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**Using Web 2.0 Tools in the Secondary School Classroom:
Unexpected Student Learning, Evolving Teacher Identity, and
Emerging Pedagogical Issues**

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Abstract: This paper arises out of a small-scale research study into participant experience in the Advanced Broadband Enabled Learning (ABEL) program, and into the impact of ABEL's job-embedded professional learning program on their classroom practice. The paper explores how secondary school teachers in two large urban and suburban school boards in Southern Ontario have used such Web 2.0 tools and applications as blogs, wikis, podcasts, RSS feeds and discussion forums either alone or integrated into a course management system (Moodle) to create blended learning environments in their classrooms. The authors present data from the ABEL program's research report, and describe how secondary school teachers have used Web 2.0 tools and applications to meet their curriculum outcomes, and engage students in learning. The paper provides examples of how Web 2.0 and social networking tools have had a positive impact on ESL literacy, shaped student social attitudes and challenged stereotypes, redefined the roles that ABEL teachers assume vis-à-vis classroom practice, and raised new pedagogical issues about literacy and assessment.

Introduction: Research into the implementation of information communication technologies (ICT) in the secondary school classroom has shifted radically over the past decade as Web 2.0 tools and applications have become generally available and the complexity of the implementation process has become more apparent. Initial investigations into frequency of ICT use in the classroom and the school (Cuban, 2001) have given way to explorations of teacher theories about its contribution to learning (Deaney, Ruthven and Hennessy, 2004). These explorations include the development of theoretical scaffolds to categorize and investigate emerging teacher knowledge (Mishra and Koehler, 2006) and the recognition of the need to provide opportunities for professional dialogue so that teachers can be both reflective about past classroom practice and thoughtful and articulate about new pedagogies (Geijsel and Meijers, 2005). This evolution is mirrored in the ongoing research into the Advanced Broadband Enabled Learning (ABEL) program and its impact on teacher professional growth, conducted by the Institute for Research on Learning Technologies at York University in Toronto, Ontario, Canada.

ABEL is a proven program that leverages ICT including Web 2.0 tools and applications to develop, design and deliver job-embedded professional learning to teachers and teacher-leaders. The most recent research into the ABEL program, conducted in February 2007, reported on its impact on shaping student learning and teacher practice. The research focused on the impact of ABEL's professional learning program on teacher professional belief, attitude and classroom

practice. From this investigation there emerged some compelling outcomes specifically related to the impact that Web 2.0 tools, such as blogs, wikis, and other collaborative tools which ABEL teachers have incorporated directly into classroom lessons either as individual tools, or integrated into Moodle, a course management system. This direct impact on classroom practice is a result of their professional learning experiences. More importantly, it also reveals much that is valuable about unexpected student learning, evolving teacher identity and emerging pedagogical issues.

Overview of the Research: Numerous research studies attempt to describe and quantify the innovative changes that are taking place in the role of the teacher in the classroom, in classroom practice, and in professional learning as a result of ICT. These research studies are increasingly using interviews and case studies to capture rich data and highlight the sophisticated levels of implementation through which secondary school teachers who are integrating ICT into classroom practice are passing.

The perspective that the role of the teacher who has incorporated ICT to achieve blended learning in the classroom has shifted from that of direct instruction to that of coaching and guiding is an oversimplification of the transformation in teacher practice that has occurred over the past ten years. Taking a psycho-social perspective, Geijsel and Meijers (2005) suggest that the integration of technology into blended learning classrooms engages teachers in a dynamic confrontation between two paradigms, a direct instruction paradigm that is insufficient for preparing students for the twenty-first century and an alternate paradigm that places the focus much more strongly on student exploration and learning. They view the changes that such teachers undergo as a process of social construction that engages them in reflective practice because they cannot fully identify with new situations and exigencies, and assert that such teachers undertake a journey of personal and professional meaning-making that they call identity learning.

