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The landscape of websites for art education and a portrait of their designers

ABSTRACT

The increasing visit numbers for art teaching and learning-related websites indicated that websites have become an indispensible resource and information provider for art learners and teachers. In this study, I sought answers to questions such as what websites were art learners and teachers using? What technologies were used by these websites? Who built these websites? Why did they build these websites? What expectations did these website builders have for their audiences? I shared over 70 art teaching and learning-related websites, and had 33 of them evaluated by 57 research participants using a seven-part coding scheme. On the basis of the evaluation survey results, I interviewed four website builders/owners. The top-rated websites were shared and discussed, focusing on website builders' motivations, overall purposes, their expectations towards the websites, as well as their technological applications in their websites.

KEYWORDS

web technology
websites for art education
online art learning
website builders
extreme learning
online art resources

INTRODUCTION

According to Taylor and Carpenter (2007), students today are 'digital natives' (Prensky 2001: 84) or 'screenagers' (Choi and Piro 2009: 55). Young people live in an environment saturated with computer and digital technology (Singer and Singer 2001), and are dramatically different from young people

in the previous decades. Because today's art learners face changing technologies, an immersive visual culture and alternative exhibition possibilities, they demand 'different forms of educational engagement informed by their constantly changing digital landscape' (Taylor and Carpenter 2007: 85). In order to meet the needs of the twenty-first century, technology-driven learners and art educators should foster opportunities for students to think conceptually and synectically by means of digital media (Unrath and Mudd 2011). Thus, numerous art researchers and educators encouraged teachers to incorporate technology into their classrooms (e.g., Buffington 2008; Lu 2013; Roland 2007; Sweeny 2011, 2014; Stokrocki 2014a). For instance, Unrath and Mudd (2011) called educators to seek innovative ways to reach and inspire the unique contributions and gifts the twenty-first-century learners bring to the table using digital technologies.

The online information revolution and digitization of educational content offers opportunities for art students and teachers to select their own learning or teaching materials and pursue paths never before possible. With more than 60 online virtual worlds and 400 universities (mostly international) offering courses, these sites offer tremendous oppo rtunities for artistic teaching and learning (Stokrocki 2014b). The availability of free resources one can find online has exploded in the recent years (Bonk 2009). In addition, because of the development of the Web 2.0 technology, the online resources have become more and more user-friendly, affordable and accessible, which provides 'a rich treasure trove of tools for students and teachers to investigate and create art in collaborative and individual ways that enrich and expand learning beyond the classroom' (Nguyen and Szymanski 2013: 93). Students and teachers are being given the freedom to explore rich veins of information as desired. According to Waks (2013), the Web with the Web 2.0 tools provides abundant opportunities for creative self-expression, social exchange and collaboration.

For art teachers, the Internet technology can encourage collaboration with each other 'in unprecedented ways, transcending issues such as common planning time and knowledge about other content areas' (Nguyen and Szymanski 2013: 95). For instance, in the past, teachers were not able to share their teaching experiences with peers from other districts or states unless they travelled to conferences. Today, by means of electronic communication technologies, especially the Web 2.0, teachers find their inspiration for lesson ideas from social media platforms, including Pinterest, Facebook and blogs (e.g., Buffington et al. 2010; Cowen 2014).

For art learners, the Internet can connect young artists from different classrooms for interdisciplinary learning and creating (Nguyen and Szymanski 2013), allowing them to engage in innovative forms of communication, expression and learning using contemporary media rooted in their daily lives (Roland 2010). It offers opportunities to exhibit student art and even has the potential to project students' art to the entire world (Burton 2010).

