LEARNING IN THE 21ST CENTURY MUSEUM

Introduction

Web 2.0, social media and mobile technologies are one of the defining issues for museums in the twenty-first century. Museums now need to operate across three spheres: their physical site; the online world (via websites and social media) and in the mobile space. What this means for how we engage our audiences in future is only beginning to be understood by museums across the world.

Given the rapid pace of change, access to new tools for learning and the subsequent focus on digital literacy, how will museum visitors learn across these three spheres? Drawing on latest research this paper will identify the key trends around learning in museums, and discuss what these mean for museum practice, not only in the education and interpretive fields, but across the entire organisation.

Identity and learning in museums

Traditional approaches to education and learning in museums are based on a constructivist model (Hein, 1998). However what will learning look like in the twenty-first century museum? Will our traditional educational theories such as constructivism still apply across all three settings museums now operate in? What does this mean for the ways educators, curators, audience researchers, program developers will work in the future. What will our pedagological values need to be?

Learning is essential to our humanity, something that separates us from other species: 'Learning is as crucial and fundamental as being alive' (Claxton, 1999, p.6). Learning is an individual and social process that humans are constantly engaged in, both consciously and unconsciously. Learning is a rich, complex, active and lifelong process of '… change in an individual's knowledge, skills, attitudes, beliefs, feelings, and concepts' (Hein and Alexander, 1998, p.10), which is undertaken both alone and as part of a community within a sociocultural context, where '… learning is not something that happens, or is just inside the head, but instead is shaped by the context, culture and tools in the learning situation' (Hansman, 2001, p.45).

Closely linked to learning is our identity: how a person sees themselves in relation to their world and their role in it, as well as to others. Our identity is fluid and shaped by the social context and membership of a community, changing across a person's life cycle. It includes a range of factors such as age, gender, cultural background, socioeconomic status as well as general life experiences. Identity not only influences who a person is now, but also how a person behaves and conceives themselves in the future. As suggested by Sfard and Prusak (2005) learning plays a critical role in influencing a person's identity.

Learning is a creative process of change in a person's identity—from not knowing to knowing, or being able to do something that hasn't been done before. In a broader sense learning could also lead to some major change within an individual's identity—in their perceptions, attitudes, behaviour, or the way they see themselves, others, and their world. Museums can play a crucial role in shaping both individual and national identities through their collections, research, public programs, websites and mobile applications (Heumann Gurian, 2010; Rounds, 2006; Weil, 1997).

Rounds (2006) proposed that visitors use museums for "identity work", defined as '… the processes through which we construct, maintain, and adapt our sense of personal identity, and persuade other people to believe in that identity' (p.133). Rounds suggested that identity is created and sustained through reflexive actions and wondered how this would be demonstrated through a museum visit, particularly given the dominance of "browsing behaviour" among visitors (Rounds, 2004). He also noted that when studying identity the focus should be not on what a person's identity is, but what they are doing about it in terms of how their identity unfolds and changes over time. In thinking about the role of museums Rounds advocated that museums offer '… opportunities both to confirm our existing identity, and to safely explore alternatives' (Rounds, 2006, p.138), particularly as museums display "order" that enables visitors to understand relationships between objects and their place in the world.

How has learning been described across the literature? Although learning is complex with many interrelated factors, the essential elements found consistently (Kelly, 2007) are that learning is:

• both unique to an individual and a shared process that all humans engage in consciously and unconsciously
• dependent on context, and across many different contexts
• lifelong and lifewide, across all facets of a person's life
• a process that is both immediate and happens over time
• reflective, leading to self-awareness and change
• an activity that is chosen by individuals based on their own interests and preferences
• shaped by a person's prior knowledge and experiences
• meaning making through making new connections
• creative and innovative
• enjoyable
• facilitated by a wide range of tools: a dynamic between a person and something.

Motivation and purpose are key components of learning, with the social dimensions of learning also being critical. Learning is an essential part of being human and is linked to our identity and sense of self—we all have an intrinsic desire to learn.