This dynamic confrontation is more concretely defined as a series of constraints and opportunities with which teachers who are integrating ICT into classroom practice constantly deal. Deaney, Ruthven, and Hennessy (2005) identify the forces that lead to teacher disequilibrium: lack of confidence and expertise in using ICT, tension between subject content, traditional pedagogical practices and ICT skills, reluctance to integrate ICT into classroom practice in a school culture that is non-collaborative and non-supportive, and the need to conform to external requirements in the form of educational policy and government expectations vis-à-vis curriculum and evaluation. At the same time, Hennessy, Ruthven, and Brindley (2005) identify key teacher perceptions about integrating ICT into classroom practice: improved student production and more efficient working processes, increased variety and appeal in classroom activities, broadened access to classroom resources and references, increased student motivation and confidence, greater pupil independence and peer support, and heightened higher-order subject thinking and learning. Dealing with the same research data, Deaney, Ruthven, and Brindley (2005) document these findings by providing concrete examples from Science, Mathematics, and English Studies in British secondary schools. Clearly these perceived advantages compel teachers to engage in 'identity learning' and directly impact professional practice.

One recent research project provides a conceptual framework to view the professional learning of teachers who are integrating ICT into classroom practice. Using their experience at Michigan State University, where they have been involved in a learning-technology-by-design experiment aimed in part at understanding teachers' development toward rich uses of technology in the classroom, Mishra and Koehler (Mishra and Koehler, 2006) argue that such teachers create a new type of knowledge generated by the dynamic intersections of technology, content, and pedagogy. Using a Venn diagram, they identify at the very core of the diagram itself, Technological Pedagogical Content Knowledge, or TPCK, as a new product of ICT integration into classroom

practice, and suggest that their framework provides a viable conceptual model for interpretation of teacher professional learning, decision making about teacher pre-service and discussion of, and future approaches to research into professional growth and classroom practice. This conceptual model suggests that teachers who are integrating ICT into classroom practice are engaged in a journey towards professional growth and clarity at a cognitive level as innovative and exciting as the process of social construction and personal and professional meaning-making that Geijsel and Meijers (2005) propose.

Three common themes, important to the ABEL program, emerge from this research. The first is that the classroom teacher plays a complex role in using ICT to shape the learning experiences of students and moving students towards greater engagement with learning and higher achievement. In addition, the subject requirements for courses in the secondary school continue to shape how teachers adapt ICT to their own needs as professionals in charge of student learning. And finally, as teachers articulate what Mishra and Koehler (2006) identify as TCPK they need to engage as professionals in professional learning communities. Hennessy, Ruthven and Brindley (2005) emphasize the strategic role that teachers will continue to play in integrating ICT into classroom practice, and make a plea for recognizing that teachers bring to bear in their use of ICT a plethora of professional issues that determine how ICT is employed for learning. Using the TPCK framework, Ferdig (2006) develops criteria for assessing the successful integration of ICT into classroom practice that recognizes teacher concerns about the effectiveness of the tool for student learning and its impact on student achievement. Sutherland, Armstrong, Burns, et al. (2004) also recognize the complexity of the new role of the teacher in the technologically rich classroom, and stress how important it is for teachers to orchestrate what they term professional knowledge communities. In order to be successful and to meet the criteria for successful integration of ICT in their classrooms, teachers must have opportunities to articulate concerns, share experiences, and discuss classroom practices in consciously created and deliberately focused professional learning communities whether real and within the school or virtual and through a portal. Using this research base, the ABEL program has constructed a professional learning program model that leverages ICT and is enhanced by Web 2.0 to provide teacher experiential learning that moves the learning from theory to practice.

The ABEL Program: The ABEL program in the Office of the Vice President Research and Innovation at York University in Toronto is a pan-Canadian program that uses its networks for knowledge sharing and collaboration and its professional learning program to transform teacher and faculty professional practice. ABEL follows a mandate to build a knowledge sharing and collaborative culture through technology-enhanced learning. ABEL provides a means for learner collaboration through professional services that advance the sharing of information (content) and expertise (pedagogy) and optimizes the use of communications technology. First reported on in a SITE paper (Owston, Wideman, Morbey, and Murphy, 2004), the program has retained its original structure, but added to its foundational goals factors such as scalability, capacity building, sustainability, and leadership. As Owston, Wideman, Moberly and Murphy reported in 2004, the program still

- maintains a learning platform that makes use of IP-based videoconferencing and other collaborative applications,
- delivers a large number of videoconference and video streaming events throughout the year,
- offers a range of technological tools, support and resources of value to teachers,
- offers an wide-range of professional learning opportunities including an annual summer institute,

- maintains its original implementation strategy that focuses on change management and innovative practice, and
- includes a research and evaluation focus for continuous improvement.

