Fearless, playful and connected:
Empowering teacher-librarians through an exploration of Web 2.0

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Abstract
This paper presents findings from a graduate-level required class for teacher-librarians in Web 2.0. It provides a rich description of how teachers and teacher-librarians are using Web 2.0 technologies in their personal, teaching and learning, and professional development. No longer are they consumers of Web 2.0 but they are creators and sharers of new content on the Internet. There was a much more balanced use of Web 2.0 after the class – many of the teachers and teacher-librarians had never used a Web 2.0 tool in their personal, teaching or professional life before the class. Teachers and teacher-librarians who completed the Web 2.0 class saw themselves as technology leaders in their schools and districts.

Introduction
In the 21st century, our young people bring their experiences, skills and questions about a variety of web-based technologies and video games to school (see for example, Richardson, 2006; Rosenfeld & Loertscher, 2007). Teachers are, according to Solomon and Schrum (2007) "well-meaning adults who have to work at being comfortable with technology" (p. 26).

To be effective educators in the 21st century, teacher-librarians need to be familiar and comfortable with new technologies. Today's new technologies include Web 2.0 (and soon Web 3.0) which are the web-based tools that are readily available, often free, and used to communicate, collaborate and create. Blogs, wikis, photo and video sharing sites, digital storytelling sites and social networking (e.g. Facebook or MySpace) are all examples of Web 2.0 technologies. As Solomon and Schrum (2007) state, "we can take advantage of the features that new tools offer and tap into students' natural affinity for these tools in order to create learning experiences that expand their worldview and enhance what they learn" (p. 24). Teacher-librarians, as school leaders in the area of technology in the 21st century, need to be fearless, playful and connected.

As school leaders who work with all teachers and students, teacher-librarians are well positioned to take on technology integration leadership roles. According to Everhart, Mardis and Johnston (2010), highly certified teacher-librarians "felt strong commitments to and experienced success with technology leadership with students to a great extent and with teachers to a lesser, but not insignificant, extent" (p.12). On the other hand, according to Hanson-Baldauf and Hassell (2007), students enrolled in school library media certification programs were not "adequately prepared

for the task of using and integrating information and communication technologies into their teaching" (p. 8). How then, do we prepare teacher-librarians to be school leaders in technology integration?

This paper will present a brief overview of the content and pedagogy of an online graduate-level class for teacher-librarians in Web 2.0 technologies. This course provides graduate students with the opportunity to explore RSS feeds, social bookmarking, wikis, social networking, photo, video and multimedia file sharing, and podcasting. Teacher-librarians blog about their experiences playing with these Web 2.0 technologies and discuss the process of learning how to use them and consider the implications of these tools for teaching and learning.

The purpose of the study was to understand the impact of a Web 2.0 course on the personal, teaching, and professional lives of teachers and teacher-librarians. The authors were also interested in ideas for further professional development, and implications for competencies and curriculum for teacher-librarianship education. The research project based on this course examined the following questions:

1. How effective is a graduate-level course in helping teachers and teacher-librarians learn about, critically evaluate, and integrate new Web 2.0 technologies?

2. What are the knowledge, skills, and attributes that these teachers and teacher-librarians develop as a result of undertaking this inquiry?

3. Which of the Web 2.0 technologies introduced in the course continue to be used by the teachers and teacher-librarians?

4. How are teachers and teacher-librarians using these tools in their own teaching, learning, professional development and personal lives?

Review of the Literature
Leadership Role of the Teacher-Librarian
The *2010 ALA/AASL Standards for Initial Preparation of School Librarians* present clear guidelines for education programs. While these standards do not govern Canada, they do inform the programs of many institutions preparing teacher-librarians/school librarians around the world. There is no standard that deals directly with information and communication technologies, yet the standards are clear in their call for school librarians to develop in their students 21st century skills and multiple literacies and to provide access to information in all formats (p. 55-56). Everhart, Mardis, and Johnston (2010) surveyed National Board Certified teacher-librarians in the United States and found that a majority of these teacher librarians were "fully or substantially involved in collaborating with teachers to use technology in their instruction" (p. 7), "fully or substantially involved in fostering an information rich environment where learners can explore their personal interests (p. 8), and "possessed the knowledge and confidence to act as technology leaders" (p.9).

Technology Integration and Teachers
The work of the *Apple Classrooms of Tomorrow* (ACOT) has provided the foundation for thinking about how teachers learn to integrate technology into their teaching. The five-stages are:
- Entry - learning basic skills of technology

- Adoption - thinking about how to integrate the technology into teaching
- Adaptation - integrating the technology into their teaching
- Appropriation - understanding technology and using it effortlessly
- Invention - experimenting with technology to use it in new ways. (Dwyer, Ringstaff and Sandholtz, 1991)

In the case of the Teacher-Librarianship by Distance Learning (TLDL) program, we are interested in moving our teacher-librarians to the adaptation and appropriation stages while in the Master of Education program.