Internet technology builds learning spaces defined by common interests and shared information (Hird 2000). Through a barrage of tools for collaboration and interaction, websites attracted a broad audience, which could be connected for long periods of time for learning purposes based on common interests. Emerging educational technologies and online resources allowed for a more learner-centric focus in education and encouraged more active learners (Bonk 2009). Both Freedman et al. (2013) and Manifold (2009) studied various online art learning communities where adolescents and young adult members of various visual culture groups conducted self-directed art study

1. Example art teacher blogs and online resources:
   - Presentation and websites resources provided by Ms Stephanie Clegg at National Art Education Association (NAEA) Annual Convention at Fort Worth, Texas, US in March 2013.
   - Mrsclegg.blogspot.com
   - Apexhsart.blogspot.com
   - Artwithmre.blogspot.com.
   - thehelpfulart-teacher.blogspot.com/
   - Great websites for art teachers: http://www.ezwebsite.org/Page.asp?PID=7495.
   - The ten best lesson plan websites for art teachers: http://voices.yahoo.com/the-10-best-lesson-plan-websites-art-teachers-11728222.html.
   - Online resources for art teachers: http://www.aaeteachers.org/index.php/blog/701-online-resources-for-art-teachers.
   - Art ideas for teachers: http://olc.spsd.sk.ca/de/resources/artideas/index.htm.

through forms of auto-didactic and peer-initiated learning. These online learners successfully developed visual techniques and skills in the areas of drawing, painting, video production, computer programming, etc., as well as their aesthetic and artistic ideas. They learned through immersion in a group, positive support, feedback and critique from their group members. The online platforms facilitated sharing of arts content, which has been created, copied and/or re-purposed in digital formats (Wilks et al. 2012).

Surveys (Roland 2006, 2007) also revealed that both art students and teachers often searched online websites for images and other resources for art learning purposes. Overall, 98% of the surveyed art teachers in 2006 reported that they used the Internet sources to gather information or images for classroom lessons (Roland). More than eight out of every ten art teachers in a 2007 survey indicated that they either always (19%) or frequently (65%) used the Internet resources in their lessons or classroom presentations. Furthermore, 22% of these art teachers reported that their students published their artwork online during the previous year. The survey results confirmed that the art learners and educators made choices to explore the Web resources, engaged in freely offered online learning lessons or discussed their own artwork with others through online podcasts or chats.

Despite the many learning opportunities, and the growing attention and research conducted regarding online art learning, many questions remain unanswered, including what websites today's pre-service and in-service art educators and other art education professionals use, and who builds those websites. With educators and students adopting the now-popular Web 2.0, what technologies do the website designers use? What motivates them to build these websites, and how do they maintain and develop them? What do they expect for their websites, and what learning outcomes are expected for their websites' target audiences? There is a need to capture snapshots and longer views of the learning activity as well as a behind-the-scenes view of the current art teaching and learning websites.

METHODOLOGY

Mixed methods were used in this study. In the first stage, I located, reviewed and collected more than 70 potential art teaching and learning-related sites for a year in order to determine the current state of possible art education websites. The websites were gathered on the basis of a thorough literature review, which discussed websites that fostered effective online learning (e.g., Roland 2005; Manifold 2012, 2013; Freedman et al. 2013; Quinn 2011; Waks 2013), as well as recommendations solicited from experts who were art education college professors, and suggestions found in blog post reviews and other online resources.[1] I used the skip interval method to determine whether the sites were effective, and then conducted a content analysis of all the effective websites.

I reviewed the past literature on website design (e.g., Lepkowska-White and Imboden 2013; Hammon 2004; López et al. 2010) and selected the most important elements and features of websites that fell under the realm of volume of information directly related to art teaching and learning, visual design of websites and technical aspects including the websites' functionality, extent of integration, novelty and uniqueness to create the coding categories that explored these three dimensions using a five-point Likert scale (1 is low; 5 is high). Two co-workers who were art education major Ph.D. candidates

and I rated all websites individually. We then shared, discussed and edited the coding results, and created a final list of 33 top-rated art teaching and learning websites. Given the use of three raters, Cronbach's α was carried out. The α coefficient was 0.7557, suggesting that the coding results had acceptable internal consistency, and the differences in rating were resolved.

