Fifteen years of pedagogical advances of technology implementation in Atlantic Canada: from APTICA to CompéTICA

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Abstract. The association for the Advancement of Pedagogical use of Technologies of Information and Communication in Atlantic (APTICA) is a leader in development and implementation of ICT-enhanced pedagogical practices in the French Atlantic Canada since 2000. Its annual conference gathers more than 150 educators and stakeholders from all levels and institutions (school, college, university and government) to discuss and share best practices and innovations through more than 30 workshops, lectures, and demonstrations. Over the past 15 years multiple partnerships developed between APTICA and provincial ministries of Education, school districts and schools, Industry Canada, as well as international institutions and organizations (ProjetICE Association from France and Francophone International Organization – OIF (Organisation Internationale de Francophonie) to help bring together and develop a number of free multimedia online teaching resources, such as a very recent project Problematic Éditer la situation to support learning and teaching problem solving skills in mathematics and French. The combination of those accomplishments has led to the partnership development CompéTICA in order to establish a digital competences framework along with elaboration of criteria for identification and study of best practices within the lifelong continuum.

Introduction: context and rationale

Professional development of teachers is a key factor of successful integration of the ICT (Information and Communication Technology) in schools (Buabeng-Andoh 2012). In 2000, the APTICA (Association for the educational advancement of information technology and communication in the Atlantic), a non-profit organization, was established to organize annually a conference to encourage and facilitate the educational integration of information technology and communication. For the past 15 years, the APTICA congress has united the Francophone Learning Community of the Atlantic Provinces to share and to develop educational resources using ICT. Along with helping francophone teachers from New Brunswick, Canada, as well as other Atlantic provinces to increase educational potential of technology, the APTICA contributes to their leading role in promoting techno-pedagogical innovation across the French Canada. In fact, Paquin (year not available) found that New Brunswick teachers, along with their colleagues from Saskatchewan and British Columbia, use more frequently ICT than their colleagues from the other Canadian provinces.

The APTICA, whose head office is located in Moncton, New Brunswick, works jointly with the government, the community, and other educational institutions such the Université de Moncton to create and share teaching and learning resources in French language thus responding to the need to strengthen the identity of French minority communities across the Atlantic region and beyond. Several innovative
techno-pedagogical initiatives at the school level, such as the use of individual laptops, interdisciplinary projects, robotics-based learning, interactive learning with clickers and whiteboards, and recently teaching programming (Blanchard et al. 2010; Freiman et al. 2011; Freiman and McGraw-LeBlanc, 2012) were led or actively supported by the APTICA members. In the next sections, we will reflect of the APTICA’s practice, from the point of view of its historical background, featuring professional development through the annual congresses, as well as the other examples of collaborations with schools, colleges, universities and other institutions and organizations. New initiatives led by the APTICA members will also be analyzed.

**APTICA in service for the community: history and accomplishments**

The APTICA is a leader in the development and implementation of ICT-enhanced pedagogical practices in the French Atlantic Canada since 2000. Its annual conference gathers more than 150 educators and stakeholders from all levels and institutions (school, college, university and government) to discuss and share best practices and innovations through more than 30 workshops, lectures, and demonstrations.

The Table 1 gives a general overview of the APTICA congresses with a theme of each congress, number of presenters and workshops.

The first five years (2001-2005), the main focus was put on the understanding of the role ICT can play in educational practices to support learning. Sharing, networking opportunities, collaboration while using technology, were keywords in 2006-2011. More global issues, such as digital literacy, leadership and citizenship in the digital era were at forestage over the past three years. The theme of the coming 2015 congress emphasizes development of teachers’ empowerment not only as followers of transformations of teaching practices suggested by others but being their creator and promoter.