A review of the literature on how teachers or teacher-librarians are learning to use Web 2.0 in their classrooms found very little research on the topic, although more has been written from a professional or practical perspective. Oliver (2007) reports on a redesign of a graduate-level technology integration course and some student feedback is included in this article. Wright and Wilson (2007) also discuss the design of a master technology teacher program. Neither of these articles are research but focus on the professional and practical issues related to this kind of course. A study by Groth, Dunlap, & Kidd (2007) looked at pre-service teachers, university instructors, and technology education. In this study, the technology was integrated into a curriculum course, rather than as a stand-alone technology course. The researchers found that modelling, support, and practical applications of technology "in an atmosphere that fostered exploration and reduced the fear of failure" (p. 381) were instrumental in changing instructional practice. University instructors must strive toward exemplary technology integration in pre-service classes in order to prepare educators to effectively integrate technology into their classrooms.

On the other hand, research in the area of technology integration in schools and by teachers is vast. Studies have provided a list of factors that can affect the use of technology in schools. Levin and Wadmany (2008), found that "teachers' training courses, workshops, and support session monitoring should be coordinated and sustained over time to empower teachers and show them what they need to know and what they can achieve" (p. 259). The researchers also found that training by authorities is only one part of a professional development plan. There is a need for formal training at early stages; however, at subsequent stages in their professional growth, they will require educational opportunities that facilitate collaboration with colleagues on authentic routine classroom issues as well as personal and self-inquiry accompanied by mentorship, sometimes in addition to, but mainly instead of, authoritative training. (p. 259)

Further research on professional development for technology integration highlights other factors including convenient access to computers, appropriate infrastructure, thoughtful planning for the use of technology and exposing teachers to using technology as a productivity tool (Hope, 1998; Smerdon et al., 2000). Leadership and a strong sense of school needs are also key to the successful integration of technology (Hardy, 1998). Sherry, Billig, Tavalin, and Gibson (2000) highlight the importance of guidance from specialist mentors and online resources while Zhao & Frank (2003) acknowledge the challenge of the changing nature of the technology itself. Challenges may also include teacher burnout, lack of time to learn and explore new technologies, and the way staff development is offered and supported in schools and school districts (Weikart & Marrapodi, 1999).

Murugaiah, Azman, Ya'acob, and Thang (2010) found that blogging was an excellent way for teachers to develop ICT competence as well as providing an opportunity to "participate in a community of practice" (p. 73). This community allowed the participants to share their opinions on the challenges and opportunities of technology integration. Wright (2010) also found that developing ICT competence was the "first step in successful classroom technology integration" (p. 145). As teachers become more comfortable with technology, they often become the "'go to' person for questions and ideas regarding technology integration" (p. 145). The benefits of developing teachers technology integration skills also included being better able to discuss and employ strategies to help students become more aware of ethical issues related to technology use (p. 145).

Hughes and Ooms (2004) used a content-based technology inquiry group to look at issues related to technology integration in a school. They used a three-step approach: "defining the technology inquiry groups identity and purpose; reviewing inquiry groups purpose and identifying technology inquiries; and initiation of technology inquiries (pp. 402-405). They found that when teachers are working in one school it is helpful to have someone from outside the school to act as "a facilitator or change agent who is more knowledgeable about the technological innovations than the group participants" (p. 408).

Buckenmeyer (2010) found that "attitude toward technology was found to be the strongest predictor of teacher technology adoption and use, while having available resources and support was the most powerful predictor for stage of adoption" (p. 33).

Description of the Case
The Teacher-Librarianship by Distance Learning (TLDL) program at the University of Alberta has been providing online educational opportunities for teachers and teacher-librarians for almost 15 years. To be accepted into the Master of Education program, students need to be qualified teachers (Bachelor of Education degree) and have a minimum of one year of successful teaching experience. Most of the students in the program are already working in school libraries and come into the program to gain the knowledge and skills necessary to build successful school library programs. A few students every year come into the program wanting to be teacher-librarians but not working in a library. This is a drastic shift from twenty years ago when the majority of students were not working in school libraries when they were registered in teacher-librarianship education programs.

As an online program, technology is woven into the fabric of each course, with students completing all of their course work and assignments online.

