

The Impact of Digital Technologies on Teachers Working in Flexible Learning Environments

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The Alberta
Teachers' Association

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Preface

The purpose of this provincial research study was to provide a solid foundation of data concerning Alberta teachers' efforts to make student learning more flexible in terms of time and space. The study identified various ways in which the flexible timing and pacing of instruction affects both teachers and their teaching and learning environment.

As the largest study of its kind in Alberta (and in Canada) on the impact of flexible and digitally mediated environments on the conditions of professional practice for teachers, this research constitutes a unique contribution to the literature. The study provides empirical evidence that should help clarify the implications of the ambiguous notion of “learning at any time, any place and at any pace,” which has recently entered into system-level discussions concerning the informed transformation of Alberta’s education system.

This research was undertaken by Dr Philip McRae, an executive staff officer with the Alberta Teachers’ Association (ATA), and an evaluative research team from the University of Alberta’s Faculty of Extension led by Dr Stanley Varnhagen, Bradley Arkison, Dr Jason Daniels, Jeff Hankey and Sandra Olarte.

Their work was supported by a provincial research advisory working group consisting of Dr Cathy Adams, Dr Terry Anderson, Tara Copeman, Graham Jackson, Gerald Logan, Frank McCallum, Sandy Nichol and Terri Reid. Additional assistance was provided by ATA executive staff officers Dr JC Couture and Brian Andrais. ATA administrative officer Harlan James helped prepare the final report for publication.

The collective attention, support and analysis provided by all these individuals is greatly appreciated. I would also like to acknowledge the many teachers who completed the survey and/or attended the focus groups as well as the school jurisdictions, organizations and institutions that have contributed to the findings in this report.

This study is especially timely given the recent tabling of a new *Education Act* (Bill 18) that, if approved, would attempt to increase learning opportunities in the education system. The study also coincides with the publication of Alberta Education’s 2010–13 business plan and its *Inspiring Education: A Dialogue with Albertans*. Both documents acknowledge that technology integration presents the education system with both significant opportunities and challenges.

Assessing the impact of emerging technologies on teachers and their conditions of practice continues to be a research and advocacy priority for the Association. As this report demonstrates, understanding the essential conditions of professional practice that support teachers and increase their efficacy will also help to ensure that teaching and learning in Alberta schools continue to improve.

Throughout all of the discussion about transforming the education system using technologies, the Association will continue to research and advocate for the conditions of professional practice required to create teaching and learning environments that advance the goal of public education: to educate all Alberta children well.

Gordon Thomas
Executive Secretary

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Executive Summary

This study was conducted in late 2010 and early 2011, a time during which the language of learning “at any time, at any place and at any pace” had already entered into Alberta Education’s 2010–13 business plan. The importance of making access to learning more flexible was also beginning to dominate system-level discussions about the informed transformation of the education system. Policies concerning digital technologies for learning have, in some cases, been hastily developed in the absence of research-based evidence from the Alberta context about the impact of these technologies on teaching and learning. A thorough exploration of the impact of flexible and digitally mediated learning environments on the work life of teachers is, therefore, needed. This study is currently the largest of its kind on this topic in Alberta and, indeed, of any population of teachers in Canada.

Research Methodology

This study used a mixed-method research approach to capture the experiences of Alberta teachers and administrators across the province: (1) an online survey and (2) a series of seven focus groups, which took place during teachers’ conventions in 2011. In all, more than 1,450 people participated in the study. For the purposes of the study, flexible and/or digitally mediated learning environments were classified into three categories, all of which could be deemed to generally contain a population of teachers that regularly use digital technologies:

1. Face-to-face teaching environments in which digital technologies are used as a component of students’ learning experiences (representing about 80 per cent of participants).
2. Primarily digitally mediated learning environments, such as online learning, e-learning and/or distributed learning (representing about 10 per cent of participants).
3. Outreach schools and/or distance education (representing about 10 per cent of participants).

Respondent Profile

With reference to the study sample, 72.1 per cent of respondents were female and over 90 per cent were employed full-time. Participants were relatively evenly distributed in terms of age, which ranged from 25 to 65. Of the participants, 80.7 per cent identified themselves as classroom teachers, 6.6 per cent as administrators, 10.8 per cent as both teachers and administrators, and 2 per cent as “other.” The demographics of the sample closely mirror that of the overall teaching population in Alberta and include a substantial number of responses from teachers in each of the Association’s 10 convention areas.

Major Findings

1. More than 80 per cent of respondents rated the experience of teaching in their current “flexible” context as positive, yet only 63 per cent indicated that they would recommend such a situation to others. With reference to their overall experience, outreach teachers, at 94 per cent, were the most positive group, and those in a primarily digitally mediated learning environment were the most negative (20 per cent rated their fully online teaching experiences as negative). Participants’ satisfaction with their teaching experience and the likelihood that they would recommend their work to other teachers was independent of years of experience.

Discussions during the focus groups highlighted several potential explanations for the 20 per cent difference between satisfaction scores and participants’ willingness to recommend their particular teaching context to others. These explanations can be organized into three main categories:

- a. *Deterioration:* Teachers were satisfied with their current context but would not recommend the teaching profession in general

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because they felt that their conditions of professional practice were deteriorating with respect to workload, role expansion and lack of personal and professional boundaries.

- b. *Attainment:* Teachers reported a level of comfort and satisfaction with their context but felt that substantial effort was required to attain mastery and satisfaction. These individuals would be less likely to recommend their situation because of the learning curve and the commensurate stress associated with initially taking on the role.
 - c. *Uniqueness:* Teachers felt that their current context was well suited to them but that it would not be suitable for incoming teachers who might not share their specific interests and aptitudes.
2. Participants in the focus groups expressed concern about the many ways in which their role as a teacher was expanding beyond the scope of what they considered to be their primary responsibilities. Among the additional responsibilities that were being downloaded onto teachers were providing technical support and counselling students with complex social and emotional needs. The kinds of additional duties that were being downloaded varied somewhat depending on the type of flex environment in which the teacher was working.
 3. Participants observed that online reporting tools, because they enable information to be shared immediately with parents, are dissolving the boundaries between work and personal time. Some parents, for example, expect assessments to be posted a few hours after a student has turned in an assignment. Others expect teachers to respond before the start of the next workday to e-mails that were sent after school hours. In short, systems that afford “anytime” access are creating the expectation of “anytime” service. Participants observed that, in the absence of overarching guidelines to manage expectations around parent–teacher interactions, individual teachers are being left to establish and maintain boundaries on their own. Participants in the focus groups also noted that, in some circumstances, online reporting tools may diminish the opportunities that teachers have to engage in meaningful conversations with parents about student progress. Rather than engaging in a dialogue with the teacher, for example, some parents are focusing only on the impersonal, quantitative representation of their child’s progress as presented in the online report.
 4. The study suggests that lack of time is the most significant factor restricting a teacher’s ability to provide instruction. Such duties as reporting student progress online, developing individualized program plans, organizing extracurricular activities and frequently communicating electronically with parents all reduce the amount of time that teachers have to work with students. Compared with face-to-face and outreach teachers, teachers in primarily digitally mediated environments, not surprisingly, spend a smaller proportion of their time directly instructing students and a correspondingly greater portion of their time on such tasks as marking and contacting parents. Large classes, both online and offline, significantly restrict the amount of time and the level of assistance that teachers can provide to individual students.
 5. Both teachers and administrators were overwhelmingly positive about the potential of technology to render the timing and pacing of instruction more flexible. Teachers working in a primarily digitally mediated learning environment are more frequently engaged than their face-to-face and outreach colleagues in such online activities as instant messaging, employing Web 2.0 tools, holding video conferences and holding web conferences. They also find these activities more useful in meeting their teaching requirements. Outreach teachers make the most frequent use of digital marking and reporting tools (68 per cent use them almost every day), whereas face-to-face teachers make the most frequent use of interactive whiteboards (53 per cent use them almost every day). Personal hand-held or portable computing devices used by students, cloud computing and online professional development are on the cusp of being used frequently and being deemed useful (or not). As a result, they bear watching.