Learning in the 21st century museum – what could our pedagogy be?

George Brown Goode, ichthyologist and former Smithsonian museum administrator in the late 1800s, identified that the nature of museum work is not only around knowledge creation, but knowledge generation and, ultimately, learning, as he stated: 'The museum likewise must, in order to perform its proper functions, contribute to the advancement of learning through the increase as well as through the diffusion of knowledge.' (1991, 337).

Museums have always seen themselves as having an educational role. The earliest museums were founded on the premise of "education for the uneducated masses" (Bennett, 1995), "cabinets of curiosities" (Weil, 1997) established to '… raise the level of public understanding … to elevate the spirit of its visitors … to refine and uplift the common taste' (Weil, 1997, p.257). In the past twenty years there has been a conceptual change from thinking about museums as places of education to places for learning, responding to the needs and interests of visitors. Weil (1999) stated that museums need to transform themselves from '… being *about* something to being *for* somebody' (p.229, emphasis in original).

Constructivism is a theory of learning that focusses on the learner and the meanings they make based on their prior experience, knowledge and interests. Constructivism had a major influence on the ways that museums thought about learning during the 1990s. A good summary of the learning principles that emerged from constructivist thought were outlined by Hein (1991):

• learning is an active process of constructing meaning from sensory input
• people learn about the process of learning, as well as the content, as they learn
• learning happens in the mind
• language and learning are inextricably linked
• learning is a social activity in conjunction with others
• learning is contextual, in that we learn in relation to what we already know, to our beliefs and our prejudices
• previous knowledge is a pre-requisite to learning
• learning occurs over long periods of time, through repeated exposure and thought
• motivation is essential for learning.

Learning in the physical museum

Hein explained that constructivist exhibitions enhanced learning through enabling visitors to both validate and also re-think their own interpretations of a subject by allowing them to consider other interpretations, perspectives and ideas about a topic. Museum learning experiences provided under a constructivist framework would encourage learners to use both their hands and their minds to experiment with the world and reach their own conclusions, through choosing what they want to attend to (Hein, 1998).

Scott Paris (1997) stated that to facilitate meaningful learning museums need to create environments that encourage exploration and enable meaning to be constructed through choice, challenge, control and collaboration, leading to self-discovery, pride in achievements, learning and change.

My doctoral research (Kelly, 2007) was based in the physical space of the museum. The research question investigated in the study was *What are the interrelationships between adult visitors' views of learning and their learning experiences at a museum?*. A key focus of the study was on how adults describe learning, the place of learning in their lives and where museums are situated. Other areas examined included the relationship between learning, education and entertainment, as well as the roles visitors play during a museum visit. The study was undertaken in two parts—Stage One investigated individuals' personal philosophies and views about learning through a qualitative analysis of a series of depth interviews. Stage Two explored how a museum exhibition experience provided insights into visitors' learning identities and the roles visitors played in a physical museum visit.

The study found that participants described learning in very rich and detailed ways, for example:

- *Obviously [learning is] something that's not boring, something that's not passive, so it's more of an active thing … Something where you choose to be involved, that you're interested in doing.*
- *Expanding your knowledge, a new aspect on life*
- *Being able to put pieces of information together [to] draw conclusions*
- *New things that add to your body of knowledge*

It was also found that adult visitors played three roles—the "visit manager" by directing and organising; the "museum expert" in explaining, clarifying and correcting; and the "learning-facilitator" through questioning, linking, reminiscing and wondering. These roles are interchangeable, occur simultaneously and are dependent on both the social context of the visit and the group composition, particularly the ages of any accompanying children.

The study concluded by finding that visitors to exhibitions:

- will make their own meanings and construct their own narratives based on their experiences and interests
- expect that learning will build on what they already know
- want (and expect) choice and control over their museum experience and their learning through providing multiple pathways and a variety of interpretive experiences suitable for both individuals and groups
- want to engage in critical thinking and questioning, with programs that raise questions, point to some answers and addresses both facts and ideas
- access multiple points of view to enable them to reach their own conclusions and make their own meanings.