The Web 2.0 course has been taught in almost every term since the first iteration of the course in Winter 2008. More than 100 students have taken the course in that time, including students from other programs within the Faculty of Education. The main assignment is a series of blog posts on different Web 2.0 technologies. Students write a weekly blog post on the following topics:

- Introductory blog - Introduce yourself and set up your blog - comment on the process of doing this, the blog publishing tool you chose and why
- Blog # 1 - Explore photo sharing sites - such as Flicker or Picasso (or others)
- Blog # 2 - Explore YouTube and Teacher Tube and other video sharing sites
- Blog # 3 - Explore social bookmarking sites - such as Diigo, Delicious and Evernote (watch "Social Bookmarking in Plain English" on YouTube for a great overview)

- Blog # 4 - Explore podcasting (and create a podcast to post on your blog)
- Blog # 5 - Explore Wikis (watch "Wikis in Plain English" on YouTube for a great overview)
- Blog # 6 - Explore multimedia sharing / mashup sites - and Voicethread or Animoto
- Blog # 7 - Explore social networking sites
- Blog #8 - Explore Twitter
- Blog # 9 - Explore blogging and blogs for professional development (including exploration of RSS & blog aggregators)
- Final Reflection

Methodology

Sixty students (teachers and teacher-librarians) who were students at the University of Alberta were contacted by email and asked to complete an online survey about their experiences before and after completing a class in Web 2.0. Thirty-four students responded. Questions allowed respondents to check off Web 2.0 technologies used before and after the class in their personal, teaching and professional lives and then to provide further ideas, stories, and examples in open-ended questions. The survey results were analyzed, looking for common themes and trends that emerged across questions and throughout the general comments (Bogdan & Biklen, 1992; Miles & Huberman, 1998). The data are presented using representative quotes from the blogs to support the patterns and themes.

Findings

Taking a class that encouraged students to play with and explore Web 2.0 technologies changed the teachers and teacher librarians in this study both personally and professionally. The first graph below demonstrates the personal use changes from before and after the class. Before the class, seven participants had never used a Web 2.0 tool for personal reasons while the rest had used one or more of the most popular tools - Facebook, blogs, YouTube, and photo sharing sites.
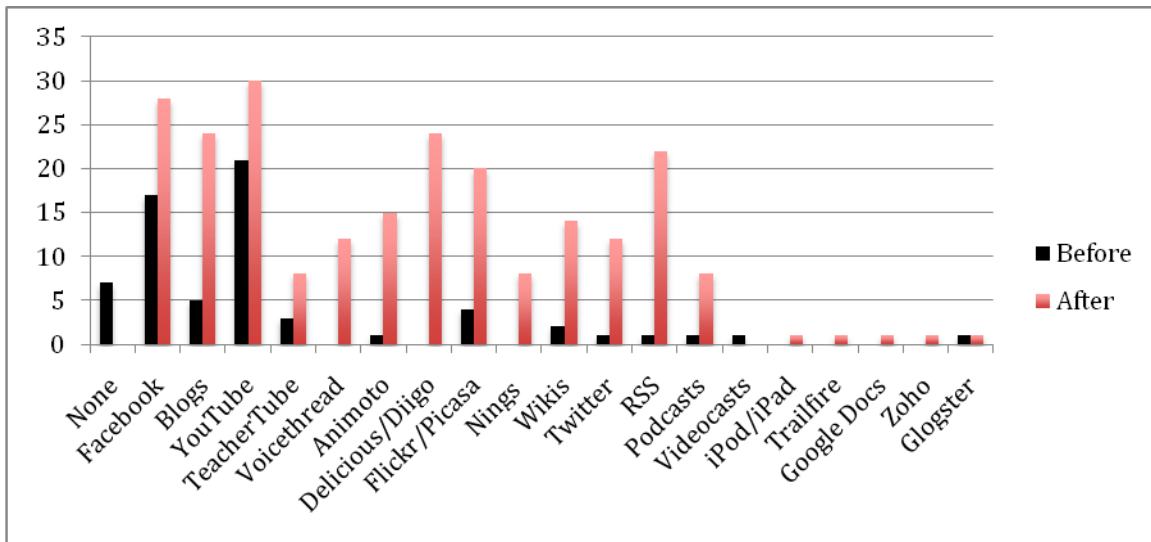

Figure 1. Use of Web 2.0 for Personal Reasons Before and after Class

After the class, one participant stated, ""My daughter and I edit her school assignments together (in real time) on docs. I create memories of family trips and pets on Animoto. I use igoogle as my computer homepage." Another participant wrote, ""Facebook - stay in touch with friends & family and share photos, videos. Use Facebook as network to share Minor Hockey news, events,

activities, etc. Wiki's & Blogs - keep up to date with personal interests. Podcasts - through itunes our family listens to different podcasts about sports, music and other interests. Our kids also listen to stories. YouTube & TeacherTube - continue to use it for personal enjoyment/interests and to share video of our kids with family & friends. TeacherTube - always checking for anything new and interesting. Animoto - created a video for my husband for Father's Day, my daughter can now also create one. Voicethread - used a particular family photo with lots of history and emotion behind it and had everyone in it comment on how they felt that day. Family was quite thankful for it. Delicious - I use it everyday to bookmark anything I am interested in or want to read again, from recipes to skating drills to articles for school. My favourite web 2.0 tool. RSS - use this to keep up to date with all the blogs, wikis, etc. I belong to."