Participants rated interactive whiteboards and administrative technologies (such as learning management systems) the highest in terms of both frequency of use and usefulness (see Figure 1). Both these technologies are mandated in many school jurisdictions. Conversely, social networking technologies such as instant messaging and online social networks, although used frequently, were perceived to have little usefulness for teaching and learning. Participants raised two concerns about social networks: (1) they may increase the prospect that teachers inadvertently overstep the professional boundaries between themselves and their students and (2) students may object to allowing teachers to access their social networks for pedagogical purposes. Participants deemed video conferencing to have very little value in

increasing the flexibility of instruction. Indeed, 83 per cent of respondents reported that they do not hold video conferences with students, and only 20 per cent of respondents felt that video conferencing was useful in making instruction more flexible.

- Participants cited a lack of technology and restricted access to technology (because of filtering and firewalls) as factors that limit their ability to make teaching and learning more flexible in terms of time and space. Participants noted, for example, that technology is not always available for every student, that teachers often do not receive the professional development they need to use technology in a way that fully supports learning and that many available technologies are unreliable.

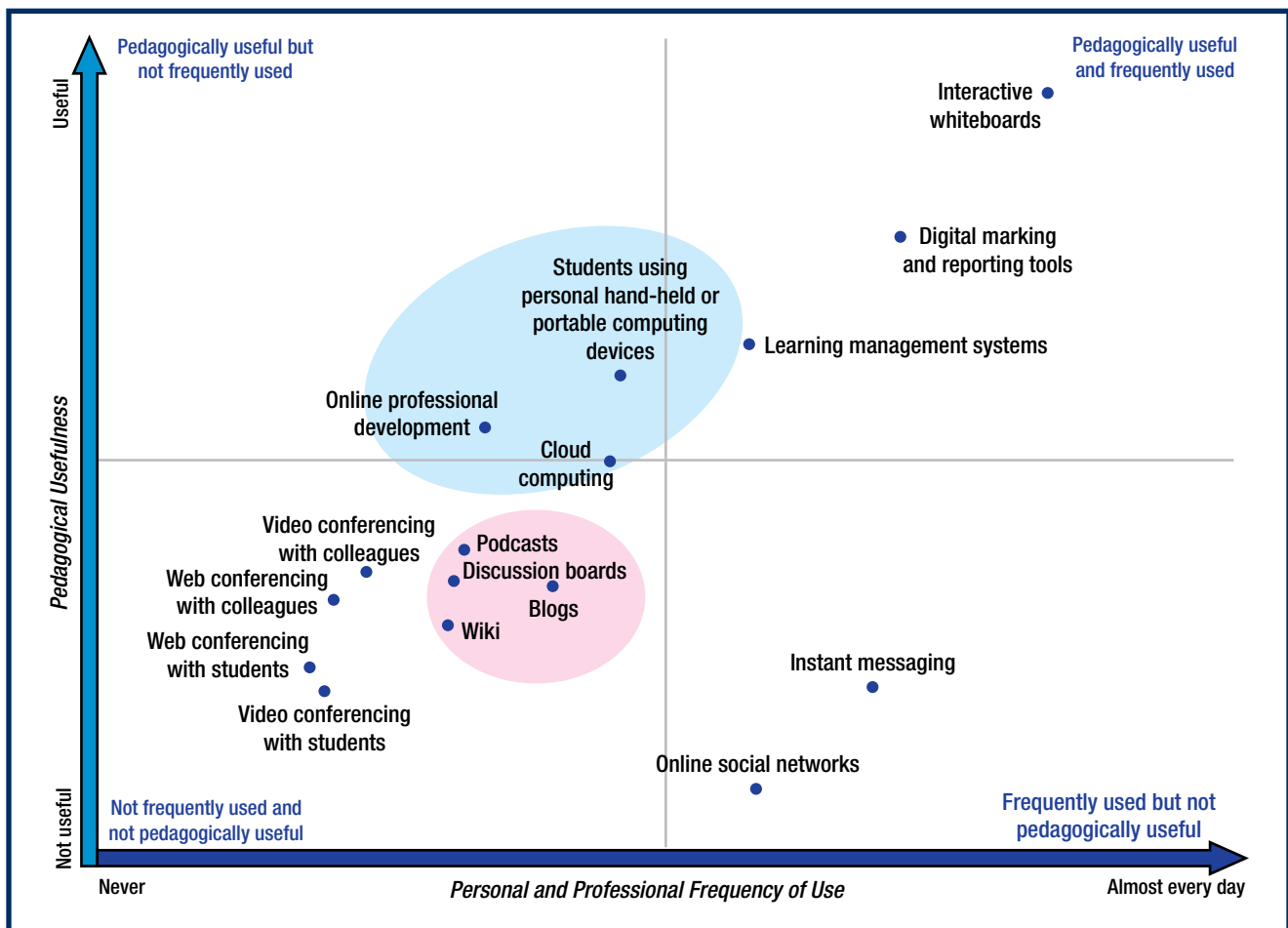


Figure 1: The Perceived Usefulness and Frequency of Use of Selected Technologies

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7. Respondents generally reported low levels of satisfaction with the support they receive in their teaching situation. They were most satisfied with support that is directly related to their interactions with students. Except for technical support, teachers working in outreach schools/distance education are more satisfied with the support they receive than their face-to-face and primarily digitally mediated colleagues. Participants were least satisfied with the availability of support related to developing and planning instruction. Such support includes time to design courses and access to professional development related to the use of technologies.
8. Overall, participants reported that, compared with last year, their teaching conditions had either worsened or stayed the same rather than improved. Teachers were most negative in their assessments of items related to class size and composition. Many participants reported that the readiness, willingness and ability of students to learn had significantly declined in the last year. How focus group participants defined “student readiness” depended on their particular teaching context. In

general, however, participants focused on two aspects of readiness:

- a. *Physical and emotional readiness*: Students who are not physically and emotionally ready to learn are less likely to achieve their learning goals. Their lack of readiness may be the result of such factors as hunger, sleep deprivation, anxiety or emotional distress. What participants had to say about students’ physical and emotional readiness varied greatly within and across focus groups and was directly related to the participant’s particular teaching situation.
- b. *Academic readiness*: To progress in school, students need to have strong foundational skills upon which to build new knowledge. Teachers assess a student’s academic readiness in order to determine the appropriate level and pace of instruction. Several participants in the focus groups observed that students’ academic readiness is declining. Participants also noted that students vary in their digital readiness and that, as a result, educators should not assume that all students have the requisite digital (citizenship) skills to succeed in a flexible learning environment.