Learning in the online world

Goode noted that museums were not just for creating knowledge but for disseminating that knowledge. In a literature scan of why people visit museums the main reasons people gave for visiting museums was to learn. However, what does learning look like in the online sphere? The emergence of Web 2.0 now means that individuals have more control over how, where and when they learn and consult a wide range of information sources in their own time and space (Kelly and Russo 2010). Old models of teaching and telling are no longer sufficient. As Cornu (2004) has observed in relation to schools, knowledge is now networked and requires an understanding of a collective intelligence over and above individual enterprise. The internet, and more specifically Web 2.0 has opened up a whole new way of engaging audiences, specifically educational audiences, who are taking up these tools in droves. Heumann Gurian said 'The use of the internet will inevitably change museums. How museums respond to multiple sources of information found on the Web and who on staff will be responsible for orchestrating this change is not yet clear. The change when it comes, will not be merely technological but at its core philosophical' (2010, 95).

Online Learning Trends

Research undertaken since 2007 by the Australian Museum has consistently demonstrated that visitors to museums are using social networks in great numbers, primarily Facebook and YouTube and that they engage in these technologies in significantly higher numbers than those that don't visit museums (Kelly, 2010; Kelly and Russo, 2008). The fastest growing use of Facebook is those aged over 55 years and we are now living with the post-Google generation – children who will never have known a world without being connected to an electronic device.

There is increasing attention being paid in the literature to learning in the digital age. The Horizons Project, established in 2002 by the New Media Consortium, looks at emerging technologies and what these mean for teaching, learning and education, and also for museums. The 2010 report (Johnson et al, 2010) highlighted the following key trends with my commentary about what these mean for museums:

• 'People expect to be able to work, learn, and study whenever and wherever they want to.' 2010, 4). This means visitors will learn not only in our physical spaces even though they may be in our physical spaces. They will access content from wherever they are (and it will probably not even be our content).

• 'It does not matter where our work is stored; what matters is that our information is accessible no matter where we are or what device we choose to use.' (2010, 4). What are museums doing to enable their collection and scientific data to be available on any platform? How are they relating the physical objects on display with information across a range of online platforms, including mobile?

•	'The work of students is increasingly seen as collaborative by nature.' (2010, 4). The boundaries between visitors and institutions are breaking down – how are we encouraging social learning and collaboration in both our physical and online spaces?

•	'The role of the academy – and the way we prepare students for their future lives – is changing. It is incumbent on the academy to adapt teaching and learning practices to meet the needs of today's learners; to emphasise critical enquiry and mental flexibility ... to connect learners to broad social issues through civic engagement; and to encourage them to apply their learning to solve large-scale complex problems.' (2010, 4) I suggest you replace the word "academy: with "museum"! Museums have always been about engaging audiences with big issues. Visitors have expressed an interest in being challenged and having their say on controversial topics (Cameron and Kelly, 2010). What better way than to harness the power of citizens to work together solving big issues facing humanity – ones that museums have something to say about (climate change, biodiversity and social justice spring to mind)?

•	'Digital media literacy continues its rise in importance as a key skill in every discipline and profession.' (p.5). How are we setting ourselves up to keep abreast of these skills? How are we changing the types of skill sets we recruit to our institutions, or change the ways that we work to work within a digital world? As they go on to say '... digital literacy must necessarily be less about tools and more about ways of thinking and seeing, and of crafting narrative.' (2010, 5).

The Horizon Report details the technologies to watch in next 12 months. The first is mobile computing and increasing access to Smartphones: 'The mobile market today has nearly 4 billion subscribers, more than two-thirds of whom live in developing countries.' (2010, 9). The second is what they term "Open content", as more universities offer their course content online for free there is a '... shift in the way academics in many parts of the world are conceptualising education to a view that it is more about the process of learning than the information conveyed in their courses. Information is everywhere; the challenge is to make effective use of it.' (2010, 13) and museums can learn from this too.