Another participant shared ""When I log on to any computer, the first thing I do is open Google Docs. Then I open a document called Web 2.0 technologies. I have links to all of the tools I use with Web 2.0. I check my email, visit Twitter, check in with my Google Reader, go to my two university accounts all from that document. I still use Facebook to catch up on friends and family news (my use of Facebook has not really changed). I still post rarely.   I read many blog posts for personal interest (Crib Chronicles) and participated in the voting for Canadian blogs this past year. I watch YouTube videos for enjoyment. Naturally 7 were in town so I watched some of their videos both before and after attending their concert. I use Delicious to bookmark sites although it only works seamlessly on one of my computers (my laptop) so I am still a little frustrated with Delicious. I have had no time to explore Diigo which may work more effectively for me. I use Flickr to store and find photos. I recently discovered the Photography Critique Group on Flickr. Although I haven't yet submitted any photos or joined that group, I suggested to my daughter that she submit a photo. I have shared my Animoto video with friends and family. I follow many blogs in Google Reader. Some of them are educational tech blogs but some are personal blogs that I have found and like to read. I have used Twitter for many personal reasons. I have developed lists for people in my city and for my team's sports fans. During the Haiti earthquake, I was a Twitter volunteer who assisted in many ways. I use Google Docs to store all of my documents. I use it as a dumping ground for work in progress. Since the formatting isn't wonderful in Google Docs, I sometimes copy and paste to a Word Document for formatting before submitting an assignment. I could even work using Google Docs when I was on vacation since I can access it from any computer in the world."

Clearly from these few examples, one can see that the class has had a profound impact on the way these participants use Web 2.0 in their personal lives.

Study participants were also asked about their use of Web 2.0 technologies in their teaching practice before and after taking the Web 2.0 course. Their responses indicated that their professional use of Web 2.0 technologies changed in meaningful ways after completing the course. The chart below summarizes their responses.
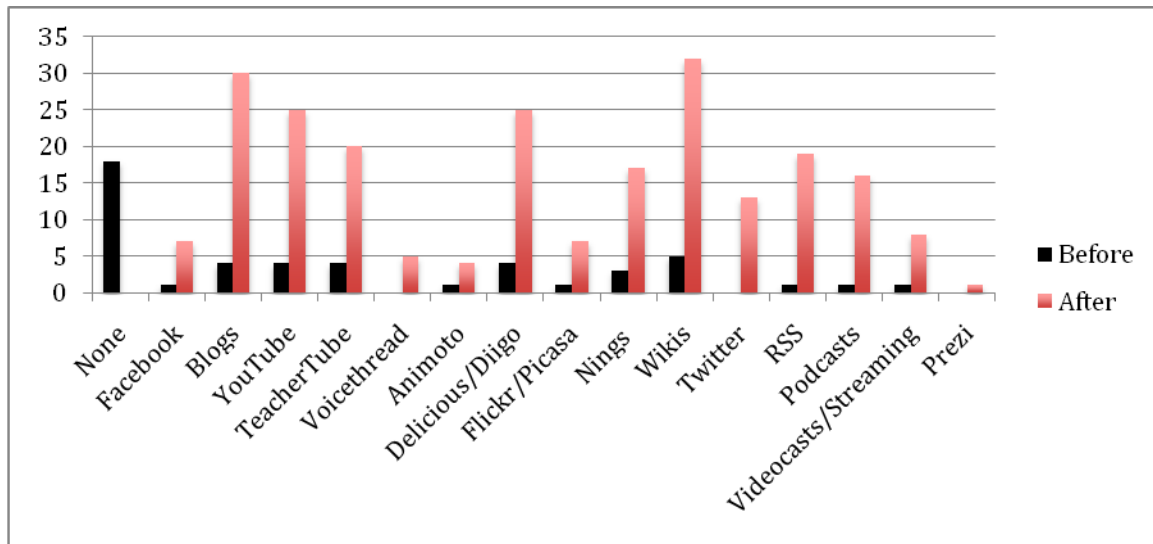
Figure 2. Use of Web 2.0 for Teaching Before and After Class

About one half of the participants had never used Web 2.0 in their teaching before taking the class. Of those that did use Web 2.0 in schools, one participant stated that (s)he had used "YouTube clips as a motivational set for certain lessons." Another participant indicated that (s)he had "used Glogster in my classroom to replace the typical poster assignment."

