs offer many ways of gauging responses; most applications allow users to privately message (PM) the facilitator and one another, participate in polls, or set mood-indication icons, giving the facilitator the flexibility to adjust training to Yers' needs. Multitasking is facilitated by the presence of multiple communication channels available in a LVC, and helps to prevent boredom setting in (a common problem with Yers) and causing attention to wander away from the class – if this does happen it tends to be reflected in the text chat, giving the facilitator or moderator a clue that they need to introduce an activity or a relevant example (Hoffman 2004). Depending on the LVC application used, recordings of LVC sessions can often be saved and archived, allowing them to be distributed as DVDs or audio/video podcasts.

CONCLUSION

Generation Y thinks and learns differently from the preceding generations, due in particular to the rapidly changing, highly technological environment in which they were raised. Today's world is very little like it was for the Yers' parents, and is characterised by greatly increased connectivity, both to other people and to the Internet, via digital devices. Yers use a number of

Internet applications, both recreationally and for other purposes, that are ideally suited to the characteristic ways they live, learn, and work. Some examples of these applications are examined in this paper and suggested as tools that can be utilised to support e-learning (or even “e-support” conventional learning), both in formal education and in the workplace. The directed use of tools that facilitate independent and collaborative learning, reflection, and networking, empowers the Generation Y learner to operate within their preferred environment. Although using these tools might involve a certain initial investment of time from facilitators (in order to become acquainted with how they work and what they have to offer), they do not require expert knowledge and their mastery should be well within the reach of most pre-Generation Y facilitators.

ENDNOTES

- ¹ A term coined in 1993 in the August editorial of Advertising Age
- ² For this reason the paper does not consider tools such as, for example, the Learning Activity Management System (LAMS), that are part of the mainstream formal e-learning landscape but are not habitually used by Yers outside of a formal learning context.
- ³ <http://wordpress.org/>
- ⁴ <http://openid.net/>
- ⁵ <http://nimnod.dreamwidth.org/>
- ⁶ <http://www.pengyou-project.info/en/index.php>
- ⁷ <https://www.webhuddle.com/>

REFERENCES

- Beard, D, Schwieger, D & Surendan, K 2008, 'Preparing the Millennial Generation for the Work Place: How can Academia Help?', accessed 20 July 2009 from <http://delivery.acm.org/10.1145/1360000/1355264/p102-beard.pdf?key1=1355264&key2=1823448421&coll=GUIDE&dl=GUIDE&CFID=45207582&CFTOKEN=31914612>
- Belshaw, D 2009, 'Elearnr: How 'Microblogging' Sites Such As Twitter Can Be Used in Education', accessed 20 July 2009 from <http://elearnr.org/2009/03/31/how-%E2%80%98microblogging%E2%80%99-sites-such-as-twitter-can-be-used-in-education/>
- Berger, E 2007, 'Podcasting in Engineering Education: A Preliminary Study of Content, Student Attitudes, and Impact', *Innovate: Journal of Online Education*, vol. 4, no.1, accessed October 29 2007, from <http://www.innovateonline.info/index.php?view=article&id=426>
- Bhatt, J 2005, 'Blogging as a Tool: Innovative Approaches to Information Access', *Library Hi Tech News*, vol. 22 no. 9, accessed November 2007 from <http://www.emeraldinsight.com/Insight/ViewContentServlet?Filename=Published/EmeraldFullTextArticle/Articles/2390220908.html>
- Boyd, DM & Ellison, NB 2007, 'Social Network Sites: Definition, History, and Scholarship', *Journal of Computer-Mediated Communication*, vol. 13 no. 1, article 11, viewed October 29 2007 at <http://jcmc.indiana.edu/vol13/issue1/boyd.ellison.html>