Introduction

The Alberta Teachers' Association (ATA) advocates for the conditions necessary to create teaching and learning environments in which all children are educated well. In 2011, the ATA, in collaboration with a research team from the University of Alberta, conducted a study of the experiences of teachers currently employed in flexible and/or digitally mediated learning environments.

This study involved a wide range of kindergarten to Grade 12 teachers and principals who use some form of digital technology to personalize learning by making it more flexible in terms of time and space. Participants used many different digital technologies and various kinds of digital content to render the timing and structure of their classes more flexible. They also used online diagnostic platforms and assessments to direct the pace and format of student learning.

Although the study was designed to include as many teachers as possible who use digital technology, the researchers also recognized that the settings in which teachers use technology varies considerably. The respondents to this survey can generally be considered an experienced population of teachers who regularly use digital technologies. For the purposes of this study, flexible and/or digitally mediated learning environments were classified into three categories:

1. Face-to-face teaching environments in which digital technologies are used as a component of students' learning experiences.
2. Primarily digitally mediated learning environments such as online learning, e-learning and/or distributed learning.
3. Outreach schools and/or distance education.

The researchers hope that education stakeholders find the results of this study useful in understanding how flexible and/or digitally mediated learning environments are affecting the work of Alberta teachers and administrators at a time when the education system is undergoing transformation.

Background

As McRae, Varnhagen, Couture and Arkison (2009) have noted, the term *distributed learning* tends to mean different things to different people.

Increasingly, the term *personalized learning* is replacing *distributed learning* to describe settings in which various digital technologies are being used to make the timing and pacing of instruction more flexible (McRae 2011). In *Inspiring Action on Education*, Alberta Education (2010) uses the term *personalized learning* in setting out its vision for educational transformation in Alberta:

Learning in the 21st century requires relevant and empowering experiences for all young Albertans. There is a need to broaden what students learn, when they learn, where they learn, how they learn, and the rate at which they progress in achieving learning outcomes. Personalized learning involves the provision of high-quality and engaging learning opportunities that meet students' diverse learning needs, through flexible timing and pacing, in a range of learning environments with learning supports and services tailored to meet their needs (p 14).

Inspiring Action goes on to envisage how technology will enhance teaching and learning, creating an environment that exhibits the following characteristics:

1. Students and educators have access to a comprehensive technology platform for learning when and where they need it.
2. Students take greater control of their own learning by using technology to personalize their learning experiences, explore their own directions and use tools that match their learning styles.
3. Administrators create dynamic, digital learning cultures that maximize the use of media-rich resources to create relevant and engaging learning experiences.

4. Schools connect with parents in their homes and workplaces and reach out to the global community in ways never before imagined.
5. There are greater opportunities for efficiencies and innovation in administration, professional development, assessment, and the provision of specialized services (p 23).

Digitally mediated learning environments enable teachers to personalize instruction and to make it more flexible with respect to both the timing and pacing of instruction. Some research on distributed learning suggests that such personalized learning environments are conducive to student performance, resulting in achievement results that are comparable with traditional delivery methods (Greenberg 2004; Cavanaugh 2001). Although digitally mediated learning environments bring about flexibility and personalization, they also commensurately affect teachers' conditions of practice. The research literature suggests that such environments increase the workload of teachers (Spector 2005; Thompson 2004; Bonk 2002; Schifter 2002; Kearsley and Blomeyer 2001 and Fuller et al 2000). The literature further suggests that the factors responsible for the enhanced workload are individualized communication and personalization (Cavanaugh 2005; Sellani and Harrington 2002; Tomei 2004).

Technologies that were once used almost exclusively in digitally mediated environments are increasingly being deployed in traditional face-to-face teaching environments. Murphy and Rodriguez-Manzanares (2009) observe that content-management systems, online reporting tools, e-mail and other technologies are being used to individualize communications between parents, students and teachers. However, as the current study suggests, online reporting tools may, in some circumstances, actually diminish the opportunities that teachers have to engage in meaningful conversations with parents about student progress. Rather than engaging in a dialogue with the teacher, for example, some parents may begin focusing only on the impersonal, quantitative representation of their child's progress as presented in the online report.

Special provincial projects such as the Emerge One-to-One Laptop Learning Initiative and the Technology and High School Success Project are helping to make technology more available in some Alberta classrooms. Technology can help teachers in face-to-face environments tailor their instruction to

each student's unique needs and to set up multilevel communities in the classroom (Stanford, Crowe and Flice 2010). However, it is important to understand how these same technologies also affect teachers' conditions of professional practice.

Research Methodology

This study builds on a study conducted in 2008 that examined the conditions of professional practice of teachers in distributed learning environments (McRae, Varnhagen, Couture and Arkison 2009). Given the rapidly evolving nature of distributed learning and the extensive integration of technology into all aspects of teaching, the study reported in this document involved a larger and more inclusive sample of Alberta teachers. Again, the goal was to study how flexible and/or digitally mediated learning environments affect such aspects of the teaching experience as workload, conditions of professional practice, technology use, support for instruction and interaction with colleagues.

To help design and oversee the study, the ATA struck a committee consisting of teachers, administrators and academics, all experienced in working in flexible and/or digitally mediated learning environments and most familiar with the existing research literature. One of the committee members is the Canadian Research Chair in Distance Education. The committee used the 2008 survey as a starting point, modifying both the online survey and the focus group questions to take into account advances in technology and the way in which the population of interest has changed.

Study Data

The study used a mixed-methods research approach to capture the experiences of Alberta teachers and administrators across the province:

1. An online survey, which garnered responses from 1,459 Alberta teachers and administrators working in flexible and/or digitally mediated learning environments. The survey produced both quantitative and a significant volume of qualitative data.
2. A series of seven focus groups, involving more than 40 people, took place both in person and via teleconference. These discussions produced qualitative data.

Survey Data Weighting

For the purposes of this study, the teachers' convention that a respondent most recently attended was used as a proxy for his or her geographical location. A substantial number of teachers from each of the ATA's 10 convention areas responded to the survey. As expected, respondents from convention areas that include large metropolitan centres made up a majority of the sample. Because the researchers knew how many teachers attended each teachers' convention, they were able to gauge whether the survey sample was representative of the distribution of teachers throughout the province. The researchers concluded that several convention areas were either over- or under-represented in the sample. To correct these differences in response rate, the researchers weighted the final survey data.

All quantitative data from the survey, with the exception of demographic questions, were weighted to match the proportion of delegates in each teachers' convention area. The middle column of Table 1 shows the percentages used to create the weighting scheme and the last column shows the actual percentages of survey respondents in each convention area. The weighting were not applied to qualitative data collected in the survey.

Convention Area	Percentage of Total Convention Delegates ¹	Percentage of Total Survey Respondents
Mighty Peace	4	7
Northeast	4	5
North Central	18	11
Greater Edmonton	23	17
Central East	3	4
Central Alberta	5	2
Palliser	10	4
Calgary City	27	42
South West	4	6
Southeast	3	2

Table 1: Participants by Convention Area

Report Limitations

Respondents held a wide range of opinions, which may not be representative of the population at large. In other words, while the findings may be helpful in setting general directions and goals, some of the specific comments may not be applicable in other contexts. The size of the survey sample was more than adequate for identifying common themes and key findings. However, the fact that the respondents were self-selected makes it difficult to know with complete certainty that the results are representative of the larger population of Alberta teachers working in flexible and/or digitally mediated learning environments.