After the course, teachers and teacher-librarians were using a wide variety of the Web 2.0 technologies in their teaching. One participant stated that (s)he used wikis "with students on projects, have my own wiki to organize classroom lessons", blogs "to connect with students", YouTube/Teacher Tube for videos for classroom lessons", Delicious "to connect and share resources with other teachers", and Flickr for "Creative Commons photos for blog/wiki/website use."

Another participant wrote "I have successfully used blogs (21Classes and Edublogs) with students in grades 5 and 6 for the past two years as a weekly tool for students to communicate with parents and each other. Students created a wiki, but I didn't have much success with this. Have created very successful VoiceThreads with students based on a novel. A classroom Delicious account for students and teacher to add websites we use in class, or to add useful websites that students discover on their own time. When parents ask for extra homework, or work for vacations, I can refer them to the site and they can access sites that we have already successfully used in class. "

Another participant explained ""I've used and taught teachers and students how to use wikis, blogs, podcasts, voicethreads, animoto, delicious, and flickr in various subject areas across grades 7, 8, and 9. In the library for I Love to Read Month, the grade 7's made glogs, the grade 8's used Animoto and the grade 9's created weebly websites to promote their favorite books. I use Delicious extensively as so do my students and staff. It helps us to keep track of and share our favorite websites with each other. I've incorporated the use of cell phones into assignments in grade 8.I've used Skype to contact authors and connect with other teacher-librarians in the province. I have been asked to present at various workshops in our school division and province."

One participant working in a high school/adult education library setting wrote "I don't use Facebook but I protect its use for adult students in my library. I have created wikis for the library web pages. I moderate a school blog and teach blogging and commenting etiquette to grade 11 students. I post podcasts, videocasts and publish school-wide events through YouTube. I use TeacherTube as a teacher resource. Students learn to make short animoto videos after school outings and share photos on Flickr."

Finally, study participants were asked to reflect on how Web 2.0 technologies had impacted their professional learning or development. The chart below illustrates how these participants felt the Web 2.0 course had an impact on their professional development.
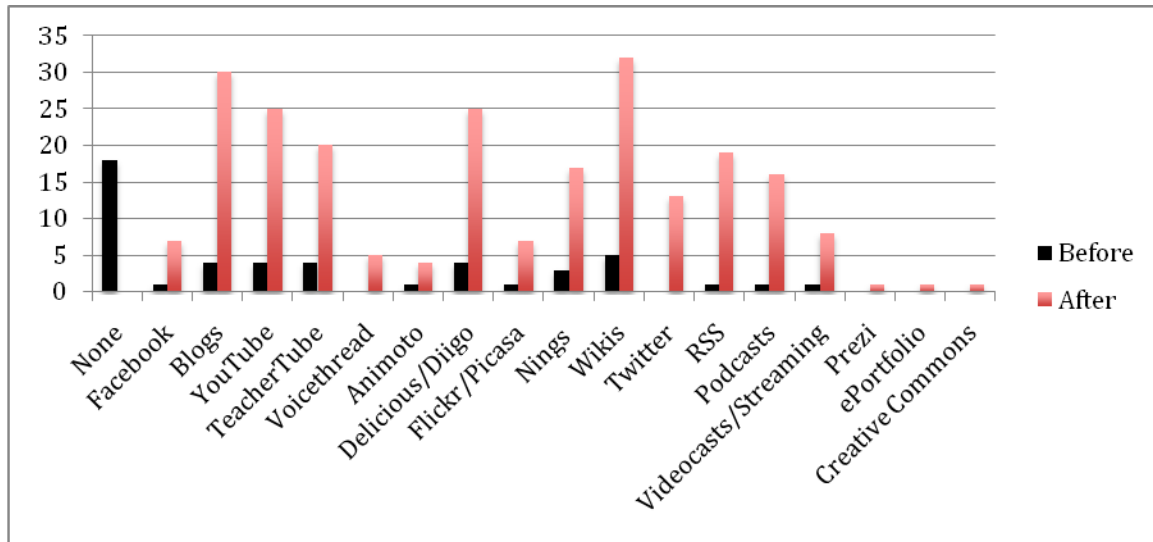

Figure 3. Use of Web 2.0 for Professional Learning Before and After Class

Half of the participants had never used Web 2.0 technologies for their professional learning. One person wrote "I continue to use RSS feeds on my customized iGoogle page and Twitter to keep abreast of professional development.- this is MY MOST FAVOURITE TOOL for PD - THANK YOU, THANK YOU, THANK YOU, JOANNE. I still consider myself more of a lurker but I have gained more PD on Twitter than anywhere else in the past two years. I use both Delcious and Diigo for bookmarking professional sites and follow individuals who have helped with my classes and again my own personal learning. Flickr and other photosharing sites are used to add to presentations. I am currently learning Prezi in hopes of sharing this with students as another option to PowerPoint." One participant loved Twitter while another commented (s)he "did not find time/benefits/success using Twitter as a professional resource."