After that, I evaluated, selected and shared these 33 sites with 57 research participants. Among these participants, 34 were juniors or seniors in the art education programme from two university sites (one in the midwestern United States and the other on the east coast of the United States), eleven were in-service art teachers teaching in the United States and twelve were art education professors or art education major doctoral students or museum educators.

After reviewing the websites, participants then chose and rated their own fifteen sites individually using a seven-part coding scheme developed by the Extreme Learning Research Team (ELRT)[2] (Jung et al. 2011), and also were given an open-ended question to provide any other comments and suggestions for each website they reviewed. Prior to the survey, all student participants were provided with training and instructions of what the seven-part coding scheme included and how to use them as grading criteria for reviewing websites. I also gave similar presentations to potential research participants at the National Art Education Association annual convention at San Diego in 2014.

The coding scheme was a revised version from the evaluation criteria developed by ELRT on the basis of a set of technological features and instructional resource characteristics found in the research literature (Jung et al. 2011). The fine-tuned evaluation criteria[3] used in this research included seven categories: (1) content richness, (2) functionality of technology, (3) extent of technology integration, (4) novelty of technology, (5) uniqueness of learning environment/learning, (6) potential for learning and (7) scalability of audi-ence. Ratings were made on each website through multiple phases based on the seven criteria using a five-point Likert scale (1 is low; 5 is high). For instance, the 'Content Richness' criterion dealt with how much information the website, resource or project contained on the topic chosen, how adequately it fulfilled the purpose of learning, and whether the information was credible and up-to-date.

Because one of the main concerns of this study was to understand the technological aspects of the websites and their founders' usage of the Web technology, the majority of the criteria were technologically related. The content, potential for learning, as well as the audience, however, were the foundational factors for educational websites and thus were included in the evaluation criteria. Averages for each category, as well as averages for each website, were calculated. The twelve top-rated websites, by the order of overall averages obtained from rating results from 57 research participants, were then analysed.

In the second stage, I randomly selected and contacted ten website founders/builders from the list of twelve top-rated websites. Six responded and four agreed to participate in the study. I then conducted either telephonic or online interviews through Skype with them. All four interviewees were individual builders of websites. Among these four participants, three were from the United States and one was from the United Kingdom. I then asked eleven questions regarding builders' backgrounds, motivations and expectations. Interview transcripts were then subjected to qualitative analysis using the

2. The Extreme Learning Research Team is made up of eighteen research members who are researchers, professors or doctoral students in the area of educational and instructional system technologies, and are mainly from Indiana University Bloomington. The main goal for research projects conducted by team members is to explore how people learn or teach with technology in unusual ways. Team members work together collectively, as well as in sub-teams such as Online Language Learning, Outdoor/Adventure Learning, Virtual Education and Social/Global Change. A special sub-team dedicates its time to classify and evaluate the quality of the websites. For more detailed information regarding Extreme Learning Research Team, please visit: http://www.extreme-learning.com/.

3. The fully revised evaluation criteria rubric can be accessed from here: http://www.windywang.com/surveycriteria.html.

common phrase and thematic content analysis of the transcripts. The results of the interviews are reported in the following sections.

RESULTS AND DISCUSSION

Twelve top-rated websites: What resources are available?

Averages and standard deviations for each category of the seven coding systems and overall averages and standard deviations for all seven categories as the grading criteria for reviewing websites were calculated. Frequencies for each website, selected by the participants, were also counted. Because of the limited number of samples, only those websites with a frequency of above 15 were selected so that the results of analysis could be statistically reliable. In order to determine highly rated websites and explain how art teaching and learning took place within these sites, I listed the twelve top-rated websites by the order of average scores based on the calculations of the evaluation data obtained from 57 research participants (Figure 1).