ABEL retains its original structure and purpose, and through continuous evaluation and reflection ensures that its approach to professional learning continues to reflect effective practice. ABEL leverages technology to deliver a proven job-embedded professional learning service that enhances teaching practice and improves student achievement. This is achieved through building collaborative learning communities, implementing blended learning environments for classrooms, schools and districts, using interactive web-based learning resources, developing sustainable inter-jurisdictional and inter-institutional collaboration, and understanding institutional change.

The ABEL program uses a variety of ICT, and in particular Web 2.0 applications to move professional learning into the classroom, supporting just-in-time situated learning. This experiential model demonstrates for the participants the intersection of the content, pedagogy and technology for professional growth and learning. Teacher and faculty reflect upon their own professional growth experiences within this learning model and then develop learning experiences for students that demonstrate effective ICT instructional practice. This is achieved by

- offering collaborative workspaces for teachers/faculty to support their learning and to engage through a collective focus and intelligence,
- providing pedagogical expertise that is available either synchronously or asynchronously to support the teacher and faculty professional learning goals. Interactive resources and content are also available,
- providing access to Web 2.0 tools and applications that encourage and promote active participation in learning,
- designing job-embedded learning delivered through videoconferencing, video streaming, using Web 2.0 tools such as blogs, wikis, Podcasting, and promoting job-sharing, mentoring, coaching and opportunities for expert-in-the-classroom (For example, in order to leverage inter-institutional collaboration the Education Faculty at York University is available to support the teachers in the classroom along with subject matter experts and community expertise and support.)
- providing a program structure that supports pedagogy, technical and content knowledge and that is available for the individual participants and site-based teams as they participate in the professional growth programs and then move to apply their learning to their own classroom practices. The support is distributed across program partner institutions, and is customized for local needs. It is user-centric, open, distributed and contributes to a culture of sharing and re-use.
- offering annual Summer Institutes that provide opportunities for face-to-face collaboration, technology training, pedagogical understanding and content development that bring together teachers, administrators, students and university faculty, and
- ensuring research and evaluation informs the ongoing evolution of ABEL's vision of job-embedded learning. This has been guided by the on-going research conducted at the Institute for Research on Learning Technologies (IRLT) at York University.

This combination of blended learning design and job-embedded approach has had significant impact on the ABEL participants as they actively support the innovative implementation of technology in the classroom.

The ABEL Research Report and Teacher Use of Web 2.0 Tools: A key component of its approach to the development of the professional learning program and on-going support for

innovative ICT integration into classroom practice is ABEL's close attention to research and into the results such research reveals. Through York University, ABEL liaises with the Institute for Research on Learning Technologies (IRLT), and many aspects of the ABEL program have been guided by the Institute's work. The most recent research into the use of ABEL tools and resources in classrooms in two large multicultural and multi-racial school districts in Southern Ontario (Wideman, 2007) presents the findings of a small-scale experience evaluation of the Advanced Broadband Enabled Learning program conducted by IRLT in the late spring of 2007. The study design incorporated two elements: a statistical survey of teachers active in the ABEL program, and individual interviews with eight teachers who had been nominated for their exemplary use of ABEL tools and resources, many of them Web 2.0 applications, over the 2006-2007 school year. The main goal of the study was to develop an understanding of participating teachers' experiences with and perspectives on the ABEL program and its impacts on teaching and learning during the 2006 - 2007 school year.

Statistical Data from the Research: The results of the survey suggest that a substantial majority of teachers surveyed have incorporated more extensive use of constructivist, inquiry-driven, and student-centred strategies in their teaching as a result of the ABEL professional learning program into classroom practice, strategies that were facilitated by the use of collaborative tools. The statistics from the research also reveal the full extent to which the ABEL experience supports previous investigations into the integration of ICT in the areas of change in teacher practice, use of Web 2.0 tools, the impact of ICT use on student behaviour and academic achievement, and the effects of the ABEL professional learning program on teacher collaboration and professional growth. In terms of teacher practice,

- 93 % of teachers indicated that they sought out new ways of teaching topics and content either somewhat more frequently or much more frequently,
- 91% of teachers stated that that had to rethink some of their ideas about teaching and learning somewhat more frequently,
- 69% said that they provided opportunities for students to take the initiative in their learning more frequently or much more frequently,
- 68% of teachers agreed that they put greater emphasis on engaging students' interest in their academic work more frequently or much more frequently, and
- 64% of teachers said that they have students work collaboratively to jointly develop projects, solve problems more frequently or much more frequently.