Another participant wrote "I can't imagine how I learned anything without my Google Reader access to blogs and wikis from the 'edubloggers' and other professionals in the technology and education field. My Delicious account is brimming with my favorite sites and I love scoping out the bookmarks of fellow TL's and edutechies. I'm still new to Twitter but I'm catching on slowly. I'm more of a lurker than an active 'tweeter'."

A third participant wrote that (s)he continues to "listen to podcasts to keep current with updates to our Destiny library management system. Follow blogs for book reviews and current practices. Use the wiki as a collaborating tool with other teacher-librarians. Continue to use and share Voicethread with staff and students."

One participant commented that (s)he "uses Voicethread, blogs, videocasts and wikis for course presentations and keep an eye on my favorite blogs through my RSS reader."

Responses from the study participants highlight the role of Web 2.0 technologies in helping teachers and teacher-librarians access ongoing, on demand, professional development.

Looking to the Future: Living with Web 2.0
The final section of the survey asked participants to list the Web 2.0 technologies they felt they couldn't live without in terms of their personal lives, their work in teaching and learning, and in their professional learning. Participants could list more than one tool. The following graphs summarize all the answers with more than 2 responses.

The graphs indicate that in each area of the participants' lives they had different Web 2.0 technologies that were important to them. Facebook was popular for personal use, wikis and blogs for teaching and learning, and RSS and Twitter were popular for professional learning. What was common throughout was the use of a social bookmarking tool – Diigo or Delicious – to manage links and resources.

Study participants were also asked if Web 2.0 technologies were blocked in their schools or school districts. Out of 34 responses, only five participants indicated that none were blocked. According to participants, Facebook was blocked in 24 of their school districts, MySpace in 17, YouTube in 14 and Twitter in nine. Several participants indicated that creation tools such as Voicethread, Blogger, Animoto, and Wordle were also blocked. Three participants were not sure what was blocked in their school district or school

In the final section of the survey, participants were also asked to provide general comments about their experiences in the Web 2.0 class. These comments provided more feedback on the participants' experiences after the class. It was this feedback that made the researchers realize that the class was helping our teacher-librarians become leaders in their schools, school districts and provinces. For example, one participant wrote, "I was not very technologically knowledgeable prior to the Web 2.0 class. Now, I am much more involved in technology and learning about what it can do and how it can enhance learning. I am so enthusiastic about sharing technology with teachers and students and so enjoy how much they love it!"

Another participant shared that "Web 2.0 technologies have just become a way of life and teaching for me. I can't imagine what I did without them. They are integrated into everything I do both personally and professionally. I get frustrated when certain programs are blocked at school and I'm continually fighting to get that changed. Recently, I was successful in convincing the IT Department that Skype should be open for teachers to use in classrooms. The TLDL course that I took has placed me as a school leader in technology in our school, division and province."

One participant wrote "It's had a very positive impact in my teaching and personal lives. By being able to understand what the tools are, even if it was something I hadn' t physically tried yet, seemed to skyrocket me to being the tech 'expert' at the school. Lots of support and credibility because of my use of these tools. Personally it's been fun."

Some participants have found that their new knowledge and skills are difficult to put into practice in their school. "I have found that Web 2.0 technologies are more helpful to me in terms of my professional development and personal life. My school does not have enough resources for me to use technology on a regular basis. We do not have enough computers for every student and that

makes it harder to incorporate these tools in my teaching. I would like to use them more and hopefully we will get the resources to do that in the future." On this same theme, another participant commented, "Even though I found the pace of the course considering the content, very overwhelming, I really enjoyed learning about the various tools. I became quite passionate about (most of) them and was disappointed to not be able to use them right away."

Another participant shared "If I had to live without Web 2.0 technologies I would not fall apart but I would miss them. Since taking the course I have increased my tools usage tremendously. Where I would spend maybe 20 minutes a week on average using the little tools that I knew how to use, I now spend a good half hour a day if not more. Some days I could be playing around the whole day. I feel confident that even though I have not used some of the tools since the course I still will use them in the future such as Animoto, Voicethread, and Videocasts."

