Delivery of an Online Education Component to Support a Participatory Planning Platform

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1   Introduction and Background

A parent project, called PlanYourPlace (PYP), funded by GEOIDE and the Neptis Foundation, aims to support planning practice by engaging communities, and will do so by creating a web-based, interactive geospatial tool. An education component is planned as part of this. The following paper strives to identify the best way to deliver this education component, drawing from literature in the fields of online education, both formal and informal, and environmental and planning education. PYP seeks to build an online, interactive geospatial tool to support community planning, including planning analysis, design, and process (development of procedures to achieve plans) (HUNTER 2011). It aims to engage the public as local planning participants, government administrators, and domain experts, and strives to facilitate collaborative, participative planning. The development of visualization tools, sketching functionality, and extended online participatory GIS capabilities that include discussion forums and ranking tools for the assessment of proposed plans are being developed to support these goals. Ultimately, the tool aims to facilitate citizen participation in planning.

The education component is designed primarily to serve the public users of the PYP tool, to facilitate their participation in planning. In support of this, there are four learning objectives based on Bloom's (1954) Taxonomy of Educational Objectives. They represent progressively increasing levels of questioning and understanding. Public users should be able to: (i) discuss neighbourhood planning and relevant factors, (ii) formulate informed opinions about plans and relevant contributing factors, (iii) prioritize competing influences for inclusion in plans, and (iv) collaboratively create well-considered plans. In order to meet these four objectives, the education component must be sufficiently fun, rewarding, entertaining (VAN DEN BRINK et al. 2007: 3), and engaging (IVERSON 2008) to attract and hold the attention of users. This is central to the *delivery* of the education. The education must also offer sufficient detail and breadth of information, or *content,* to meet the learning objectives. Further work on content and learning objectives is planned for future phases of the parent project. The review seeks to determine, by synthesizing literature from related fields: (i) what measures will attract the public user that the PYP tool targets, (ii) what will retain users, (iii) what will facilitate learning, and finally (iv) what will facilitate user retention of the material.

2   Methods

Literature was reviewed from the fields of environmental and planning education, as well as online education, both course-based and informal. Though considerable literature exists

on education and pedagogy, delivery of courses online (both in secondary and post-secondary education), and in environmental education, there is little regarding online learning for enjoyment. For this reason, sources discussing website-delivered content that required user retention (WIEGRAN & KOTH 1999, LESLIE et al. 2005), user education (LIN & GREGOR 2006, METIRI GROUP 2008, AYAD & RIGAS 2009, VAN DEN BRINK et al. 2007, IVERSON 2008), or user behavioural change (LESLIE et al. 2005, VANDELANOTTE et al. 2007), particularly in retail and health sciences were also examined for further information. These provided further information on retaining and informing users not enrolled in a formal course. The numerous subject areas added breadth to the review, and allowed triangulation between *Weltanschauungen*. The applicable concepts and principles from each of the above-listed fields were synthesized to craft a solution with the intention of providing effective education in support of PYP.

3 Results and Discussion

The literature review revealed a number of characteristics of successful delivery of online education that help create environments conducive to learning online. The information and ideas gleaned from the sources identified were combined to inform the delivery of the PYP education component. However, some studies were more relevant than others. LIN & GREGOR'S (2006) investigation of expert opinion regarding museum educational websites proved to have the most context in common with the current project. Users visited the sites in question for recreational learning, which fits closely with the type of lay user expected for PYP. Because public users of the PYP tool will be visiting the website on their own initiative and for their own benefit, they are engaged in what is known as learning for enjoyment (LIN & GREGOR 2006). Enjoyment learners have different needs to those engaged in course-based online learning; they visit the site for leisure, relaxation, and interest rather than course requirements (ibid.). Sources found in the collection of works edited by van den BRINK et al. (2007) deal with participatory spatial planning assisted by GIS, highly relevant to the context of the current project. In other studies, only some concepts could be translated to the current project. For example, some directed users to a website for course-based material (WILLSON 2008, PELZ 2010, BUZZETTO-MORE & PINHEY 2006, GERSON 2000), for health interventions (VANDELANOTTE et al. 2007, LESLIE et al. 2005), or for retail (WIEGRAN & KOTH 1999). There was also some overlap within sources, such as in WILLSON (2008), which combines two categories by dealing with both online and planning education.