- Brown, M 2005, 'Learning Spaces' in Oblinger and Oblinger (eds.), *Educating the Net Generation, Educause Learning Initiative*, accessed 2 June 2007 from <http://www.educause.edu/educatingthenetgen/>, p.12.5.
- Childs, E 2008, 'Using FaceBook as a Teaching Tool', accessed 20 July 2009 from http://praxis.technorhethoric.net/index.php/Using_FaceBook_as_a_Teaching_Tool
- Codrington, G. & Grant-Marshall, S 2004, *Mind The Gap!*, Penguin, Johannesburg, South Africa, pp.12-13, 17, 19, 104-117, 120, 124, 130-132, 154, 164-165.
- Dalsgaard, C 2006, 'Social Software: E-learning Beyond Management Systems', *European Journal of Open, Distance and E-learning* 2, viewed 25 December 2007 at http://www.euodl.org/materials/contrib/2006/Christian_Dalsgaard.htm
- Dede, C 2005, 'Educating the Net Generation', in Oblinger and Oblinger (eds), *Planning For Neomillennial Learning Styles: Implications for Investments in Technology and Faculty, Educause Learning Initiative*, accessed 2 June 2007, from <http://www.educause.edu/educatingthenetgen/>
- Downes, S 2007, 'Places to Go: FaceBook', *Innovate: Journal of Online Education*, vol. 4 no. 3, accessed 4 November 2007 from <http://innovateonline.info/index.php?view=article&id=517&action=article>, p.1.
- Educause 2005a, '7 Things You Should Know About Podcasting', *Educause Learning Initiative*, accessed 2 November 2007 from <http://www.educause.edu/ir/library/pdf/ELI7003.pdf>
- Educause 2005b, '7 Things You Should Know About Collaborative Editing', *Educause Learning Initiative*, accessed 2 November 2007 from <http://www.educause.edu/ir/library/pdf/ELI7009.pdf>
- Educause 2006, '7 Things You Should Know About FaceBook', *Educause Learning Initiative*, accessed 2 November 2007 from <<http://www.educause.edu/ir/library/pdf/ELI7017.pdf>>
- Educause 2007a, '7 Things You Should Know About FaceBook II', *Educause Learning Initiative*, accessed 2 November 2007 from <http://www.educause.edu/ir/library/pdf/ELI7025.pdf>
- Educause 2007b, '7 Things You Should Know About Twitter', *Educause Learning Initiative*, accessed 2 November 2007 from <http://www.educause.edu/ir/library/pdf/ELI7027.pdf>
- English, R & Duncan-Howell, J 2008, 'FaceBook Goes to College: Using Social Networking Tools to Support Students Undertaking Teaching Practicum', accessed 20 July 2009 from http://jolt.merlot.org/vol4no4/english_1208.htm
- Faulkner, G & Watson, T 2007, 'What is Microblogging?', *IBM Shortcuts* Podcast 31: Transcript, Accessed 21 November 2007 from <<http://www.ibm.com/podcasts/shortcuts/Shortcuts31.pdf>>, pp. 1-3.
- Fragiacomo, L 2004, 'Capturing the Y', in *Managing Information Strategies Magazine*, accessed 05 June 2006 from http://www.misweb.com/magarticle.asp?doc_id=24115andrgid=2andlisted_months=0