Online Learning and Museum Visitors

Over the past nine years the Australian Museum, Sydney, has been working with students and teachers from the *Coalition of Knowledge Building Schools*[1] advising the Museum on the development of exhibitions and programs, how to design learning experiences tailored to their needs, as well as how the Museum can best use the digital environment to showcase its research and collections. The Coalition consists of around 20 public and privately-funded schools across New South Wales who have joined together to undertake research across a broad range of topics, both specifically related to school activities and more general informal learning projects. The schools cover the spectrum of years from Kindergarten (students aged five years) to Year 12 (aged 17-18 years), as well as representing a broad range of socio-economic circumstances and geographic locations.

These consultations came to be known as *Kids' Colleges* and, to date, five have been held – 2006 (exhibition development), 2007 (digital learning[2]), 2008 (climate change), 2009 (Teachers' College[3]), 2010 (exhibition text[4]) and 2011 (Pop-up Museum[5]). They are attended by around 15-24 students from across the Coalition and are facilitated by an educational specialist from Sydney University, attended by relevant Museum staff and documented both via report; student journals and digital media (Groundwater Smith and Kelly, 2009; Kelly and Groundwater Smith, 2009; Kelly and Fitzgerald, 2011).

For the digital *Kids' College* 24 students from nine schools across New South Wales attended a one-day workshop in November, 2007. Students were consulted on a range of issues encompassing their use of digital technologies in leisure and for learning. They undertook a behind-the-scenes tour of the Museum, spoke with a number of scientific staff and experienced the public areas of the Museum in order to provide feedback about the Museum's potential on-line offer. They were also asked about their general views of the internet, where they accessed it and how comfortable they felt with technology.

---

[1] http://australianmuseum.net.au/BlogPost/Teacher-Talk/The-Coalition-of-Knowledge-Building-Schools
[2] http://www.australianmuseum.net.au/BlogPost/Audience-Research-Blog/e-Kids-College-November-2007
[3] http://australianmuseum.net.au/BlogPost/Audience-Research-Blog/Web-to-classroom-workshops
[4] http://www.australianmuseum.net.au/BlogPost/Exhibit-A-inside-our-exhibitions/Kids-and-text-in-museums
[5] http://australianmuseum.net.au/BlogPost/Audience-Research-Blog/Reflections-on-the-Pop-Up-Museum

Unsurprisingly, all students reported that they felt totally comfortable with technology in general, giving interesting perspectives about the internet, for example:

• *I enjoy using computers and digital technologies to learn because there are so many possibilities and it is a lot more interesting than a pen and paper. But technology can be tricky and break down very easily and it isn't always reliable. But with technology, almost anything can happen.*
• *Surfing the net is fast, exciting and surprising and different. Without the internet the world would be bland.*

When asked to complete the sentence "Not being able to access the web is like not being able to …" respondents likened it to not being able to *breath, live, eat, talk, socialise* and *Get access to water*, as well as *Travel around the world, explore my inner self or broaden my horizon*.

A number of students made a distinction between visiting the Museum itself and visiting the Museum's website. For example, one student who had participated in previous research projects with the Museum had this to say:

• *Last time I came here we focused mainly on new technology and we were constantly saying we needed more screens, games and interactive displays, but since then I have been thinking: I can do that at home, I can watch movies, play games etc at home. If I come to the Museum I want to be able to get information, read it and be able to learn from it. It is good to have these things (screens etc) but I guess, like all things, in moderation. The Web site needs to suit all audiences. I got the feeling that you were trying to find out what we want but we are not the only people that use the Museum. A section on the site, with bright colours, games etc could be good, but it is unlikely that the reason we are at a Museum site in the first place is to play the games. We can do that anywhere. If we are there we are probably looking for information of some kind. So it needs to be easy to read and access without being too dry.*