Google Art Project is a website as well as an online platform where visitors can access high-quality images of artwork housed in Google company's partner museums. Given, that the main concern of this study was technological utilization of the website and the fact that Google Art Project used the new Google street-view technology (Kennicott 2011), it was logical that it ranked highest among all the websites. Although most of the participants mentioned that they loved this aesthetically pleasing website, three of them said that the main webpage was confusing as it was newly launched. As first-time visitors, they were not clear about what to expect or how to navigate.

Deepspacesparkle is a comprehensive website that covers extremely rich resources and content focused on teaching ideas and lesson plans. The Art Library section presents an enormous number of art lessons classified by grades, subjects and techniques, and makes full use of social media such as Pinterest and Facebook to interact with the audiences. The author also writes a blog, posting the latest information and resources. The website offers online

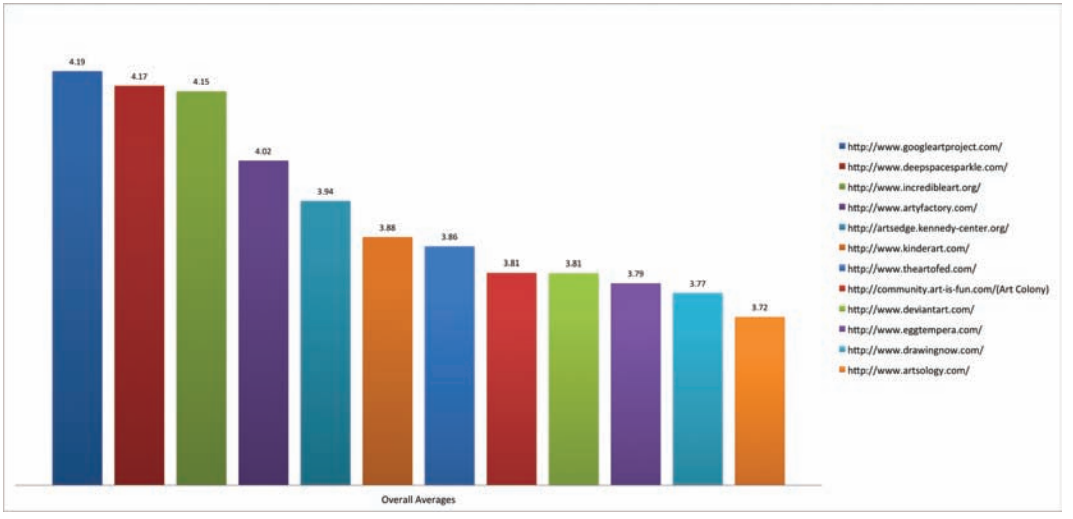

Figure 1: Twelve top-rated website findings with averages.

courses on art instruction; visitors may register and pay to participate. Other than the advanced technology, what attracted participants' attention and earned high rankings was the design of the website. Participants commented, 'The site is setup well with no crazy technology advances shown, [but] I absolutely love the color choices of this website. They are vibrant and catch the viewer's eye' (Corey[4]) and 'this has been my favorite website that I have seen. I think it is put together very well and grabs my attention with the use of bright colors. The clean format helps me find what I am looking for' (Elizabeth).

The highly popular website Incredibleart totalled 13,419,469 visitors in 2012 (Kevin, founder of this website), and while no unique technologies were utilized, rich content and resources probably accounted for its popularity. One participant commented,

> This website is incredibly useful for art educators and students. It has ideas for lesson plans, links to art-related activities/games, information on art history, updates on the art world, and an online community. I will definitely use this in future art education-related classes and endeavors.
>
> (Sam)

Similarly, Artyfactory uses only basic technology, but its rich content and learning potential gained participants' attention.

ArtsEdge is the Kennedy Center's free digital resource for teaching and learning in, through and about the arts. According to the website, the goal of builders is to 'expand the content to serve a new definition of educators, encompassing classroom and out-of-school teachers, with the single-minded goal to support arts-based student learning, whether in the classroom or an informal learning environment, like the home'. In terms of technology, it offers a combination of visual images, slideshows, texts, online digital books and shared online videos.