In terms of the use of Web 2.0 tools,

- 64% of teachers indicated that they had used a course management system such as Moodle to provide access to learning materials and to post and receive assignments from once per week to once or twice during the year,
- 56% of teachers stated that they had used blogs with their students from once per week to once or twice during the year,
- 51% of teachers stated that they had used videoconferencing (VSee or Adobe Connect/Breeze) with their students from once per week to once or twice during the year, and
- 40% of teachers indicated that they had used wikis with their students from once per week to once or twice during the year.

With regard to student behaviour and academic achievement,

- 76% of teachers found that students tended to be more engaged and on task when they made use of ABEL resources and the Web 2.0 tools that ABEL made available,
- 76% of teachers recognized that they engaged students in a wider range of learning when they used ABEL resources and the Web 2.0 tools that ABEL made available,
- 66% of teachers stated that agreed that the quality of student work had been higher or remained constant overall as a result of the use of ABEL resources and the Web 2.0 tools that ABEL made available,
- 55% of teachers agreed that students took more initiative and demonstrated better self-management when using ABEL resources and the Web 2.0 tools that ABEL made available, and
- 40% of teachers indicated that less time had to be devoted to classroom management issues when students were involved in ABEL resources and the Web 2.0 tools that ABEL made available.

In terms of teacher collaboration and professional learning,

- 80% of teachers agreed or strongly agreed that they had learned from the experiences of other teachers somewhat more frequently or much more frequently,
- 78% of teachers stated that the use of ABEL resources and the Web 2.0 tools that ABEL made available had made their professional lives more rewarding,
- 78% of teachers stated that they collaborated with other teachers to develop teaching strategies somewhat more frequently or much more frequently,
- 76% of teachers agreed that ABEL resources and the Web 2.0 tools that ABEL made available had provided unique opportunities for their students to learn that they would not otherwise have received,
- 67% of teachers agreed or strongly agreed that the content of their lessons was deeper when they used ABEL resources and the Web 2.0 tools that ABEL made available for use in their classrooms,
- 59% of teachers revealed that they had collaborated with other teachers to develop new curriculum,
- 56% revealed that they had collaborated with other teachers in planning and carrying out classroom projects and activities, and
- 42% of teachers agreed or strongly agreed that their use of ABEL resources and the Web 2.0 tools that ABEL made available had changed their perceptions of students and the nature of their achievements.

This last statistic is particularly significant when we examine the comments of teachers who were interviewed in May of 2007 about their use of technology in their classrooms. When these teachers were asked to describe in detail two ABEL-facilitated teaching projects or activities they considered most significant in terms of student outcomes, their own professional growth, and shifts in their teaching, they selected collaborative student projects using ABEL resources, essentially Web 2.0 tools, blogs, wikis, podcasts and other collaborative tools which they had incorporated as individual tools directly into classroom practice over an extended period of time or integrated into Moodle, a course management system.

The Teachers and their Projects: The secondary school teachers interviewed were a heterogeneous group in terms of their subject specialties, their prior technology expertise, and their years of experience in the ABEL program. As a result of involvement in the ABEL professional learning program and its job-embedded support the teachers are now integrating ICT into computer science or technology classes, business and co-op courses, physics classes, English

and French classes, and design and ICT courses. In the documented case studies there was a great range in their self-reported technical proficiency with digital technologies; all had at least several years of teaching experience, and a large majority had only started participating in the ABEL program in the past year. The schools where they taught were mostly urban and suburban with catchment neighbourhoods that had SES levels that ranged from working to upper middle class, and several teachers had substantial numbers of ESL and first-generation immigrant students in their classes. The majority of their students had computer and Internet access at home.

The projects that six teachers choose to highlight in their interviews will serve to reflect the general, constructivist, inquiry-driven and student-centred direction revealed by the statistical data.