In November 2009 the Australian Museum held *Web to Classroom* workshops with primary and secondary teachers. The aim was to find out how teachers are using the internet in their classrooms and how we can work more closely with them via our own website. They identified the big trends/issues around the web that will impact on educational audiences in future as:

• widespread prevalence of Smartphones for students (and teachers) so mobile web will become important
• wireless schools - no longer are students/teachers tied to a classroom or even their own school environment
• students value their social networks and peers' opinions and information rather than "experts"
• teachers are no longer "repositories of information" but are facilitators of students' learning - the relationship is more two-way and equal
• there is a move towards digital books primarily to reduce bag weight but also to save costs
• students expect instant feedback as they are used to this in their lives
• we are now dealing with "digital learners" - kids in future will never not have had their hands on something that doesn't plug in
• kids are now totally multitasked - where in the past this would be seen as a negative we now need to see this as a normal part of learning
• social and collaborative learning is now the way we all learn
• childrens' brains are changing to accommodate the ways they now learn and engage
• they don't need to retain/remember information as they can just go back and access it again
• we have moved from a one-to-many form of teaching to a many-to-many approach and a more equal arrangement (and a more empowered one too I suspect)
• the beauty of sharing online is that students can see each others' work and learn from that

Learning in the mobile space

Ralph Appelbaum, a well-known museum architect, remarked that *increasingly museum visitors will bring in more technology in their pockets than is available in the entire museum*. More and more museums are developing mobile applications across a broad range of business areas, such as exhibition content; field guides, mobile websites, museum guides, collection access, and for a range of platforms, including iPhone/iPad, tablets as well as Android (Burnette, et al, 2011). Access to mobile and smartphones is only predicted to increase, with for example 59% of US adults going online with their mobile phone daily[6] and the numbers of users accessing the Australian Museum's website via their mobile device is growing steadily[7].

---

[6] http://australianmuseum.net.au/blogpost/Web-2U/Grounding-Digital-Information-Trends-Part-1
[7] http://web1.australianmuseum.net.au/blogpost/Web-2U/How-do-visitors-use-our-website-front-page

How we learn in the mobile space is only beginning to be addressed in the literature. There are a variety of studies looking into measuring the value of mobile apps[8], with not so much attention paid (as yet) to the visitor experience and learning. While there are many elements from the physical and online spheres that are relevant to mobile learning, the major difference lie in the areas of accessibility and geo-location – mobile devices truly bring the world into the palm of your hand.

Mobile learning has been described[9] as being accessible from anywhere, providing access to a wide range of learning materials, collaborative and providing instant feedback. The features of mobile include ability to use rich media; personalisation; always available and providing a social experience with high levels of interactivity and engagement. The Digital Youth Project (2008)[10] found digital provides opportunities to:

- rethink social norms
- develop technical skills
- experiment with new forms of social expression
- share – extend social worlds
- engage in self-directed learning – explore interests
- encourage independence.

Suggestions for mobile learning experiences based on my research and thinking to date are that they should:[11]

- encourage users to interact and connect with each other
- use a range of social media tools to organise content, for example a unique Twitter hashtag, Facebook page, micro-website
- engage with experts by following them on Twitter/Facebook to encourage dialogue
- use tools such as polls, puzzles, games and rewards to encourage two-way interaction and sense of empowerment
- make content engaging and relevant – use a variety of media, including rich media and YouTube
- encourage learners to engage with their environment and current location – take pictures and upload them (SMS, Twitter, Facebook, websites etc)
- Use mobile devices to enhance experiences via QRCodes, location-based information and/or rich media

Overall, the optimum mobile experience will build a community that connects like-minded people to encourage sharing.

---

[8] http://web1.australianmuseum.net.au/research/Measuring-the-Value-of-Mobile-Applications/
[9] Distilled from various websites suggested by @NancyProctor, Head of Mobile, Smithsonian (http://twitter.com/#!/NancyProctor)
[10] http://www.itofisher.com/mito/weblog/2008/11/living_and_learning_with_new_m.html
[11] A presentation by Leenu Juurola on mobile learning at the conference also had some good ideas. More here:
http://australianmuseum.net.au/BlogPost/Web-2U/A-mobile-app-in-development

Bringing it all together: learning across the three museum spheres

I am coming to a view that the visitor experience is similar across all three spheres – physical, online and mobile – it's just the tools and the context that are different. Constructivism is still a useful way to frame how learning could be structured across each sphere (Table 1).