This study produced the largest data set on this subject to date in Canada. Knowing the total number of teachers who attend the 10 teachers' conventions in Alberta, the researchers concluded that the response rate to the survey was approximately 3.6 per cent. However, that rate is likely understated for two reasons. First, it assumes that all Alberta teachers and administrators knew about the survey. However, technical and procedural difficulties in publicizing the availability of the link almost certainly meant that some potential respondents did not receive an invitation. Second, it assumes that all teachers and administrators identified themselves as part of the target population. Although the target audience—teachers working in a flexible and/or digitally mediated environment—was defined to be as inclusive as possible, teachers who use technology only occasionally may have concluded that the survey did not apply to them and, as a result, did not respond.

The data from the survey and the focus groups complemented one another. The data from the focus groups allowed the researchers to explore the findings from the survey in more depth. As is often the case with exploratory research, new questions emerged that might become the focus of future research.

Participant Profile

The following demographic data provides an aggregate representation of the teachers who elected

1. Data provided by the Alberta Teachers' Association.

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to participate in the provincial online survey. Unlike the other data derived from the survey, the demographic data has not been weighted; it represents the actual demographic breakdown of the 1,459 survey respondents.

Age and Gender

A large majority of survey respondents (72.1 per cent) were female, a proportion that closely mirrors the gender distribution of the overall teacher population in Alberta.² Respondents were fairly evenly distributed in terms of age, which ranged from 25 or younger to 65 or older (see Figure 2).

Teaching Experience, Employment Status and Designation

To better understand the potential influences of learning environments on teachers' experiences, we asked survey respondents to identify the specific context in which they were teaching (see Table 2).

Teaching Environment	Per cent
Face-to-face teaching environments with digital technologies	77
Outreach school or distance education	9
Primarily digitally mediated learning environments	8
Other	5

Table 2: Respondents' Teaching Context

Respondents who answered "other" to the question of teaching context worked either in more than one of the other categories listed or in a face-to-face teaching environment in which no digital technologies were used.

Asked to describe their current employment status, 90.2 per cent of survey respondents indicated they were employed full-time, and 9.8 per cent indicated that they worked part-time. Respondents were also asked to provide their employment designation. The results mirror those for Alberta teachers as a whole:

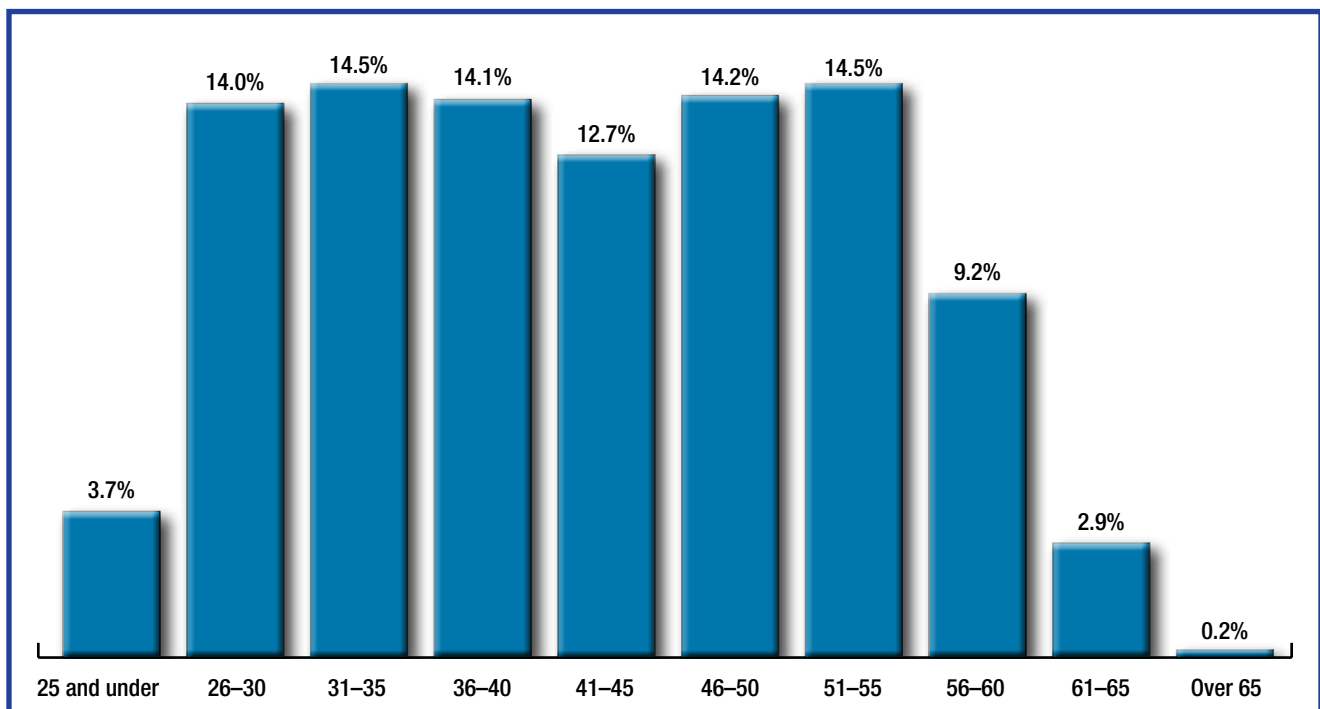


Figure 2: Age of Survey Respondents (n=1,425)

2. Available from <http://education.alberta.ca/departement/stats/certification.aspx> (retrieved February 16, 2011).

80.7 per cent were classroom teachers, 6.6 per cent were administrators, 10.8 per cent were teacher/administrators and 2 per cent were other.

Survey respondents were generally highly experienced teachers. Indeed, most of them had between 20 and 30 years of teaching experience,

a finding that suggests that newer teachers were underrepresented in comparison with the overall Alberta teaching population.³ However, the distribution in Figure 3 may better approximate experience levels of teachers in flexible learning environments.