After the class, some students, not surprisingly, spent less time online with the Web 2.0 technologies. One participant shared, "The Web 2.0 course was full on, but I learned a lot and enjoy using many of these tools now. I've enjoyed sharing some tools with students, who had never heard of them and/or never used some of them. I love RSS for keeping up to date on news and blog postings (even though I have strayed from reading EVERY day!). I am hoping to offer some informal professional development sessions for our teachers next school year on Web 2.0....just some fun explorations that might spark further interest and use."

One student summed up the general feeling about the class stating, "Web tools are being implemented into my teaching more and more since taking the course and my confidence with them has grown tremendously."

The teachers and teacher-librarians who participated in this study will continue to be technology leaders in their schools, districts, and provinces. Their responses indicate that they will continue to play with new technology and encourage others to integrate technology into their personal and professional lives.

Discussion
This paper has reported on a research study that investigated teacher and teacher-librarians' experiences with Web 2.0 technologies after taking a graduate level course that encouraged them to play with technology and blog about their learning. Several research questions guided the study:

1. How effective is a graduate-level course in helping teachers and teacher-librarians learn about, critically evaluate, and integrate new Web 2.0 technologies?

2. What are the knowledge, skills, and attributes that these teachers and teacher-librarians develop as a result of undertaking this inquiry?

3. Which of the Web 2.0 technologies introduced in the course continue to be used by the teachers and teacher-librarians?

4. How are teachers and teacher-librarians using these tools in their own teaching, learning, professional development and personal lives?

We know that few of the participants had prior experience with Web 2.0 technologies before taking the course. Findings from the study indicate that participants had a much more balanced

understanding and use of Web 2.0 technologies after taking the class. Responses to the survey indicate, for example, that after completing the course, all participants were using a variety of tools in their personal and professional lives and were integrating tools into their teaching. In addition to transforming their personal and professional lives, participants indicated that there was a clear move from consumer of content (watching YouTube videos or listening to podcasts, for example) to being a creator and sharer of information (making videos, podcasts, sharing links, images, ideas, and blogging). Participants also were able to see and articulate the real benefits of collaboration and community in a Web 2.0 world, as indicated by their use of and engagement with Nings, blogs and blogging, RSS, wikis and Twitter.

Participants' responses to the survey questions, and in particular their general comments, indicate that as a result of taking the Web 2.0 course, these teachers and teacher-librarians were better prepared to identify the best tools for different parts of their lives. They could see that some Web 2.0 technologies were more appropriate for their personal use (e.g. Facebook), while others were more useful in classroom or library settings (e.g. wikis, Animoto, Voicethread, and blogging). Interestingly, study participants also identified how they were using some of these Web 2.0 technologies to further their own professional learning. For example, participants referred to using Twitter and following blogs through RSS feeds as highly useful for their ongoing professional development.

Of course, responses to the study also indicated that some were more "sold" on Web 2.0 generally than others. However, even for those participants who were still hesitant about some Web 2.0 technologies, their responses indicated that their confidence were greatly improved. By blogging regularly about their Web 2.0 explorations, as well as reading and commenting on the blogs of some of the leaders in our field, study participants were actively engaged in larger conversations about education, school libraries, and technology. The blogging assignment forced them into the public realm and encouraged them to engage in conversations with other members of their networks, while sharing their experiences and opinions on the challenges and opportunities of technology integration in schools and school libraries. This finding echoes the work of Murugaiah, Azman, Ya'acob, and Thang (2010), who found that blogging was an excellent way for teachers to develop ICT competence as well as providing them with an opportunity to "participate in a community of practice" (p. 73).

In addition to gaining confidence in their own abilities, findings from this study highlight that participants in the class developed competence in the areas of Web 2.0 technologies and technology in general. It is clear from the graphs and feedback that participants moved from no use of Web 2.0 to knowing and using a variety of tools. Their successful use of Web 2.0 technologies within the supportive environment of a class situation has lead them to integrate technology into their own classrooms and libraries and work with colleagues to collaborate on technology-related projects. Wright (2010) similarly found that developing ICT competence was the "first step in successful classroom technology integration" (p. 145).

We also saw school and district technology leadership with some of the study participants indicating they were the "go to" person in their school for technology integration and instruction (Wright, 2010, p. 145). Some of the study participants told us that as a result of taking the Web 2.0 course, they had been asked to provide workshops or professional development sessions for their schools, districts, or provincial associations. They also indicated that they were being seen as leaders by their colleagues and were seen as important teaching partners because of their new and "special skills". Perhaps more important, participants in this study were beginning to view themselves as leaders, taking on increased responsibilities in their schools and districts.