Kinderart was a website specifically for art educators, offering free art and craft lesson plans and activities for all ages. The lesson plans and resources may have earned the website its high rating.

The main goal for the development of Theartofed was to provide professional development for in-service art teachers. It offers online courses covering new technology, iPads, assessments and classroom management for art teachers by means of advanced instructional technologies. By taking these courses with fees online through the platform of Ning, teachers obtain professional development credits or graduate level credits credited through a college or university (Jane, 2013, personal communications).

Art Colony, an interactive online community specifically for artists, had 2,581,793 visitors in the past year (Mary, founder of this website). Participants commented on the appeal of the website:

> I like that it has numerous groups for all kinds of artists, mediums, and projects. I also like how friendly the community feels and how the users appear to wait to help each other succeed or develop. The visual appeal of the website helps, also. There are people willing to give you any information you may need pertaining to art through the forum and groups. Having forums is very modern.
>
> (Stefanie)

4. All names used in this article are pseudonyms to protect the anonymity of participants.

Research has been conducted regarding the website of deviantArt (Freedman et al. 2013; Manifold 2009), an online community where art lovers and enthusiasts of all genres and styles shared their artwork. According to the writers for the webpage, 'deviantArt is the largest online social network for artists and art enthusiasts with over 27 million registered members, attracting 65 million unique visitors per month' (2013).

Eggtempera was a website that introduced and taught egg tempera painting. Drawingnow was a website with the educational purpose of teaching people of all ages how to draw cartoons, manga, anime, etc. It offered rich resources, including step-by-step online tutorial videos for learners at different levels. A participant commented it was a 'very engaging website for younger audiences. Helpful tool to learn how to draw using technology …' (Mary).

Artsology utilized a wide variety of comparatively innovative technology including interactive games and arts investigation quizzes. The website, written in Hypertext Preprocessor (PHP), allows more interactivity between audiences and the website, and attracted a diverse audience. Gaming was possibly the main reason that helped the website with a high rating; one of the participant mentioned, 'I love the incorporation of games and art history [… it is] a great assessment to learn how much knowledge the students have about art history' (Alison).

Survey results revealed that diverse technology tools were chosen to accomplish intended educational purposes of each website. Most websites, however, heavily relied on content-delivery tools as the primary means to achieve the goal. Content richness was found to be the most important evaluation criteria for the survey participants (Wang 2013). The result, however, indicated that the emerging and novel technologies have not been incorporated in the design of art websites for educational purposes. Many websites were still static without the evidence of the usage of the Web 2.0 tools. These websites also lacked activity tools by which learners could practice their skills and techniques, assess their learning results or apply knowledge into real life scenarios (Wang 2016).

Moreover, no significant differences were found between the ratings by pre-service art educators (overall average of 3.87) and the in-service group (overall average of 3.75) (p=0.557). The orders of top-rated websites chosen by two groups were slightly different though. Figure 2 displays the top fifteen websites by the order of rating results from the in-service group, and the comparison of the averages of rating results from the two groups. The in-service group tended to select websites that were directly related to their art teaching – for example, websites that included high volume of lesson plan information and information of professional development (e.g., theartofed.com and arted20.ning.com). Their ratings heavily relied on content richness. More pre-service teachers chose websites that included participatory experiences (e.g., deviantArt.com and elfwood.com). They paid more attention to the aspects of fun and unique technology as well as the visual design of the websites.

BEHIND THE SCENES

To answer the research questions and explore behind the scenes of these websites, four website founders, whose websites were among the twelve top-rated websites, were selected and agreed to be interviewed. In the following section, I reported the results of the individual interviews with four website builders as well as owners.

Figure 2: Comparison of in-service and preservice groups.

Who builds these websites?