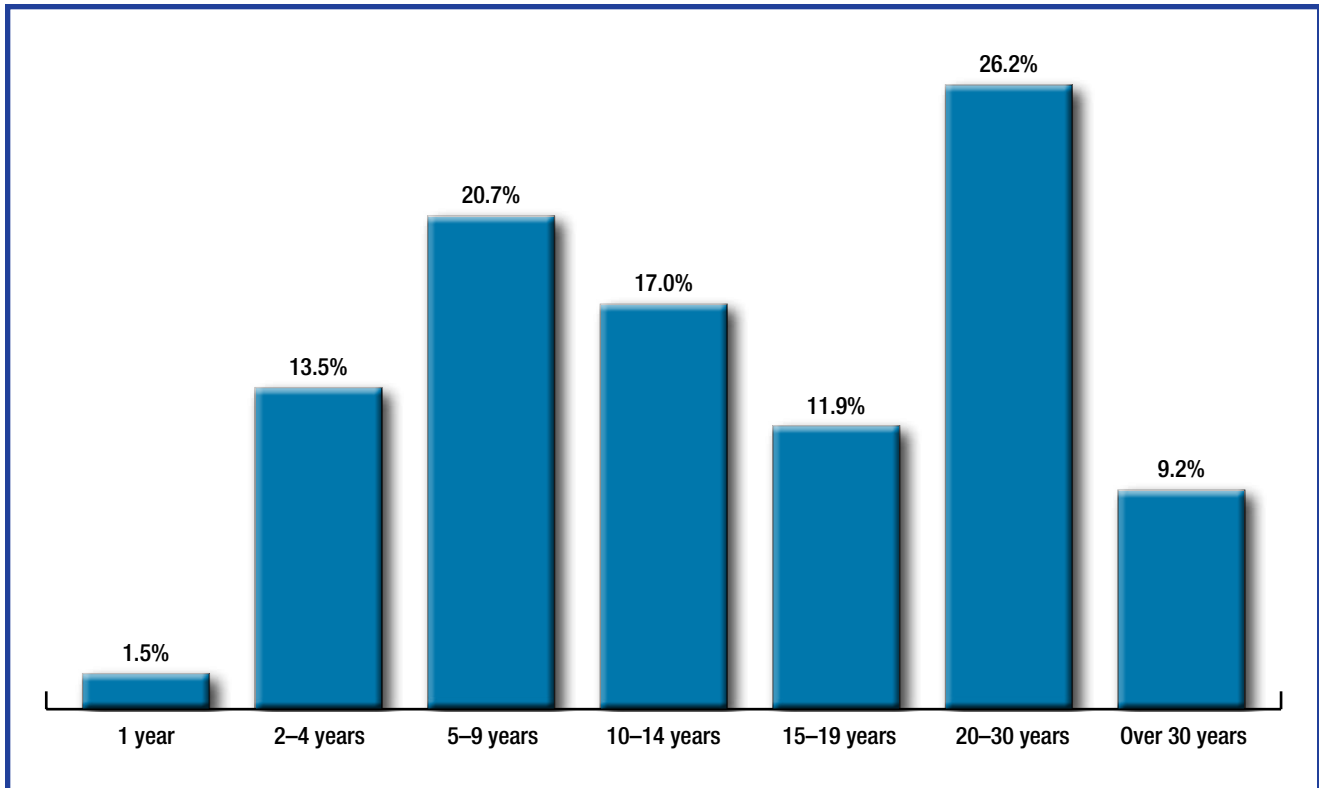


Figure 3: Years of Teaching Experience (n=1,433)

3. According to 2008/09 Alberta Education statistics, approximately 39 per cent of Alberta teachers have fewer than five years of experience, compared with only 15 per cent in our sample. Available from <http://education.alberta.ca/departement/stats/certification.aspx> (retrieved February 16, 2011).

Key Findings

We have organized the findings from the survey and focus groups by topic. In the case of several of the topics, we have also provided two pieces of supplementary information. The first, “In Their Own Words,” presents some of the verbatim comments that respondents made about a particular topic. These comments are meant to put the key findings into context and add depth to the data. The second, “Group Comparisons,” highlights differences in the way teachers in two or more groupings (defined below) responded to a particular topic. In all cases, only statistically and practically significant results are included in the “Group Comparisons.”

Groupings:

- Work Setting
 - Face-to-face teaching environments with digital technologies
 - Outreach schools or distance education
 - Primarily digitally mediated learning environments
- Years of Teaching Experience
 - Fewer than five years
 - Five to 14 years
 - 15 years or more
- Designation
 - Classroom teacher
 - Administrator
 - Classroom teacher/administrator

Teacher Satisfaction

The survey measured overall teacher satisfaction in two ways. The first was by asking teachers directly. Based on this measure, 83 per cent of respondents rated their current teaching context as positive (see Figure 4). The second was by asking respondents how likely they would be to recommend their current teaching context to another teacher. In this case, only 63 per cent of teachers indicated that they would likely recommend their current teaching situation. Discussions during the focus groups revealed three possible explanations for the 20 per cent difference between these two indicators of satisfaction:

1. *Deterioration*: Teachers were satisfied with their current situation but would not recommend the teaching profession in general because they felt that conditions were deteriorating with respect to workload, role expansion and lack of personal and professional boundaries.
2. *Attainment*: Teachers reported a level of comfort and satisfaction with their situation but felt that substantial effort was required to attain mastery and satisfaction. These individuals would be less likely to recommend their situation because of the significant learning curve and the stress associated with initially taking on the role
3. *Uniqueness*: Teachers felt that their current situation was well suited to them but that it would not be suitable for incoming teachers who might not share their specific interests and aptitudes.

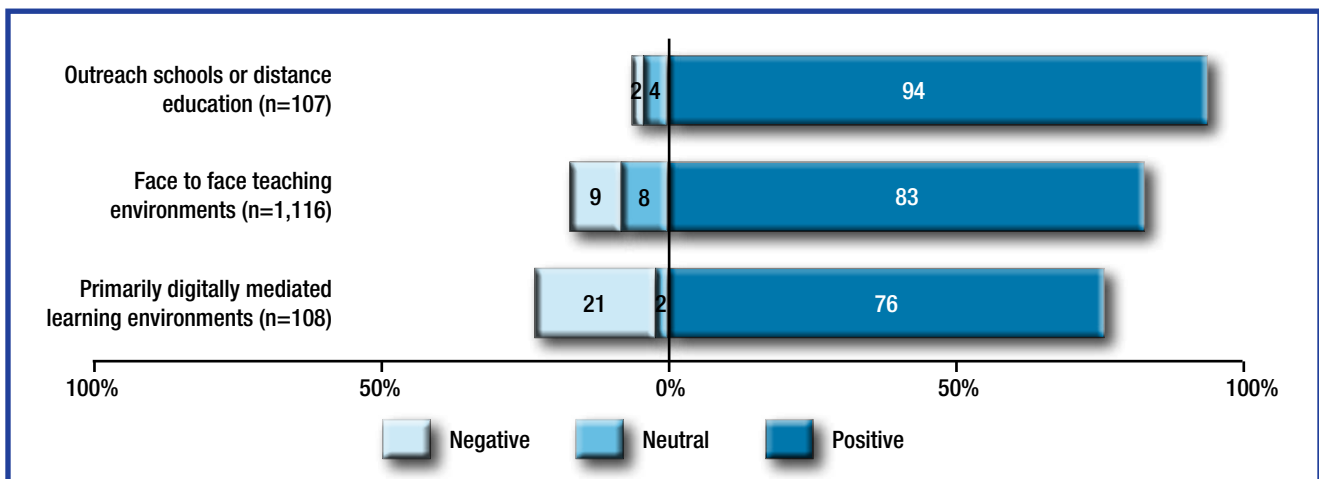


Figure 4: Respondents' Satisfaction with Their Current Teaching Context

Support

The satisfaction that respondents reported with respect to support received is summarized in Figure 5. Neutral responses are displayed to the left of centre to encourage a more conservative

interpretation of the results and to ameliorate the impact of acquiescence bias (Hurd 1999).

Although teachers generally reported low levels of satisfaction with the supports they receive in their work setting, they were most satisfied with the supports directly related to their instructional

Group Comparisons

- The difference in satisfaction between teachers in different work settings was more pronounced on the question of likelihood of recommending their job than it was on the direct question regarding satisfaction: 83 per cent of outreach teachers said they would recommend their context, 61 per cent of face-to-face teachers said they would and 60 per cent of digitally mediated environment teachers said they would.
- Overall satisfaction with teaching experience and likelihood to recommend are independent of years of teaching experience.