Physical exhibitions	Online (website + social media)	Mobile apps
Free choice	Free choice	Free choice
Many entry points	Many entry points	Many entry points
No specific path, no beginning, no end	No specific path, no beginning, no end	No specific path, no beginning, no end
Based on prior knowledge and experience	Based on prior knowledge, experience and interests	Based on prior knowledge, experience and interests
User-controlled	User-controlled	User-controlled
Present range of points of view and perspectives, often museum seen as authority	Present range of points of view and perspectives, yet authority can be questioned or unclear	Present range of points of view and perspectives, authority comes from individual
Provide materials that allow to experiment, conjecture and draw conclusions	Interactive websites can provide programs and information that allow to experiment, conjecture and draw conclusions	Mobile apps can provide programs and information that allow to experiment, conjecture and draw conclusions
Used for leisure, entertainment, learning, connecting	Used for leisure, entertainment, learning, connecting	Used for leisure, entertainment and learning
May be difficult to remain up-to-date	Usually up-to-date, constantly changes	Always up-to-date, constantly changes
Inherently social	Inherently social	Inherently social

Table 1. The Constructivist Museum (based after Hein, 1998)

Furthermore, I suggest that rich learning experiences across the three spheres need to include:

• experiences that encourage discovery, interaction, cater for the unexpected, provide many pathways to explore, give a taste for what happens behind-the-scenes and are fun
• content that is challenging, real, authoritative, meaningful, encourages questions and is well-organised and easy to navigate
• staff that can relate to visitors, are respectful of their ideas and views, are knowledgeable in their field and are easy to talk to – whether they are in the physical space, online or accessed via mobile devices
• social experiences, hanging out with friends, families, peers and learn together and building community and connections.

How will we get there? Organisational learning and change

Given that the topic of this conference is learning in museums how will we implement these ideas? There was an interesting discussion recently on Nina Simon's *Museum 2.0* blog that looked at the big questions for museums: *What are the most important problems in our field?*.[12] She identified three that seem, on the face of it, simple, but are really quite challenging:

1. *How can we make cultural knowledge--content, context, and experience--as widely, freely, and equitably accessible as possible?*
2. *How can our institutions and programs improve quality of life for individuals and communities?*
3. *How should we structure our institutions and funding programs to do 1 and 2?*

In her book *Wiki Government*, Beth Simone Noveck (2009) outlined the Obama Open Government initiative. She notes that the Memorandum states: 'By soliciting expertise (in which expertise is defined broadly to include both scientific knowledge and popular experience) from self-selected peers working together in groups via the Internet, it is possible to augment the know-how of full-time professionals. ... Collaboration catalyses new problem-solving strategies, in which public and private sector organisations and individual solve social problems collectively.' (2009, xii-xiii). So, now rather than any time in history the web enables us to be able to solve big problems that museums have something to say, for example climate change, biodiversity, social justice. In future (as now), social networking will increasingly be the ways citizens will come together to find innovative solutions on a mass-scale and increasingly via their mobile devices.

These last two points throw up some interesting questions for museum educators in terms of the skill sets we need, the mindsets we need to develop and the ways we will engage our audiences in the future. The ways we work and interact with visitors and each other will change –there will be a more direct and equal relationship. We will need to be more visitor-focussed and less museum-focussed, we will need to be nimble, flexible and responsive to change. Addressing the big problems in our field (and those facing humanity) in programs that are visitor-centric and delivered to where they are (not where we are) are issues we will need to tackle.