Not surprisingly, I found that these website founders were all former art teachers, professionals with years of rich art teaching experience. Kevin graduated from a midwestern university with a Bachelor's degree in art education and a Master's degree in education. He also taught art in public schools for ten years. Jane had a Bachelor's degree in art education as well as a Master's degree in education. She was also a former kindergarten to fifth grade art teacher. Mike majored in art history during his study at a university on the east coast. Joshua graduated from an internationally renowned school of art in the United Kingdom, and he had more than 36 years of experience teaching at the high school level.

Some of them also had industrial and business backgrounds in the area of art. For instance, Kevin was an art director in advertising agencies in two midwestern cities. He later formed two businesses, one in web designing and another renting DVDs by machine, and was the education coordinator for the Indiana Humanities Council. Mike worked in the New York art gallery business for ten years, and later opened his own gallery and web-design firm.

Motivations for building these websites

Interviews with the web founders revealed that inspiring children and/or students to create art was the biggest motivator that helped these builders create their websites. For example, Kevin's initial idea in 1994 was to build a simple school website featuring his students' artwork online. He held the idea back because his principal and curriculum director worried about the possibility that child molesters could target students on the Web. Kevin later decided to create an international site to host children's artwork from around the world.

Mike created his website for entertaining his own young children ten years ago and furthering his programming skills at the very beginning. But later he aimed to target a wide audience of children. He said,

> But deep down I knew I wanted to create something to reach a wide audience of kids, using the arts and music-related games to act as a gateway into getting kids inspired to learn more about the arts in general.
>
> (Mike)

For Joshua, designing website and providing art teaching resources online was more of a hobby. He stated, 'I enjoy developing websites. I enjoy reading about art, [and] looking at art a lot. I enjoy communicating with students'.

During her work for her Master's thesis, Jane found that the participation of professional development activity could greatly improve teachers' attitudes towards their professional outlook, but realized there were not many professional development opportunities for art teachers. This research motivated Jane to start her website and a professional development business. She said, 'Basically starting my website was an extension of having my research to put it to action by providing what art teachers were asking for or needed'.

Their expectations and goals for their websites

Research indicated that promoting art was the common goal for these website builders. Kevin's initial goal for this website was to instil pride in his students and to promote art in the school district. After his supervisor rejected his idea,

he wanted to promote visual arts around the world. Jane's goal was to provide professional development for art teachers, specifically the most current issues in art education, to cater to their professional development needs. The website created by Joshua was a site where people could share knowledge, obtain the information and learn practical tips for teaching art. Mike's goal was to expand his current popular site to reach more audiences. He stated in the interview, 'While the site is currently reaching approximately 60–70,000 monthly viewers, I would like to expand the reach, get more teachers involved, and hopefully reach more kids and inspire them to get involved in the arts' (Mike).

Distinctive characteristics of the websites

Kevin's website was one of the oldest sites on the Internet. Because of its longevity, it had many submissions to art galleries over the years, with more than 31,500 webpages for holding and displaying images submitted by the students. Rich lesson ideas, confirmed by the page visit numbers, were also one of the biggest reasons the site attracted audiences. Abundant resources were provided by Joshua's website. He placed great emphasis on the visual aspect of his site since he believed artists learn visually first and verbally second.

For Mike, the outstanding and most popular section of his website was gaming. By playing a game, Mike would like the players to 'think beyond the actual game play and to think about the subjects of the game'. He further quoted an example, the Van Gogh Hail Storm (http://www.artsology.com/van-gogh-hail-storm-game.php). The learner played the role of Van Gogh, using a mouse to hold the hat to catch the hail before it hit Van Gogh's paintings. The game showed the learner several Van Gogh's famous paintings, but also 'reflected how often Van Gogh painted outdoors in nature and some of the risks or struggles that may have come with that'.

Jane thought the online degree-level graduate courses just for art teachers were the most successful part of her website. Art teachers need graduate-level credits in professional development, but are so busy that they demand curricula specific to and adaptable to their schedules. The online courses provide a convenient way to gain the experience and credentials they need.