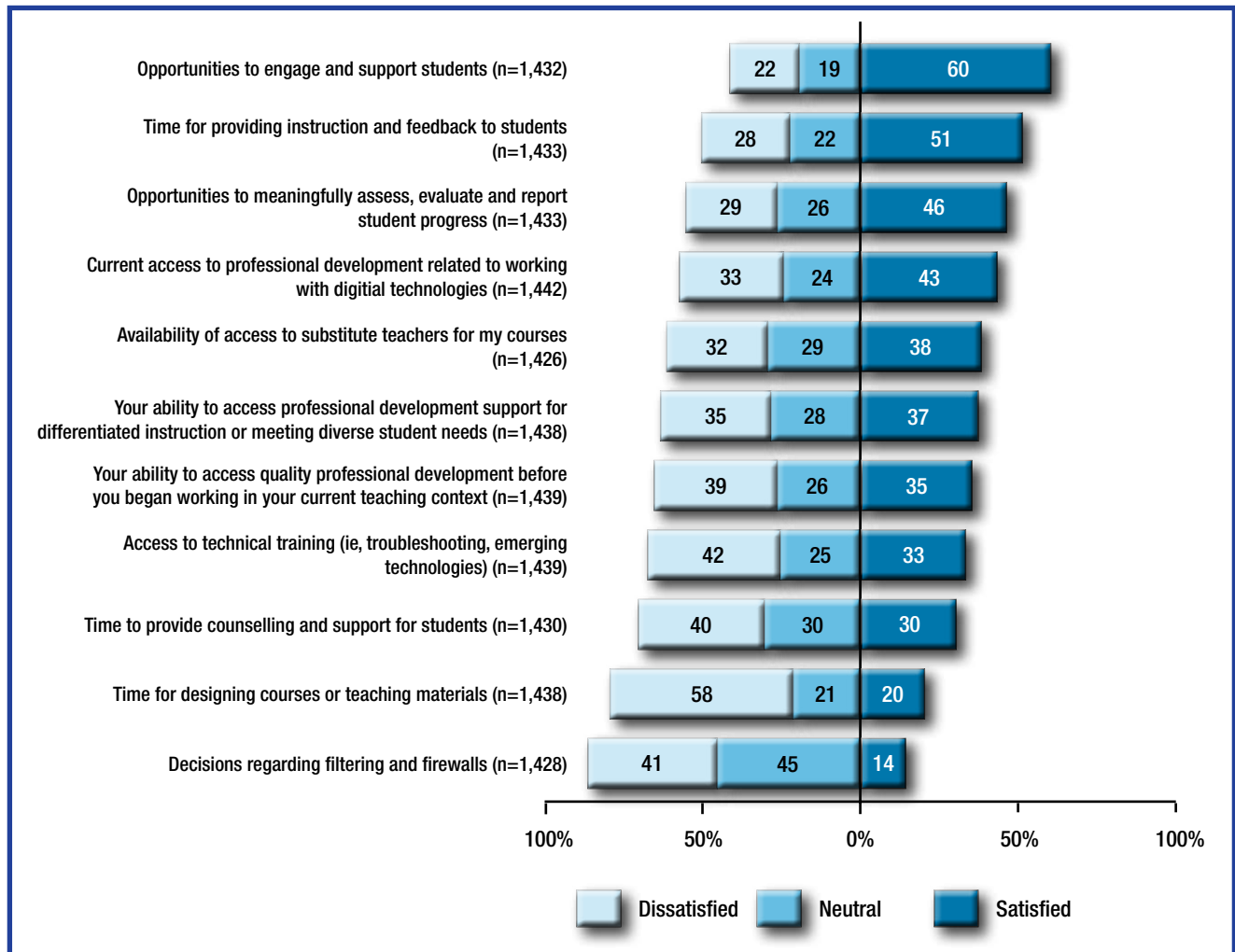


Figure 5: Respondents' Satisfaction with Support Provided

Group Comparisons

- Except in the area of technological support, teachers working in outreach schools and distance education were more satisfied than teachers in digitally mediated environments with the support they receive.
- Outreach teachers were more satisfied than teachers in the other groups with their ability to engage with students, whether by providing instruction, giving feedback, offering counselling and support to students, or assessing students and reporting on their progress.

interactions with students. Teachers tended to be least satisfied with support for technical decisions related to filtering and firewalls. To a lesser extent, teachers were also dissatisfied with the time allocated for designing courses and with their ability to access training and professional development. In addition, teachers were highly dissatisfied with the extent to which they were able to provide counselling and support to students.

Factors Enhancing and Restricting Instruction

Not unsurprisingly, most of the factors that teachers said enhanced their ability to provide instruction

focused on students. According to respondents, the access that students and teachers have to such technology as computers, interactive whiteboards, laptops, software and online resources is a key element in determining the ability of teachers to do their job. Other factors that respondents mentioned as enhancing their ability to instruct included adequate time for preparation and instruction and time to collaborate with other teachers.

To improve the quality of their instruction, teachers also need a supportive administration that encourages creative and innovative teaching, that provides shared leadership and that defines and consistently communicates strategies, vision and expectations.



Figure 6: Factors That Enhance a Teacher's Ability to Instruct Students

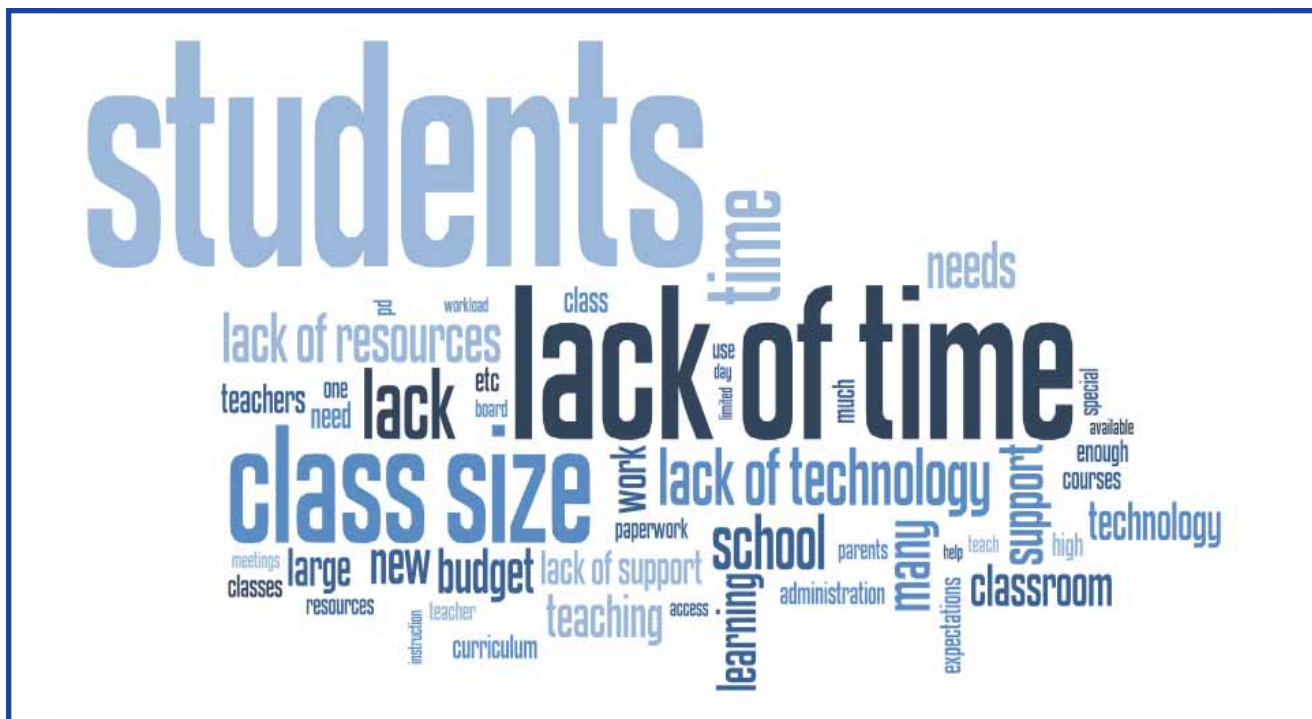


Figure 7: Factors That Restrict a Teacher's Ability to Provide Instruction

Participants repeatedly mentioned that they also need technological support as well as support from the district, educational assistants, colleagues and the community.