- Sarah used Moodle as a course management system in a Grade 11 Physics course. She moved course materials and outlines into Moodle, provided links to United Streaming and humorous YouTube videos for students to discuss on an online forum, had students photograph a physics concept as embodied in a phenomenon of their choice, and had her students make extensive use of an online discussion forum. She was particularly pleased that she was able to configure Moodle so that only she could view draft versions of student assignments and post private suggestions for improvement before students posted them in the class forum for peer review.
- Carl also used Moodle as a course management system in a Grade 11 Physics course. When he was made ABEL co-coordinator for his school in the fall of 2006, he set up the course Moodle into which he incorporated discussion forums and student blogs. He discovered after he began using Moodle that it provided a major pedagogical advantage over a course web page in that it permitted much greater interactivity, making it possible for students to post and discuss problems and solutions rather than simply access course information and resources. He was able to convince his students to stop using instant messaging when they sought help with a homework problem so that others could benefit from and contribute to ensuring discussions when they had the same problem.
- Val, an English and French teacher and a colleague within her department took advantage of student interest in iPods by incorporating them into Moodles for Grade 11 and Grade 12 English and French courses. They created French blogs so that students could respond to French songs related to themes in the French novels they were teaching in Grades 11 and 12 French classes, and English blogs so that they students could answer questions on audio versions of Shakespearean plays they were teaching in their Grade 11 and Grade 12 English classes. They later recorded lesson Podcasts and incorporated student discussions forums in their Moodles so that students could view lessons missed and respond to peer submissions of poetry that they had written. They also invited their students to create and post Podcasts of their own on topics relevant to the course content in their French classes. They initially viewed the use of the Moodles as a means of promoting the development of self-management skills because assignments and lessons were available to students who for a variety of reasons were absent from classes, but were surprised and pleased by the degree of interactivity and language practice Web 2.0 tools provided.
- Lindsay, a social science teacher, created a structured blog as a course management system for a Grade 12 course on psychology, sociology and anthropology, and collaborated with a teacher in New Brunswick on a Grade 11 class-to-class sociology project using Breeze and student wikis. The students in her Grade 12 course had access to the blog both on school time and at home, and used it to make peer comments on documents that they created, in this case biographical summaries and annotated

- bibliographies. In a class-to-class world religions project, students from Ontario and New Brunswick worked in inter-provincial teams on collaborative projects, doing research on data from StatsCan, commenting on posted journal articles, and using the wiki to discuss and construct a survey intended to identify social attitudes and stereotypes.
- Vina, a business and computer science teacher also used blogs in five courses throughout the year. In a Grade 11 accounting course she asked her students to respond to questions on case studies and to ask other students about their own responses to the questions. In her Grade 12 computer science course, students had to post their draft presentations on a topic such as network architecture in advance of the presentation date so that they could be reviewed, and commented on prior to presenting them, thus allowing for appropriate revision and editing. Vina thought that this peer review helped improve the general quality of the presentations because it generated questions to which students had to respond, and discussions for which new information had to be researched.
 - Susan, a technology, graphics, video and communications teacher, developed communication technology blogs for all of her junior and senior courses. It was her intent to provide a resource for guided Internet searching and to “to compete with MySpace and Facebook for student attention”. She posted excerpts from articles that she wanted students to read and respond to, and incorporated the time provided for reading and response into the school’s daily reading program. She also used the blog to post links to interesting exemplars of design and media communication principles that she taught in her courses, asked students to comment on them and encouraged them to seek out and post links to interesting exemplars that they could find.

Unexpected Student Learning: As teachers who were interviewed integrated Web 2.0 tools into their courses and assessed their impact on student learning and student achievement, they all confirmed what the research has already indicated: increased student engagement with subject content, greater responsibility of their own learning, deeper investigations of issues, and improved student assignments. However, those teachers in secondary schools where there were a large ESL students and a substantial number of first-generation immigrants were both surprised and gratified by the impact of their use of Web 2.0 tools on written literacy and student attitudes.

- Susan discovered that her ESL students, many of whom had real difficulties with oral and written English, responded much more frequently to the postings on her communication technology blogs than they would have done in more conventional class discussions, and that their commentary overall was more grammatical, more intelligent and more carefully thought through. She ascribed this improvement to two factors: the availability of technological translators and a more meaningful sense of audience as they engaged with their peers. Vina too found that her ESL students responded more frequently to postings in the blogs she set up, because she believed that the blog postings, which she had arranged to be anonymous, allowed for greater freedom of student expression. It also afforded her an opportunity to identify ESL difficulties and address them in a sensitive manner when they appeared anonymously in the blog.
- Lindsay and the teacher with whom she collaborated in St Stephen’s, New Brunswick discovered that their Grade 11 students were engaged in a stunning cross-cultural experience as they composed their surveys on social attitudes and stereotypes on the wikis they had set up. Lindsay’s Grade 11 class was culturally, religiously, linguistically, and racially diverse, while the class in St. Stephen’s was far more homogeneous in its cultural, religious, linguistic and racial make-up. Their students learned the etiquette of communicating with other Canadian citizens from very different backgrounds, discovered