---

[12] http://museumtwo.blogspot.com/2011/10/what-are-most-important-problems-in-our.html

The ways our organisations work in future will need to:

• be prepared to let go of authority, be truly visitor-focussed and take on facilitation rather than a teacher role
• take risks – trying new approaches following constructivist principles, based on visitor interests and needs, not on what we want to say
• gives people permission to "go for it"/"just do it", then learns from that, enabling staff to try new programs and approaches, and gives them permission to fail
• encourage connections and networks – and facilitates them
• provide scaffolding and support that others can work from – we don't always need to innovate ourselves, others can use our material and do it instead
• acknowledges that a healthy community will self-monitor and self-correct
• remember that some areas will still need "discipline" and organisational input, yet many more need participation
• listen first, act later.

Final thoughts

As Goode said 'The people's museum should be much more than a house full of specimens in glass cases. It should be a house full of ideas' (p.306). The three spheres of operation make it possible for a museum to be a place of ideas where visitors and museum staff work together to create and disseminate knowledge and engage with ideas. Elaine Heumann Gurian stated that: 'My fundamental assumption is that museums will soon need to shift from being a singular authority to a participants and encourager of intellectual and social engagement among its visitors. In doing so museums will have to look at the administrative assignments and responsibilities of staff in order to become this more responsive institution' (2010, p.108). Mike Edson in a recent interview published in O'Reilly Radar, said 'In the last epoch, we were measured by the success of our internal experts. And in this coming epoch, we're going to be measured by the success of our networks at large: our social networks, our professional networks. People are going to be connected. Ideas will be sharable and portable.'[13]

---

[13] http://radar.oreilly.com/2010/05/how-the-smithsonian-keeps-up-w.html

As mentioned earlier in this paper Paris's view of museum learning accounted for control, challenge, collaboration and choice. Given the changes to our operating environments, museum visitors (wherever they are) are now part of *Generation C[14]*:

- in *control* of their own experiences
- *choosing* what they will pay attention to, as well as when and how
- seeking *challenges*
- working and learning *collaboratively*
- being widely *connected*
- "*I share, therefore I am*".

In a book about digital museums and the future, MacArthur (2007) asked *Can museums allow on-line users to become participants?* My challenge to us as museum workers in whatever field we're in is to turn this question around and ask *How will we enable and encourage all users to become participants wherever they are and however they choose?* My work to date has shown that the twenty-first century audience will be better connected, more informed, more engaged, older, more culturally diverse, more interested in ideas and architects of their own learning. They will be mobile, accessing information wherever they are and whenever they choose to. In this way, they will be active participants, rather than passive receivers of content and information. Given the opportunities provided in the online and mobile spaces, the 21st century museum will need to be flexible, mobile, vibrant and changing spaces, accounting for a variety of uses, houses full of ideas, and, ultimately, *museums without walls*.

Professor Stephen Heppell[15], the noted digital educator, stated recently that, given the rapid changes in technology and education, the next ten years will be the most fun we'll have in our jobs. So, how we eventually end up as museums without walls is not going to be without significant challenges – but they should be lots of fun to work in too!

---

[14] http://blog.nielsen.com/nielsenwire/consumer/introducing-gen-c-%E2%80%93-the-connected-collective-consumer/
[15] http://heppell.net/

REFERENCES

Bennett, T. (1995). *The Birth of the Museum: history, theory, politics*. London: Routledge.

Burnette, A., Cherry, R., Proctor, N. and Samis, P. (2011). Getting On (not under) the Mobile 2.0 Bus: Emerging issues in the mobile business model. In J. Trant and D. Bearman (eds). *Museums and the Web 2011: Proceedings. Toronto: Archives & Museum Informatics*. http://conference.archimuse.com/mw2011/papers/getting_on_not_under_the_mobile_20_bus (Accessed October 11, 2011).

Cameron, F. and Kelly, L. (2010). *Hot Topics, Public Culture, Museums*. Cambridge Scholars Publishing: London.

Claxton, G. (1999). *Wise-up: the challenge of lifelong learning*. London: Bloomsbury Publishing.