- Fung, P 2007, 'Public Listings on FaceBook', *The FaceBook Blog*, accessed 10 November 2007 from <http://blog.FaceBook.com/blog.php?post=2963412130>
- Glogoff, S 2005, 'Instructional Blogging: Promoting Interactivity, Student Centred Learning, and Peer Input', *Innovate: Journal of Online Education*, vol. 1 no. 5, Accessed 20 November 2007 from <http://www.innovateonline.info/index.php?view=article&id=126>
- Grude, A, Scholl, M & Thompson, R 2007, 'Privacy on FaceBook', *Computer Supported Cooperative Work*, vol. 15 no. 4., accessed 12 November 2007 from <http://www.amygrude.com/documents/689.pdf>
- Hernandez, T 2006, 'Next Generation E-Learning: A Buyer's Market', *Certification Magazine*, accessed 5 June 2006 from http://www.certmag.com/issues/jul00/feature_hernandez.cfm
- Hofmann, J 2004, *The Synchronous Trainer's Survival Guide*, Pfeiffer, California, USA, p.40.
- Holotescu, C & Grosseck, G 2008a, 'Can we use Twitter for Educational Activities?', accessed 20 July 2009 from http://www.scribd.com/docinfo/2286799?access_key=key-3iknfg8hrmpppbxw31
- Holotescu, C & Grosseck, G 2008b, 'Using Microblogging in Education. Case Study: Cirip.ro', accessed 20 July 2009 from http://www.scribd.com/docinfo/8551345?access_key=key-28mjkrybomn42qlb9ca
- Jonassen, DH, Peck K L & Wilson, BG 1999, *Learning with Technology: A Constructivist Perspective*, Prentice Hall, Upper Saddle River, New Jersey.
- Kearsley, G 2006, Explorations in Learning and Instruction: The Theory into Practice Database, Accessed 9 June 2006 from <http://tip.psychology.org/>
- Kehrli, S & Sopp, T 2005, 'Managing Generation Y', Society for Human Resource Management HR Magazine, accessed 05 June 2006 from <http://www.shrm.org/hrmagazine/articles/0506/0506managementtools.asp>, p.5.
- Kittell, K & Luebke, T 2005, 'Training Generation X and Generation Y: Best Practices for Industry', Inspired Training Institute, accessed 5 June 2006 from <http://www.inspiredtraining.net/pdf/best-practice-generations.pdf>, pp. 5-7.
- Lange, M 2006, 'The Basics of Branching Logic', *Learning Circuits*, accessed 5 June 2006 from <http://www.learningcircuits.org/2006/January/lange.htm>
- LiveJournal 2007, What Is LiveJournal?, accessed 15 November 2007 from <http://www.livejournal.com/tour/index.bml>
- Markiewicz, P 2003, 'Who's Filling Generation Y's Shoes?' at *BrandChannel.com*, accessed 14 December 2007, from <http://www.brandchannel.com/start.asp?id=156>
- McIntosh-Elkins, J, McRitchie, K & Scoones, M 2007, 'From the Silent Generation to Generation X, Y and Z: Strategies for Managing the Generation Mix', accessed 20 July 2009 from <http://delivery.acm.org/10.1145/1300000/1294104/p240-mcintosh-elkins.pdf?key1=1294104&key2=4823448421&coll=GUIDE&dl=GUIDE&CFID=46474157&CFTOKEN=96107106>