Many participants also mentioned that they needed broadband Internet access as well as high quality resources, including class materials, books, study guides and videos. Access to professional development that directly addresses learning and technology concerns (personalized professional learning) was also cited as a major factor that enhances a teacher's ability to instruct students.

Other factors that enhance a teacher's ability to instruct are autonomy, good communication with parents and staff, engaged students, flexibility, a compelling curriculum, one-on-one instruction, support from parents and peers, a good physical environment and teamwork.

Still another factor that participants mentioned as enhancing their ability to instruct students was class size and composition. According to respondents, small classes lead to better teaching and instruction. Conversely, classes having students from a wide range of disparate learning backgrounds are more

difficult to teach. In such cases, adequate resources and supports are especially important.

According to participants, lack of time is the greatest impediment to a teacher's ability to provide instruction. Carrying out duties such as reporting on student progress, developing individual program plans, helping with extracurricular activities and communicating frequently with parents all reduce the amount of time that teachers have to prepare for class. Numerous and lengthy staff meetings also erode available time.

Lack of technology and restricted access to the available technology were also often mentioned as limiting factors to making instruction more flexible in terms of time and space. Common issues included technological resources that were not always available for every student (ie, equity of access), insufficient professional development to enable teachers to use the technology in a way that fully supports learning and technology that is unreliable.

Respondents also reported that their ability to instruct is hampered when they cannot access support resources in a timely fashion. For example, several respondents reported delays in accessing such

In Their Own Words

- High numbers of students with behavioural individual program plans impact the classroom environment negatively. Cutbacks in educational aides mean more teacher time is required to assist students with special needs. This reduces the amount of quality time a teacher may spend with the rest of the students.
- I have a few students who have individualized needs that are unique and more demanding than the other students. I struggle with implementing programming that supports their needs and the other students' needs. More adult support in my kindergarten classroom would be better for all the students.

resources as tests, class materials, books and educational assistants. In addition, Alberta Education does not always update support resources promptly when new curricula are introduced or existing curricula change, a delay that makes classes more difficult for teachers to design and execute.

Still another restricting factor is lack of funding. Some teachers report that budget limitations reduce the supplies, equipment and technology available to students, thereby directly affecting their performance. Respondents also noted that limited funding restricts their creativity and reduces their opportunities to use cutting-edge technology to enhance learning.

Other factors that restrict the ability of teachers to provide instruction include lack of administrative support, miscommunication of—or unrealistic—expectations, a curriculum that is continually changing, the implementation of new technologies without proper support, lack of professional development, and difficult or disengaged parents.

Workload, Stress and Satisfaction

On average, teachers reported working 49 hours per week. Of this time, 37 hours are spent at either their

school or the district office, 11 hours are spent in a home office and one hour is spent off-site conducting school or home visits. This work week was dominated by three activities traditionally associated with the role: providing instruction to students, marking and assessing students, and developing course materials. However, as Figure 8 shows, respondents also spent a significant portion of their week on administrative and professional development activities.

Role Expansion

Many focus group participants expressed concern about the many ways in which they were being assigned tasks outside their primary role as teachers. Participants noted, for example, that as a result of budget cuts, they had to take on additional duties including providing technical support and counselling students with complex social and emotional needs. The specific duties being downloaded varied somewhat with the teaching environment.

Creating Boundaries

Tools such as online reporting software, content-management systems and even e-mail give parents ready access to information and school staff. Online

Group Comparisons

- Compared with face-to-face and outreach teachers, respondents in primarily digitally mediated environments spend a smaller proportion of their time providing instruction to students and a greater proportion on tasks such as contacting parents and grading.

In Their Own Words

- I spend my day putting out fires. Are we teaching? Are we tech professional people? What's my job? The very strong teacher part of my personality wants to help kids. What's best for these kids? And when I can't offer it to them because there's no help desk and I'm not a tech professional, it really becomes frustrating for everyone.
- One of the things I see eroding is the role of the guidance counsellor in an online school. I have found the offloading onto me as a teacher is really getting to be a lot. I was told last year I had to find a proctor for a student in another country, in another time zone.... Kids will tell you in email, "I feel like I want to kill myself." So where do I go with that at 10 o'clock at night? And then it turns out our guidance counsellor's hours have been cut back, and what do I do with the kid who's cheating all the time? All of these things that guidance could be very instrumental in.

reporting, in particular, may provide parents with a much more immediate window onto their child's academic performance, including anytime-access to achievement data. E-mail facilitates communication between parents and teachers outside the confines of traditional parent-teacher interviews. These tools increase the immediacy of information-sharing and may facilitate a form of communication between parents and staff (teachers and administrators).

Comments in the survey and in the focus groups, however, suggest that online reporting tools may actually diminish the opportunities for teachers to engage in meaningful conversations with parents about student progress. Rather than engaging in a dialogue with the teacher, for example, some parents may begin focusing only on the impersonal, quantitative representation of their child's progress as presented in online reports. Focus group respondents