Cornu, B. (2004). Networking and collective Intelligence for teachers and learners. In *Digital technology, communities and education*. Ed. A. Brown and N. Davis. Routledge: London.

Groundwater-Smith, S. and Kelly, L. (2009). Learning outside the classroom: A partnership with a difference. In A. Campbell and S. Groundwater-Smith (Eds), *Connecting Inquiry and Professional Learning in Education* (pp.179-191). London: Routledge.

Goode, George Brown (1891; 1991). *The Origins of Natural Science in America*. Ed Sally Gregory Kohlstedt, Washington: Smithsonian Institution Press.

Hansman, C. (2001). Context-Based Adult Learning. In S. Merriam (Ed.), *The New Update on Adult Learning Theory* (pp. 43-52). San Francisco: Jossey-Bass.

Hein, G. and Alexander, M. (1998). *Museums: Places of Learning*. Washington: American Association of Museums.

Hein, G. (1998). *Learning in the Museum*. London: Routledge.

Hein, G. (1991). *Constructivist Learning Theory*. Paper presented at the ICOM/CECA Annual Conference, Jerusalem.

Heumann Gurian, E. (2010). Curator: From Soloist to Impresario. In *Hot Topics, Public Culture, Museums*. Ed. F. Cameron and L. Kelly, 95-111. Cambridge Scholars Publishing: London.

Johnson, L., Levine, A., Smith, R., and Stone, S. (2010). *The 2010 Horizon Report*. The New Media Consortium: Austin, Texas. http://wp.nmc.org/horizon2010/ (Accessed 28 September 2011).

Kelly, L. (2007). *Visitors and learners: Adult museum visitors' learning identities*. Unpublished PhD, University of Technology, Sydney. http://australianmuseum.net.au/document/Understanding-museum-learning-from-the-visitors-perspective (Accessed 10 October 2011).

Kelly, L. (2010). *The Twenty-First Century Museum: The Museum Without Walls*. Alma S. Wittlin Memorial Lecture, ICOM Shanghai.

Kelly, L. and Fitzgerald, P. (2011). Cooperation, collaboration, challenge: how to work with the changing nature of educational audiences in museums. In *Rethinking Educational Practice Through Reflexive Inquiry*. Ed. N. Mockler and J. Sachs. 77-88. Springer: London.

Kelly, L. and Groundwater-Smith, S. (2009).Revisioning the Physical and On-line Museum: A Partnership with the Coalition of Knowledge Building Schools. *Journal of Museum Education*. 34(4), 55-68.

Kelly L. and Russo, A. 2010.From Communities of Practice to Value Networks: Engaging Museums in Web 2.0. In *Hot Topics, Public Culture, Museums*. Ed. F. Cameron and L. Kelly, 281-298. Cambridge Scholars Publishing: London.

MacArthur, M. (2007). Can museums allow online users to become participants? In *The digital museum: A think guide*. Ed. H. Din and P. Hecht, 57–65. American Association of Museums: Washington DC.

Noveck, B. (2009). *Wiki Government. How Technology Can Make Government Better, Democracy Stronger and Citizens More Purposeful*. Brookings Institution Press: Washington DC.

Paris, S. (1997). Situated Motivation and Informal Learning. *Journal of Museum Education*, 22, 22-27.

Rounds, J. (2004). Strategies for the Curiosity-Driven Museum Visitor. *Curator*, 47(4), 389-412.

Rounds, J. (2006). Doing Identity Work in Museums. *Curator*, 49(2), 133-150.

Sfard, A., & Prusak, A. (2005). Telling Identities: In Search of an Analytic Tool for Investigating Learning as a Culturally Shaped Activity. *Educational Researcher*, 34(4), 14-22.

Weil, S. (1997). The Museum and The Public. *Curator*, 16(3), 257-271.

Weil, S. (1999). From Being *about* Something to Being *for* Somebody: The Ongoing Transformation of the American Museum. *Daedalus*, 128(3), 229-258.