Obstacles and challenges

Interview responses indicated that technological issues that arose during the process of website maintenance and development were the common obstacles and challenges for these website owners. For instance, Kevin reported that he had to constantly switch hosting domains because of a variety of technical issues:

> *GeoPages* randomly decided that my site didn't relate to the content in the section it appeared so they booted the site. I then moved it to my own personal Internet host. They offered free hosting for customers. However, when the site was featured on the home page of *Netscape* (a popular site at the time), my site began getting thousands of visitors a minute. It knocked my entire Internet provider off-line. He called me and told me to take my business elsewhere. I then moved my site to free pages I got through *Apple Computer* at the mac.com domain. They then notified me that they were closing the service. I then moved the site to princetonol.com servers that also hosted the site for free. That worked well until *Google* began messing with their search algorithms and began

> penalizing the entire princetonol.com domain. I was told if I were ever to get my traffic back, I would have to move to my own domain.
>
> (Kevin)

Jane also mentioned the obstacle of technical issues. Jane and her business partner, as well as her husband David, founded and programmed the website by learning as they went along. All the designs and graphics were done in the house, which was a huge challenge for them. Joshua mentioned that the greatest difficulty for him was 'keeping abreast of the lightning speed of technological change on the Internet which necessitates constant upgrading of the site'. He was presently upgrading his entire site so that all pages were optimized and validated for HTML5.

Other obstacles may be time and financial issues. For Mike, the main obstacle was maintaining time as a full-time job as a web designer. It was a struggle for him to find enough time to create all the features his website needed to match his vision of what it should be. Although not stated by these interviewees, the costs for the maintenance of the websites, constantly looking for free web-hosting domains, including ads in their webpages, along with doing everything by themselves suggested that they may have had financial obstacles during the development of their websites.

How technology works

Although being helped occasionally, these website owners almost built their sites on their own. They all learned or were in the process of learning new technologies to maintain and develop their websites. Kevin, for example, had a background in education and advertising art, and taught himself web design. Joshua learned how to use a developing knowledge of HTML and JavaScript to program his website. He also mentioned that he would continually improve content and work for HTML5 validation and cross-browser compatibility.[5]

Jane reported that she utilized several novel and cool technologies to enhance the function of her website. For example, in the online course, she used the social media platform, Ning, where teachers can post their assignments, reply to their classmates and share their work. For online conferencing, she used the Instant Preventer, which allowed users to stream live video to several hundred art teachers instantly.

Mike used a 'grab bag' of technologies in order to create the game functionality, including Javascript, Java applets, Flash, jQuery and HTML5. He was working to have all of the games and site content re-written in HTML5 so that it could be cross-platformed and made device accessible, especially for mobile platforms, since 'some of the site's games and features, such as those done in Flash, are now not able to be played on some mobile devices'.

How technology can empower art learning and teaching

All website owners placed a high value on the important role technology was playing in art teaching and learning activities. Mike said that because of the web technology, an online platform could offer free content and resources that teachers can share with students through whiteboard or on individual computers in the classroom. Kevin also mentioned that without technology, such as the Web, HTML, CSS (Cascading Style Sheets), etc., his website would not exist. His website's existence allowed teachers from all over the world to learn from each other.

5. HTML5 is the latest revision of the HTML, a markup language for structuring and presenting content for the World Wide Web. Websites built by HTML5 can better support the latest multimedia while keeping contents on websites easily readable by a variety of Web browsers and platforms.

Jane said the reason that her online courses were so successful was that those art teachers who needed professional development had very tight schedules. Online courses offered them the most convenient and flexible choice. She also confirmed during her online teaching processes that technologies could allow teachers to communicate in alternative ways.