- Middlebrook, C 2007, The Big Juicy Twitter Guide Part #1: What Is Twitter?, accessed 7 November 2007 from <http://www.caroline-middlebrook.com/blog/twitter-guide-1-what-is-twitter/>
- Oblinger, DG & Oblinger, JL 2005, 'Educating the Net Generation', *Educause Learning Initiative*, accessed 2 June 2007 from <http://www.educause.edu/educatingthenetgen/>, pp. 1.2, 2.3, 2.4-2.6.
- O'Leonard, K 2006, 'Podcasting: A New Technology for Learning', Bersin & Associates, accessed 30 March 2007 from http://www.elearningresearch.com/site/login.asp?ref=1andreferer=newanddocID=245andfile=112906_RB_Podcasting_KOL_Final.pdf
- Paolillo, JC, Mercure, S & Wright, E 2005, 'The Social Semantics of LiveJournal FOAF: Structure And Change From 2004 To 2005' in *Proceedings of the 4th International Semantic Web Conference*, Ireland, accessed 23 September 2007 from <http://ftp.informatik.rwth-aachen.de/Publications/CEUR-WS/Vol-171/paper6.pdf>, p.3.
- Parry, D, 2008, 'Twitter for Academia', accessed 20 July 2009 from <http://academhack.outsidethetext.com/home/2008/twitter-for-academia/>
- Plybon, E, 2009, 'Twitter 101 for Educators', accessed 20 July 2009 from <http://www.examiner.com/x-12200-Dallas-Educational-Technology-Examiner~y2009m7d18-Twitter-101-for-educators>
- Rankin, M, 2009, 'Some general comments on the "Twitter Experiment"', accessed 20 July 2009 from <http://www.utdallas.edu/~mar046000/usweb/twitterconclusions.htm>
- Rubel, S 2007, 'Walled gardens and the lesson for social networks', *Micro Persuasion*, a accessed August 28, 2007 from <http://www.micropersuasion.com/2007/06/walled-gardens-.html>
- Schroeder, J & Greenbowe TJ 2009, 'The Chemistry of FaceBook: Using Social Networking to Create an Online Community for the Organic Chemistry Laboratory', *Innovate: Journal of Online Education*, vol. 5, no.4, accessed 20 July 2009 from <http://www.innovateonline.info/print.php?view=pdf&id=625>
- Siemens, G 2004, 'Connectivism: A Learning Theory for The Digital Age', *International Journal of Instructional Technology & Distance Learning*, vol. 2 no.1, accessed 6 August 2007 from <http://www.elearnspace.org/Articles/connectivism.htm>
- Siemens, G 2007, 'Networks, Ecologies, and Curatorial Teaching', accessed 29 September 2007 from http://www.connectivism.ca/blog/2007/08/networks_ecologies_and_curator.html
- Smith, K, 2009, 'The Twitter Experiment – UT Dallas', accessed 20 July 2009 from <<http://www.youtube.com/watch?v=6WPVWDkF7U8&NR=1>>
- Stoerger, S 2006, 'Edublogging: Annotated Bibliography', School of Library and Information Science, Indiana University, accessed 17 July 2007 from <http://ella.slis.indiana.edu/~sstoerge/edublog.htm>

- Strauss, W & Howe, N 1991, *Generations*, William Morrow, New York, USA.
- Strauss, W & Howe, N 2000, *Millenials Rising*, Vintage Books, New York, USA.
- Thompson, C 2007, 'Your Outboard Brain Knows It All', *Wired*, vol. 15 issue 10, accessed 1 September 2007 from http://www.wired.com/techbiz/people/magazine/15-10/st_thompson
- University of Minnesota, 2009, 'Twitter in the Classroom?', accessed 20 July 2009 from < http://www.univsource.com/edu-channels/show-video/Twitter-in-the-classroom_4Oxlz_3o3O0.html>
- Van Dam, N 2004, *The e-Learning Fieldbook*, McGraw-Hill, New York, USA, p.58.
- Ware, J, Craft, R & Kerschenbaum, S 2007, 'Training Tomorrow's Workforce', *Learning Circuits*, accessed 15 May 2007 from <http://www.learningcircuits.org/2007/0407ware>
- Wheeler, S, 2009, 'Teaching with Twitter', accessed 20 July 2009 from < <http://steve-wheeler.blogspot.com/2009/01/teaching-with-twitter.html>>
- Wilmot, D 2005, '*Teachers as Recontextualisers: A Case Study Analysis of Outcomes-Based Assessment Policy Implementation in Two South African Schools*'. PhD Thesis, Dept. of Education, Rhodes University, p.35.
- Windham, C 2005, 'The Student's Perspective' in Oblinger and Oblinger (eds.), *Educating the Net Generation*, *Educause Learning Initiative*, accessed 2 June 2007 from <http://www.educause.edu/educatingthenetgen/>, pp.5.7, 5.11-5.12.
- Young, J 2009, 'The Chronicle of Higher Education: Professor Encourages Students to Pass Notes during Class -- via Twitter', accessed 20 July 2009 from <http://chronicle.com/blogPost/Professor-Encourages-Students/4619>

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