<table>
<thead>
<tr>
<th>Year</th>
<th>Themes presented</th>
<th>Number of facilitators</th>
<th>Number of workshops</th>
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<tbody>
<tr>
<td>2001</td>
<td>1st Congress (no specific theme)</td>
<td>34</td>
<td>32</td>
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<tr>
<td>2002</td>
<td>ICT: Real learning in a virtual world!</td>
<td>41</td>
<td>51</td>
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<tr>
<td>2003</td>
<td>ICT: A universe to tame!</td>
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<td>51</td>
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<tr>
<td>2004</td>
<td>ICT professional skills at the service of pedagogy</td>
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<td>56</td>
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<tr>
<td>2005</td>
<td>ICT: links to be developed</td>
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<td>51</td>
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<td>2006</td>
<td>Virtual learning communities</td>
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<td>45</td>
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<td>2007</td>
<td>Our collaboration network</td>
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<td>52</td>
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<tr>
<td>2008</td>
<td>Let’s Exchange our Pract: ICT for success</td>
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<td>43</td>
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<tr>
<td>2009</td>
<td>Learning with ICT; Clicks!</td>
<td>57</td>
<td>52</td>
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<tr>
<td>2010</td>
<td>10 years of ICTs in ATLANTIC</td>
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<td>30</td>
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<tr>
<td>2011</td>
<td>A network for 21st century learners</td>
<td>34</td>
<td>32</td>
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<tr>
<td>2012</td>
<td>Digital Literacy : to support the generation of tomorrow</td>
<td>34</td>
<td>32</td>
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<tr>
<td>2013</td>
<td>Educational leadership in the digital age</td>
<td>40</td>
<td>34</td>
</tr>
<tr>
<td>2014</td>
<td>Citizenship in the digital age ... whose responsibility?</td>
<td>37</td>
<td>29</td>
</tr>
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Table 1. Themes of APTICA congresses

The first congress of APTICA took place in 2001 and was already enthusiastically welcomed by many people. Elvy Robichaud, the former Minister of Education of New Brunswick states that "The first congress of the APTICA is an innovative way to help teachers to develop knowledge in the use of new technologies. This kind of congress has a future, because at the rate that new technologies evolve, the need for development can only increase". This quotation captures well a central point of the APTICA’s philosophy, especially regarding the possibilities and opportunities that ICTs offer through a growing diversity of tools available. Besides, the theme of the 3rd Congress demonstrates this: "ICT, a universe to
"...tame". In the welcoming comments in the 2003 congress program, Bernard Lord, the former Prime Minister of New Brunswick emphasizes that "To maximize the potential of our fellow citizens, we have no other choice but to adapt to the constant pedagogical changes ..."

In 2005, as the APTICA has been preparing to mark its 5th anniversary thus demonstrating a real strength of this vision, as well as its sustainability, Bernard Lord, still the Premier of New Brunswick that year recognized that "Organizations like APTICA can only help the people of New Brunswick and the entire Atlantic region to get high quality education needed to succeed in the twenty-first century ". This comment confirmed the APTICA’s pivotal role in developing digital competencies among educators.

Five years later, as the APTICA celebrated its 10th anniversary in 2010, the Dean of the Faculty of Educational Sciences witnessed: "Ten years already! It's an achievement that we should commemorate with great pride. During the past decade, APTICA has become a true professional learning community in pedagogical application of ICT. During this period, the APTICA has mobilized people from different educational backgrounds and offered them a place of meet, reflect and dialogue so that we can collectively have a better understanding of the importance of ICT and how they can be used for learning."

This year, APTICA will celebrate its 15th year and this organization continues to impress and to pursue promoting and leading innovations in educational practices in the Atlantic Provinces.

While going over the program of each congress, we can see the evolution of the issues and topics we analyzed in two ways (Figure 1a, b). First, we looked at the title of each workshop and classified them according to different categories (Figure 1a). Then, we analyzed the text by means of the NVIVO software and constructed a cloud of keywords (Figure 1b). Finally, we present the results of the satisfaction survey (Figure 2).

![Figure 1a. Topics of APTICA Workshops](image)

![Figure 1b. Word Cloud of Topics](image)

From our analysis, we learn that over the 15 years, the most frequent topics of the APTICA workshops were different ICT tools (30%), their usefulness for educators and learners (19%), their use in teaching and learning different subjects (13%), as well as variety of types of professional development (how to use ICT in teaching, sharing best practices, assessment, etc.), all of these categories are well aligned with the mission of the association. The Word Cloud summarizes this by putting ‘learning’, ‘education’, ‘digital’ ‘tools’, ‘development’, ‘professional’ in the foreground of the most frequent keywords.

Regarding the participants’ opinion on the quality of the congress (Figure 2), the survey shows the overall high level of satisfaction with the organization of the congress (91%) and its key elements: quality of the opening conference (each conference featured the main theme of the congress and was given by a prominent expert from the field) – 88%, as well as opportunity to interact with other participants (85%). 67% were very satisfied with the quality of the workshops.