> So since they can't do a presentation in front of everyone, I have to record their voices, using a software called *Chirbit*. They will be able to speak to everyone, record the lessons, use technologies like *Prezi.* I mean, different ways of communicating than just writing a lesson plan, because that's all we've done before many times […] That it doesn't have to look like a traditional classroom. And I think technology allows everyone to participate. In the traditional classroom, you can sit in the back of the classroom lot of the time, say nothing, and get the grade. But in online class, every single person has to respond, has to talk. That's the only way we know they are participating. I think the interaction of the shyest and most talkative person is equal. I think the conversation can be even richer on online platform. So that's … how we use technology.
>
> (Jane)

Jane's comments further confirmed that technologies utilized in online learning provided the low-risk settings for personal learning and development. In online environments, the learner, who was usually reserved in classroom discussions, might feel freer to express an opinion online (Hird 2000). This suggested that technologies used in an online learning platform did not diminish interaction and communication, but actually encouraged and stimulated participation in alternative ways.

CONCLUSIONS AND IMPLICATIONS

To begin, the initial goal of this research was to inspire art educators to teach art utilizing technology and a variety of platforms. This research was just a start, and it had several limitations. The 70 websites I collected were only for the purpose of analysis of current online art resources. The list mentioned in this study was by no means an exhaustive one, and it was also impossible to collect an exhaustive list because of the rapid development, changes and appearances of new technologies and websites. Moreover, considering the direct relatedness of the research purpose, as well as the overload of websites and resources, to make the research process feasible and practical, all websites created by museums, as well as social media, such as Pinterest and Facebook, which contained art-related content, were excluded from the list. Geographically, the survey respondents were all from North America, and all websites were mainly English language based. The list did not include any art education-related websites that were built in languages other than English.

Many interesting findings emerged from the study. The volume of information available online has increased exponentially because of the rapid development of the Internet technology. Art educators, however, might believe that individuals who designed websites had little or no credentialed teaching expertise. They may worry that learners may not be able to distinguish between information and misinformation. Contrary to the belief that people who built websites did so for commercial purposes and that many resources found on websites were unreliable and lacked professionalism, my research

results revealed that designers of the highest-rated websites, as determined by the Extreme Learning Website Coding Scheme, are actually professionals. They earned art degrees from prestigious universities and gained years of teaching experience in the public school system. More importantly, all of them loved art and devoted themselves to art education. They had a strong passion to promote art and inspire art learners.

In most cases, these owners built the websites to provide the latest and greatest art teaching and learning resources, with considerable investment of their own time and money. Because of the rich teaching experiences they had, they knew what teachers needed. They may not place emphasis on the theory and foundation of art education, but they tried very hard to provide free services and resources, and other practical tips online, which could be utilized immediately in the real teaching and learning scenarios.

Technology empowered art learning on the online platform. Confirmed by the four interviewees' responses, the Web platform provided alternative ways for stimulating and encouraging people to learn. Technology helped extend learning far beyond the traditional time and place boundaries of the classroom, so that art lovers and educators could best take advantage of online resources. Technology also encouraged sharing and collaboration among peers, artists, art teachers and museum educators so that the website could be viewed as an electronic library.

Technology could hinder the improvement of these art teaching and learning websites. The interviewees reported they were more art educators than computer programmers; in most cases they worked alone on the maintenance and development processes, and lacked professional technical support to continue their websites' further development. Although they might have many innovative ideas to help improve art learning online, those ideas were difficult to implement because the builders lacked some of the technical skills.

On the other hand, lack of financial support may hinder further development of these websites. The interviewees indicated that they built these sites simply because they enjoyed doing this. Their main goal was to promote art teaching and learning, but not for commercial reasons. One interviewee also mentioned that he needed to include the ads to supplement his income so as to maintain the site.

The popularity of art teaching and learning websites indicated by site-visit statistics and educators' high regard towards these sites evidenced in this study suggested the possibility that these learning websites could strongly affect current and future art education practices. Art educators should begin to fathom the potential of online art learning and be open to the selection of online resources using, for example, the Extreme Learning Website Coding Scheme and the websites referenced in this article. The findings of the present study can also address many audiences, including art education administrators, art instructors, instructional designers, art students and researchers.

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