that they had to go beyond instant messaging and engage in collaborative dialogue, realized that they had to think very carefully about appropriate language and correct spelling so as not to give offence and to create impressions of serious academic activity, and express a mature and professional attitude towards each other and the survey in their interactive work in their wikis. Both teachers agreed that using Adobe Connect/Breeze to introduce students to each other and communicate as collaborative groups composing the surveys, “put a human face” on the activities and helped students to understand that Canada truly embraced a diverse citizenry. As the project is ongoing, both teachers say they are looking forward to the final phase of conducting the surveys with respondents, graphing, analyzing and writing up the results, and discussing with students what the data means, and how it is similar and different for both regions.

Evolving Teacher Identity: These interviews also reveal that teacher roles in the ABEL classroom have changed in a more complex manner than simply shifting from direct instruction to coaching, guiding or indeed mediating between the technology and the student. Web 2.0 tools and application are essentially neutral in terms of course content and, as their use in the ABEL program in 2006-2007 indicates, infinitely capable of different pedagogical uses in the classroom. In determining how best to use Web 2.0 tools to achieve course outcomes, engage students in learning, and ensure academic achievement, all of the teachers interviewed articulated and demonstrated the instructional intelligence that they have developed through ABEL professional learning, teacher training and experience over the years.

Essentially in their use of Web 2.0 tools and applications, they are shifting the focus of direct instruction from conveying content to instructing students on the use of the new technologies, on appropriate etiquette and language, and on expectations for detailed and extended dialogue that promotes higher order thinking in their interactions and their assignments. Students in general may know YouTube and FaceBook and be able to instant message, but many of the teachers interviewed pointed out that students need instruction on the appropriate and effective use of wikis, blogs, and Moodles if they are to use these tools for deep learning.

At the same time as these teachers have engaged in direct instruction in these areas, they have also created technologically rich learning environments, virtual spaces within which their students can pursue deep issues, dialogue productively with peers, engage meaningfully with real audiences, and begin to take responsibility for their own learning. As such these teachers have multiple roles: they are extenders of the boundaries of subject content, they are crafters of pedagogical strategy, and they are refiners of their own expertise in using technology.

In a very basic sense Geijsel and Meijers (2005) are correct when they assert that the change that these teachers are undergoing is a social construction that engages them in reflective practice because they cannot fully identify with new situations and exigencies, and say that such teachers undertake a journey of personal and professional meaning-making that they call identity learning. Certainly the blended learning environments they are creating for their students are social constructions, and the professional growth they are experiencing is pushing the boundaries of their knowledge and bringing their instructional intelligence to bear on new situations and exigencies.

Many of the teachers interviewed spoke about their need to explore the new Web 2.0 tools themselves as learners before they integrated them into the blended learning environments they created for their students in spite of all the support that ABEL provides, and all recognize that in the beginning they did not fully understand or appreciate the power and potential of the Web 2.0 tools and applications they were using. Their exploration of the Web 2.0 tools and applications

was for some of them a singular and somewhat isolating experience, for they were engaged in individual professional meaning making as subject teachers. As a result, some of the teachers interviewed expressed a strong need to know how other teachers in their own and other subject areas were using the Web 2.0 tools and applications, and spoke about the importance of belonging to a professional learning community where they could not only share their new understanding but receive assurance and validation as well.

Emerging Pedagogical Issues: Interviews with these teachers also reveal that they are beginning to confront pedagogical issues for which there may as yet be no ready answers. They recognize the need to prompt students to engage in higher order thinking in their postings to blogs and wikis, and they welcome the fact that Moodle allows them to extend the boundaries of the course and the classroom, and that they acknowledge the value of the collaborative dialogue that these Web 2.0 tools and applications provide. However, a close reading of their comments uncovers concerns about how to establish academic expectations in general, how to identify specific expectations for written literacy and about how to assess and evaluate student work:

- As teachers apply their instructional intelligence to blending Web 2.0 tools and applications into instructional design they are not only prompting students to post comments to blogs and to contribute to wikis through guided questions and specific directions, they are giving students opportunities to take the lead in their own learning. As we argue above students in general may know YouTube and FaceBook and be able to instant message, but many of the teachers interviewed pointed out that students need instruction on the appropriate and effective use of wikis, blogs, and Moodles if they are to use these tools for deep learning, and effective self-management. All of the teachers in the survey expressed concern by direct comment or by inference about ensuring the quality of student interactions and of the artifacts they generated. Lindsay spoke about the need to define very clearly the role the blog was to play in her course from the very beginning, and about the high level of sensitivity that students from different backgrounds must bring to their interaction with peers and to the content of their wikis, particularly when they were dealing with social attitudes and stereotypes. Carl had to convince his students that using the discussion forum that he provided in his Moodle would produce more complete solutions to student problems, solutions from which all could benefit, than mere text messaging could provide.
- Susan began to reflect upon what level of English usage is acceptable in the communication technology blogs she set up in all of her courses. Although she was gratified by the positive response of her students to posting comments on her blogs, she has begun to wrestle with one consequence of her use of this Web 2.0 tool – the use of text-messaging syntax and writing style (She refers to this as “text speak”) in student blog comments. As an educator, she was torn between her desire for her students to present materials in grammatically correct English, and her desire to have her students participate and add their voices to the blogs she set up. On the one hand, she acknowledged that she taught in a secondary school and an urban school board that placed a priority on literacy, that she fully supported this priority, and that she has always promoted literacy in her classes. On the other hand, she was very much aware that her students use truncated syntax, abbreviations and letter substitutions in text messaging in social intercourse outside the classroom, and she was quite prepared to accept that the new technologies were bringing about changes in language usage as their popularity and use expanded. Her difficulty was undoubtedly exacerbated because her ESL students were posting grammatically correct and well thought through comments that were superior to the oral and written comments they made in class, while her first-language

- English students were posting what she called “text-speak” to her blogs while using far more academic language in their written assignments.
- Val and her colleague have begun to think about the implications for student evaluation of their use of Web 2.0 tools in their French and English classes. Unlike Susan, they have not expressed concern about literacy in their blogs and discussion forums, perhaps because they are language teachers and their students automatically avoid using text-messaging syntax in posted comments. Both teachers, however, have puzzled over how to evaluate student responses in blogs and discussion forums. To date they have evaluated the effort and insight that individual students have demonstrated as they have responded to posted questions, and made comments in blogs and discussion forum. The issue of student evaluation may loom larger for them. The Ontario Ministry of Education provides very specific curriculum outcomes for all of its accredited secondary school courses, and has created a common Ontario student report card that may not yet adequately assess the learning that students engage in as they use collaborative Web 2.0 tools and applications.

Although the subject group for these interviews was small, the manner in which the teachers who were interviewed have integrated Web 2.0 tools and applications to create blended learning environments and the resulting emergence of these issues provides clear evidence of how teachers in the ABEL community are applying their instructional intelligence as they shape the learning environments for student engagement and student achievement.

Conclusion: The data from the most recent ABEL research into ABEL participant experience summarized in this paper includes only those results directly related to Web 2.0 tools and applications. The full report (Wideman, 2007) makes valuable recommendations that promote both the pedagogical focus of professional learning opportunities devoted to ABEL tools and resources, the unimpeded sharing of teacher instructional use of Web 2.0 tools and applications, and the creation of short and highly focused training videos (webinars) for on-demand, just-in-time training in tools use. These recommendations re-enforce ABEL’s belief that teachers play a strategic and truly significant role in the innovative use of ICT in the blended learning environments that they are creating in their secondary school classrooms.

That ABEL has already achieved so much and is capable of fulfilling these recommendations is a tribute to the uniqueness of its professional learning program. In fact the use of the Web 2.0 tools and applications in delivering professional learning allows for a participant-driven, situated approach. These new tools allow teachers to access whatever, whenever, wherever (March, 2005) and provide ‘modules’ of information that are distributed, decentralized and open. In this program, the context is much more focused than is traditional on a job-embedded approach to professional learning using an instructional design that leverages the collaborative platform and other ICT and participatory applications. The professional learning program offers participants a variety of professional experiences that both deliver content and model the effective use of a wide range of technology applications for learning.

As teachers/faculty access these programs within their day-to-day work/classroom experience, they begin to apply their new understanding to their curriculum design and classroom implementation. The result is an adoption of innovative teaching practice and a creation of new ways of learning through ABEL tools and resources, among them Web 2.0 tools and applications, providing teachers/faculty with a wide range of instructional strategies to support curriculum and student achievement.

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