An unexpected finding from this study was that participants indicated that they were more aware of issues related to intellectual freedom and technology integration. Some participants mentioned, for example, that they were actively trying to change restrictive Internet policies and were fighting the filtering that exists in many of their schools. According to Wright (2010), this is one of the benefits of developing and encouraging teachers' technology integration skills. They are better able to discuss and employ strategies to help students become more aware of ethical issues related to technology use (p. 145).

These findings are similar to the work of Everhart, Mardis and Johnston (2010), who found that a large majority of National Board Certified school librarians were "fully or substantially involved in collaborating with teachers to use technology in their instruction (p. 7). Everhart, Mardis and Johnston also found that few of the National Board Certified school libraries were "substantially involved in providing technology training integral to the school's professional development plan" (p. 9). This study seems to indicate that study participants are more actively involved in providing technology professional development at the school level after completing the class.

Hanson-Baldauf and Hassell (2009) found that many of the school library media students in ALA and NCATE accredited programs "expressed frustration and argued for a more hands-on practical, purposeful, and authentic approach to instruction in learning to use and integrate these tools and applications" (p. 7). Their survey found that "the majority of the survey participants seem to be at the entry stage (learning the basic skills), especially in their familiarity and competency with emergent Web 2.0 technologies" (p. 9). These findings are in contrast to this study where a majority of the participants are at the adoption or adaption stage based on the survey responses.

A few participants indicated that the were unable to integrate technology into teaching because of a lack of computer resources in the school. While this is a challenge, the responses indicated that these study participants were glad to be engaging in professional development and see others acting as change agents. They can imagine moving toward that role in the school in the future. Buckenmeyer (2010) found that "attitude toward technology was found to be the strongest predictor of teacher technology adoption and use, while having available resources and support was the most powerful predictor for stage of adoption" (p. 33). While teaching the course, the instructors were aware that students had differing attitudes towards learning Web 2.0 technologies – it is a required course in the program. Those who were most willing to explore and learn have moved into being school and district technology leaders.

Conclusions

This graduate-level required class in Web 2.0 technologies helped teachers and teacher-librarians learn about, critically evaluate, and integrate new Web 2.0 technologies. The majority of the study participants indicated that they were at the adoption or adaptation stage of technology integration with a few of the participants indicating they were at the appropriation stage. Study participants are now familiar with a variety of Web 2.0 technologies that can be used for personal, teaching and learning and further professional development. The participants have developed confidence and competence in their technology skills. They have taken on leadership roles in terms of technology integration and are often seen as the "go to" person in their school for Web 2.0 technologies.

For personal use, Facebook and YouTube continue to be very popular with study participants. Wikis, blogs, Voicethread, Animoto, and Glogster are being integrated by the study participants into their teaching practices. For their personal learning networks and further professional development, RSS feeds, blogs, Twitter remain important parts of the study participants' lives. The most popular Web 2.0 technology is social bookmarking and the study participants indicate that they use either Diigo or Delicious to gather, share, organize bookmarks with fellow teachers and teacher-librarians and also with students. Perhaps it is not surprising that a wonderful organizational tool like Diigo is something that teacher-librarians really love. No more than three study participants were using social bookmarking before the class.

This study has provided a rich description of how teachers and teacher-librarians are using Web 2.0 technologies in their personal, teaching and learning, and professional development. No longer are they consumers of Web 2.0 but they are creators and sharers of new content on the Internet. This move from consumer to producer as learners also helped these study participants in thinking about teaching and learning with students in their schools and school libraries. They have truly joined the Web 2.0 world.

There was a much more balanced use of Web 2.0 after the class – many of the teachers and teacher-librarians had never used a Web 2.0 tool in their personal, teaching or professional life before the class. Teachers and teacher-librarians who completed the Web 2.0 class saw themselves as technology leaders in their schools and districts. They were asked to provide workshops for teachers and were seen by administrators as technology leaders. This led to a greater self-confidence and willingness to take risks with new and emerging technologies.

Three Key Learnings
- The majority of the study participants indicated that they were at the adoption or adaptation stage of technology integration with a few of the participants indicating they were at the appropriation stage.
- For personal use, Facebook and YouTube continue to be very popular with study participants. Wikis, blogs, Voicethread, Animoto, and Glogster are being integrated by the study participants into their teaching practices. For their personal learning networks and further professional development, RSS feeds, blogs, Twitter remain important parts of the study participants' lives.
- The most popular Web 2.0 technology is social bookmarking and the study participants indicate that they use either Diigo or Delicious to gather, share, organize bookmarks with fellow teachers and teacher-librarians and also with students.

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Statement of Originality

This statement certifies that the paper above is based upon original research undertaken by the author and that the paper was conceived and written by the author(s) alone and has not been published elsewhere. All information and ideas from others is referenced.