The literature reviewed revealed 27 characteristics that support learning and attract users in online education. Table 1 lists these, along with the sources associated with each claim. Characteristics recommended by more than one source were prioritized. The primary reason for using the measure is identified under "Benefit." Note, however, most measures will have secondary benefits as well. For example, use of multimedia facilitates learning, but also contributes to visual appeal, thus helping retain users. Overlapping characteristics were listed separately because each is important in its own right, as in the above example. The benefit description "Attract users" includes both initial and return visits, while "retain users" is used for measures that keep visitors looking at the site for longer during each visit. "Other" characteristics concern project administration rather than the users' learning environment. The "Benefit" column was not used in prioritization, since each reason is considered equally important.

Table 1:   Positive Characteristics of Online Education Websites

Characteristics	Sources	Benefit
Asynchronous and Free Accessibility	[1–6]	Attract users
Interactive	[1–4]	Facilitate learning
Discussion, comments, and user generated content	[2, 4, 6, 7]	Facilitate learning
Feedback to users	[2, 4, 6, 7]	Attract users
Short time between follow-ups	[6, 8]	Helps retain material
Discussion prompts	[4, 6]	Facilitate learning
Prompts to return	[2, 3]	Attract users
More than 5 prompts to return	[8]	Helps retain material
Visually Appealing	[1, 8, 9]	Retain users
Ease of Use	[1, 6, 9]	Retain users
Relevant Multimedia	[1, 5, 6]	Facilitate learning
Adaptive to user level, and inclusive of all users	[1, 6]	Retain users
Simplicity (relaxing and short tasks)	[1, 5, 9]	Retain users
Material reflects content	[5, 6]	Facilitate learning
Learning objectives	[6]	Facilitate learning
Use of scenarios, problems simulations, examples, and case studies	[9, 10]	Retain users
Learner-Driven	[1, 7, 11]	Facilitate learning
Personalization	[2, 3, 8]	Attract users
Goal setting	[10]	Retain users
Useful links and partnerships with other sites	[1, 2]	Facilitate learning
Sharable content	[1]	Other
Ongoing measurement of success of strategies	[2, 6]	Other
Game-based delivery	[12]	Facilitate learning
Reach audience at home (rather than at work)	[3]	Retain users
Incentives / rewards to use site	[2]	Attract users
Initial face to face contact	[3]	Attract users
Dynamic	[3]	Attract users

Table 2:   Key

1	Lin, A.C.H. & Gregor, S.D.	7	Pelz, B.
2	Wiegran, G. & Koth, H.	8	Vandelanotte, C., Spathonis, K.M., Eakin, E.G., & Owen, N.
3	Leslie, E., Marshall, A.L., Owen, N., & Bauman, A.	9	Gerson, S.M.
4	Willson, R.W.	10	Iverson, K.
5	Metiri Group	11	van den Brink, A., van Lammeren, R., van de Velde, R., & Dane, S.
6	Buzzetto-More, N.A. & Pinhey, K.	12	Ayad, K. & Rigas, D.

In order to prioritize development among the 27 characteristics, we favoured characteristics based on the number of times they were recommended. Characteristics were grouped with like characteristics, as highlighted with blocks of grey and white in Table 1. The result was four main groups, each recommended many times, two smaller "groups" with fewer recommendations, and six individual characteristics that did not fit in any group (or together). The four main groups of characteristics will have priority during development of the educa-

tion component, followed by the smaller groups, with the six miscellanies assigned tertiary priority during development.

In the top four groups, *interactive characteristics, including discussion and feedback* to users, was recommended most frequently, with nineteen recommendations. The number of sources that recommended each aspect of interactivity was summed. This "counts" some sources more than once toward each group of characteristics. This was done because recommendations for different characteristics within the group, such as interactivity and discussion, were considered two recommendations toward the group, even if from the same source.

Interactivity includes such strategies as voting, discussion, and rewards (LIN & GREGOR 2006). It is used to motivate and increase learner attention and participation, and make learning experiences memorable, to have lasting impact (ibid.). As such, it will be beneficial for retaining users, facilitating learning, and helping users retain lessons. Wiegran & KOTH (1999) found that discussion builds community and credibility (by allowing users to provide transparent feedback), which both encourage people to return to the site. Discussion also adds an element of dynamism, which generates return traffic (LESLIE et al. 2005). Discussion is also important to allow users to explore the material and engage in the learning process through written expression and dialogue via feedback from other learners (GROSS DAVIS 2001), and adds an element of self-directed learning (WILLSON 2008, PELZ 2010). Both result in better learning and retention; WILLSON (2008), for example, found that online discussion helped students develop and articulate their arguments better.