**APTIMA: collaborating with others**
Over the past 15 years multiple partnerships were developed between APTICA and others institutions either at a provincial, national or international level. The leading role of the APTICA in the professional development of teachers through the conferences and workshops given at the congresses was reinforced by a number of collaborative projects allowing for the development and implementation of a number of online resources to support teaching practices.

The Cyberpedagogical Innovations (2003) project was a partnership with the Acadia Institute of Teaching and Technology (AITT) of Acadia University in Nova Scotia. APTICA was responsible for the organization of a week-long web technology training. The participants from nine French language schools from across Canada created web content that featured both cultural and regional representations.

In 2004, a research funded through Atlantic Canada Opportunities Agency (ACOA) and the National Research Council aimed to identify the technological needs of teachers. Through an online questionnaire, 800 teachers from the Atlantic Provinces identified the importance of ongoing training with ever-changing ICT. The positive results from these experiences confirmed APTICA’s expertise which became, in 2005, consultant for the New Brunswick Teachers Association (NBTA) to automate its conference registration system.

The APTICA recognized in 2006 the need to gather in one “virtual place” the pedagogical tools and initiatives developed by Atlantic Canada’s francophone teachers. The project Together under one roof: APTICA Network gathered and created learning activities related to the educational potential of ICT developed by professional education in the Atlantic provinces and this at different educational levels. The three year project was made possible through a financial contribution from the Ministry of Intergovernmental Affairs New Brunswick and virtual Francommunautés Program of Industry Canada.

The APTICA initiated international partnerships in 2009 and 2010. In collaboration with the association Projetice France, this joint venture Educatice offered the opportunities for schools in Canada to be matched with schools in France to collaborate and exchange educational activities related to technology. This project was made possible through a financial contribution from the Ministry of Foreign Affairs of France and the Consulate of France in the Atlantic.

APTICA’s acquired expertise to help bring together and develop a number of free multimedia online teaching resources is currently collaborating with the International Organization of the Francophonie (OIF), to offer another educational website regrouping activities related to technology and which relates to

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Figure 2. Results of the APTICA survey
Open Educational Resources. This pilot project ProblemaTICE (2013-2015) has created directly usable resources in the classroom, in the area of problem solving and more generally for learning mathematics and French.

From APTICA to CompéTICA: new partnerships – extending the best practices

APTICA’s acquired experience has led to the development a new partnership development network CompéTICA (Competence in TIC in Atlantic) to study life-long digital competences, their transferability, adaptability, as well as ecosystemic aspects across educational institutions, families, and work places.

In Canada, as elsewhere in the world, the government multiplies efforts to define, develop and foster digital citizenship which requires a number of ‘new’ abilities and skills in order to have a lifelong success in terms of education, career, job, community, and family life (Industry Canada, 2010). These skills can be summarized, according to the Programme for the International Assessment of Adult Competencies (OECD, 2013), as an ability to solve problems in technology-rich environments. Although the need to develop these skills is generally accepted, the structure of the latter and the modelling of their acquisition at every stage of life are still in full development, both in research and in practice. In order to meet the urgent need to identify and measure the acquisition and transfer of lifelong digital skills CompéTICA (Compétences en TIC en Atlantique, www.competi.ca), a research partnership network, has been created.

It aims to establish collaboration between family and school, between elementary school and high school, between high school and post-secondary institutions and, finally, between educational institutions and the workplace, in order to (1) define the continuum of digital competences in varied contexts of life such as education, work, community and family, (2) identify and describe best practices that develop these competences over the lifelong period, and finally (3) develop and implement new initiatives as result of increasing collaborative efforts.

The Digital Canada 150 initiative has identified three main challenges related to what it calls ‘building digital skills for tomorrow’: skills shortages in the ICT sector, a need for improvement of digital skills in workplaces across the economy, and issues related to ‘digital divide’ (Industry Canada, 2010). Although the initial results of the PIAAC (OECD, 2013) study for adults ranging from 16 to 65 years old indicate that Canadians show a score located at higher levels (2 or 3) on the scale of the Problem Solving in Technology-Rich Environments (PS-TRE), thus being ranked above the OECD average set up at 34 %, there appears to be a drawback on the top level (with only 6 % of Canadians in this category (level 3) and on the bottom level, 15 % belong to the lowest category (below level 1), a proportion which is also higher than the OECD average, set up at 12 %. The difference is even bolder in the Atlantic Provinces.

The Francophone community of New Brunswick, as well as of the whole Atlantic region is seen as unique context to analyze the problem of digital literacy in its entirety. Being in the minority language situation, the Francophone and Acadian community faces significant challenges related to material, financial and human resources. This community must, in addition, manage a population decline in some regions, and help the survival of their language and culture. Despite, or perhaps because of this precarious situation since the 1990 Provincial Francophone is a leader in the field of ICT, seeing including it in an ingenious way to ensure its vitality. In the province of New Brunswick education system was one of the first in Canada to provide Internet access to all primary and secondary schools, which helped to overcome the challenges related to ICT access (first-order digital divide). However, the challenges of the second-order digital divide, those related to the acquisition of digital skills are still present, as shows, among other things, a low literacy rate among Francophones compared to the Anglophone majority. Knowing that families play a vital role in the education of their children (Nickols et al 2009), what role do they play in the acquisition digital skills? Do parents have these skills? Do the youth, left free in the digital world (Fribourg 2007), develop the skills necessary to be successful in life while fully contributing to society?

Finding solutions to these challenges seems to be particularly relevant in the context of the francophone minority. Indeed, exploiting the full potential for communication, collaboration and human networking offered by ICT is essential to reduce the potential drawbacks of a digital divide, to diminish inequity of access and to bring social justice to the linguistic minority. These efforts could strengthen the
construction of identity and community belonging as invoking the report of the Commission on
Francophone Schools in New Brunswick (DOE, 2008). Moreover, according to a study by the Media
Technology Monitor, French Canadians generally adopt new technologies slower than their Anglophone
countrymen (MTM, 2013), out of the province of Quebec.

Establishing new partnerships to establish links between the school community, college and
university, government and community organizations, and the private sector, the project will not only allow
the adjustment of the profile of digital skills according to the real needs of these organisms, but also to
create the tools and evaluation mechanisms, assessment, consultation and mentoring, as well as to ensure
the achievement of these communication skills on a continuum which encourages multidirectional flow of
knowledge. Our research aims to develop an interdisciplinary and multi-sectoral partnership to better
understand the complexity of these issues and the phenomenon of digital skills by studying these transition
points in the life cycle. With this partnership, the knowledge generated by the research will be applied
directly in the practices of partner organizations and beyond, to the entire community. Thus, together
with our new partners and in line with the priority area in digital economy, our project aims to develop a
model of a competent digital citizen and a network of key partners from all concerned sectors: schools and
departments of education, community colleges, universities, businesses and community centers.

After having multiple consultations with our partners, as well as conducting extensive literature
review, a questionnaire for the interviews with experts has been developed and validated and first
interviews with experts have been conducted. Another important part of the work was looking for new
partners to extend the network. Hence, besides six confirmed partners coming from government, school,
community college, university, and private sectors, more than 10 new potential partnerships have been
emerged. Each partner shares with others their vision of issues related to digital literacy and their way to
deal with them. The follow-up discussions help to identify gaps and key transition points in terms of the
lifelong digital literacy continuum. During the second year, we are focusing on analyzing and interpreting
data from the interviews and sharing them with the partners. As result, we foresee a construction of the
digital competence framework along with elaboration of criteria for identification and study of best
practices within the lifelong continuum. Ensuring effective contribution from each partner at this stage,
together with increasing role of collaborative work will be key factors to consider.

Conclusion

The APTICA, for the past 15 years, has been an advocate, a leader and a key player in preparing
the French Atlantic teachers from all educational settings, to integrate ICT in a pedagogical way in its
classrooms. In this paper, we have elaborated on the annual congress offered each year at the Université de
Moncton, its themes and subject matters, it’s pertinence through expert’s comments from the field and
finally the satisfaction levels of the participants.

Parallel to the organization of the congress, the volunteers of this organization have managed
through the years, to develop their expertise in successfully creating partnerships with provincial, national
and international organizations. Finally, the combination of those accomplishments has led to the
partnership development CompêTICA which aims to establish a digital competence framework along with
elaboration of criteria for identification and study of best practices within the lifelong continuum.

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