Visual appeal and ease of use was the second most recommended group, with eleven recommendations. Visual appeal can maintain user concentration, and encourages people to "look deeper into a website" (LIN & GREGOR 2006). Multimedia can positively impact learning, especially for spatial and complex material (METIRI GROUP 2008). It should be coherent and simple, avoid redundancy, and present pictures simultaneously with words or narration (METIRI GROUP 2008). Ease of use is important for retaining users, as users who are frustrated with site navigation, for example, will not stay long (ibid.). It is also important for learning, as users can focus on educational material rather than navigation. The site should have a simple structure in order to be easily and quickly navigated (ibid.; GERSON 2000, RUBIN & CHISNELL 2008). Visual appeal, including colour, text, format, size, and image size performs a similar function to ease of use, keeping users on the site longer (LIN & GREGOR 2006, TUFTE 2001). GERSON (2000) recommends making the site easy to use with consistent site styling, as well as links to welcome, syllabus, and resources pages. The site layout should use short paragraphs and white space, headings to guide readers, colour for emphasis, and bullets and numbered steps for clarity and brevity.

The third group was *simple tasks and material reflecting learning objectives*, with ten recommendations. Simplicity in tasks and material is important for enjoyment learners, who desire interest and relaxation rather than testing or trying material (LIN & GREGOR 2006). As a result, the material should avoid being abstruse, or long-winded. This group is important, as IVERSON (2008) cautions that interaction is not enough in course-based online learning, and that engagement must be present as well. To accomplish this, engaging tasks should be used, including scenarios, simulations, and problem-based learning, to help students feel immersed in their learning. Strong and clear structure is also necessary, as in-person feedback is not available to students who become confused. Clear numbering of

steps and hyperlinks to next steps are important. To provide this, the course can supply material via the E-CLASS model, an acronym for Explain, Clarify, Look, Act, Share, and Self-evaluate/Submit (GERSON 2000).

Finally, *learner-driven flow and personalization* was the last of the four main groups with seven recommendations. Learner-driven, or self-directed education is used because users are more motivated and purposeful in their learning, and retain and use learning better and longer (LIN & GREGOR 2006). PELZ (2010) indicates that student-led discussion is of paramount importance in effective online learning. Personalization, such as selection of items that are important to users can help target education to their needs. It can also generate return traffic, as users will have developed a profile that they cannot easily duplicate on other sites (WIEGRAN & KOTH 1999). This group is important, as users can choose their learning to be fun, rewarding, entertaining (VAN DEN BRINK et al. 2007: 3), and engaging (IVERSON 2008).

The first of the two smaller "groups" was *sharing between sites*, with three recommendations. This could include collaboration and the exchange of links or material with schools, non-profits, government and corporations, and other sites with useful, relevant resources. This allows learners to broaden their search, self-direct their learning, and improves the site's visibility or presence on the web, thereby attracting users. Second, *asynchronous and free accessibility* had six recommendations on its own, making it the most commonly mentioned individual characteristic. It refers to free access for the public at any time and place, and digestible at the learner's own pace (LIN & GREGOR 2006, WIEGRAN & KOTH 1999, LESLIE et al. 2005, WILLSON 2008, METIRI GROUP 2008).

4   Conclusion

The literature review and prioritization revealed that the following primary groups of characteristics aid in creating an online environment conducive to recreational learning: (i) interactive characteristics, including discussion and feedback; (ii) visual appeal and ease of use; (iii) simple tasks and material reflecting learning objectives; and (iv) learner-driven flow and personalization. These characteristics aid in attracting and retaining users, facilitate learning, and help users retain material. They will be given first priority and designed into the education component in order to maximize its effectiveness. Two groups were given second priority for development: (i) sharing between sites, and (ii) asynchronous and free accessibility.

Educating laypersons about planning principles, sustainable urban development, municipal process, competing factors, and stakeholders involved in the development process facilitates their participation in planning. It supports their efforts to understand and evaluate plans and engage in meaningful discussion about local issues. Since we have taken the stance that participation is necessary for sustainable development, we suggest that well-delivered online planning education can contribute to sustainable urban development. The education component of PYP will be implemented using the delivery mechanisms discussed in this paper. In addition, the examination of delivery methods in this paper may help other practitioners and researchers deliver online, informal education regarding sustainable and participatory urban planning.

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