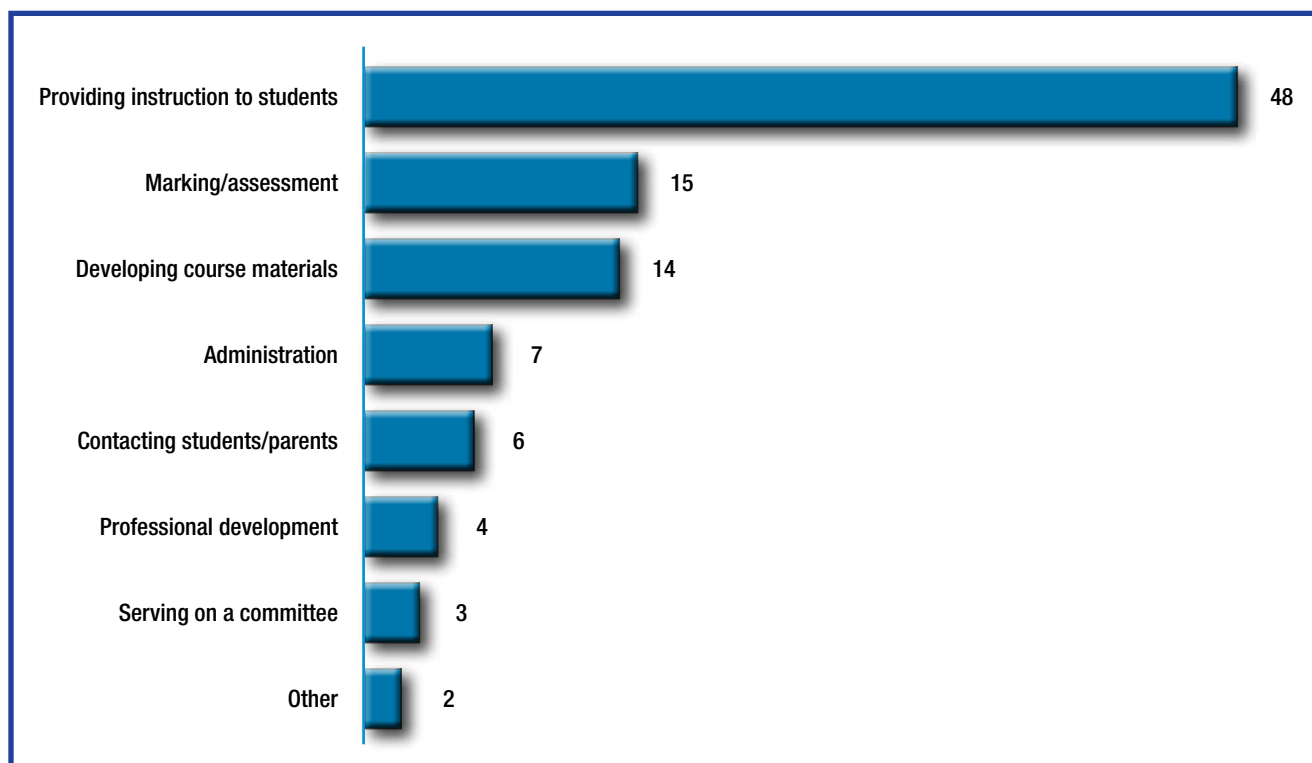


Figure 8: Percentage of Time Spent on Activities (n=1,418)

In Their Own Words

- These kids shouldn't be expecting that just because we're online, we're available 24/7. ... I woke up one morning and my discussion board was [at] 3 AM: "Where is the teacher? I've e-mailed her five times. She's not answering!" So I said, "I'm actually a human being, so I'm probably in bed for part of the night, and you wouldn't expect to go to your regular teacher's house at 3 AM and knock on the door and say, 'Can you read my paper?'" There seems to be a blurring of a lot of things.
- It's up to me to tell my parents that I'm not available and it shouldn't be my job. When you're a 24-hour teacher—and I think it's getting closer—the expectation that if a parent e-mails me at 4:00 AM that they have a response by the time they get to work at 7:00 AM is getting out of control. So I'd like to communicate that scenario to the general public. I am not a computer.

also noted that these same technologies are increasingly serving to blur teachers' boundaries between work and personal time.

Focus group respondents noted that many parents expect marks to be posted shortly after students have completed an assignment. They also expect e-mails sent after school hours to be answered before the start of the next business day. In other words, the implementation of "anytime access" to learning seems to have created the expectation of "anytime service." In the absence of overarching guidelines to manage expectations around parent-teacher interactions, individual teachers, according to focus group participants, are left to establish their own boundaries.

Class Size and Composition

The most common concern among respondents with respect to workload was class size. Respondents

noted that overpopulated—and especially split—classes require teachers to spend more time marking and reporting and inhibit their ability to personalize learning by responding to the diverse needs of individual students. Unless teachers receive additional resources, classes consisting of students with a wide range of needs and abilities may also diminish the overall quality of instruction. Respondents reported that the number of students now requiring special attention is making it harder for teachers—especially without the necessary supports—to manage the learning needs of all students.

The survey results clearly showed that teacher-student ratios differ considerably across the three teaching environments. The ratio of students to teachers is particularly high in primarily digitally mediated environments where most students are in Grades 10–12 (Division IV). Because they limit the amount of time that teachers can spend with each student, large class sizes in all contexts were identified as hindering a teacher's ability to provide instruction.

In Their Own Words

- Because we are an international school, I have a lot of ESL/international students who can hardly speak, write or understand a word of English. Yet I am held accountable for their marks in social studies. The class sizes are so large that I can't possibly give individualized instruction, although this is expected of me. In the nonacademic classes, the average size is 32, not the 18 proclaimed by the government. I have 17 coded kids in one class alone, with no help.
- Class sizes are too large, and I spend too much time on classroom management as opposed to delivering instruction, which weakens my performance as an educator.

In Their Own Words

- We don't get prep time because we cover each other's classes. It is making getting sick [and] medical appointments almost impossible as we can no longer impose on another colleague as it brings morale down so far.
- The government also does not provide curricular materials that follow the curriculum. I have to reinvent the wheel by taking the outcomes and creating the material. Something is wrong with that picture!
- I am provided with two 30-minute preps per week... I spend many, many hours at home completing my report cards, as well as the individual program plans.

Respondents voiced numerous concerns about the lack of resources available to help teachers address the challenges of working with large numbers of students with special needs, including those with behavioural problems and learning disabilities and those for whom English is a second language. Respondents also expressed concern about the inordinate amount of time they spend completing individual program plans and about the fact that they lack the supports and time needed to fulfill these responsibilities. Many respondents noted that continuous enrolment complicates student management and increases the teacher's workload. Respondents suggested that the problem could be alleviated by hiring more support staff and reducing class size by hiring more teachers.

Teaching and Planning

Respondents also cited instructional time and preparatory work as major factors affecting workload. Many respondents felt that they were required to teach too many classes, often in areas in which they had little expertise. They also questioned the current method of calculating full-time equivalency. Moreover, numerous respondents felt that they were not given enough preparation time and that the time they did have was often taken up supervising or covering for colleagues. Because they have too many classes and not enough preparation time, respondents noted that they tend to spend considerable time at home planning classes and marking assignments. Although many respondents were receptive to technology, they reported that designing lesson plans that effectively incorporate technology only increases their workload.

Extracurricular Obligations, Meetings and Professional Development

Respondents also expressed concern about obligations outside the scope of instruction. Some respondents noted that compulsory extracurricular activities such as coaching, choir, concerts and clubs added to their workload. Others enjoyed undertaking such activities on a voluntary basis and were reluctant to give them up despite their hectic schedules. Adding to the workload were mandatory meetings with staff and parents, committee meetings, and the obligation to read and reply to e-mails. Some participants observed that the rigid structure of supervision made it difficult for them to take much-needed breaks. Furthermore, some respondents lamented the lack of available professional development, especially learning opportunities related to technology. Others regarded current professional development as an unnecessary burden, particularly when the conferences or events were not related to their teaching assignments. Overall, respondents wanted not only more professional development but also more flexibility with respect to how that professional development was accessed.

Leadership and the Demands of Administration

Some respondents criticized the way in which new initiatives—especially those appearing to be superfluous or ineffective—are imposed on teaching

In Their Own Words

- My extracurricular workload is extensive. I am passionate about it and I enjoy doing it, but some of the other extracurricular assignments in our school do not come close to fulfilling their mandatory 125 hours. It is frustrating when my extracurricular (over 250 hours) is deemed equivalent to other teachers' extracurricular (well under 125 hours).
- Our staff is required to meet for between two and four hours biweekly to discuss information that could be delivered electronically.
- For any professional development offered during the day we have to book subs, write lesson plans and prepare extra for the privilege of learning and keeping up with the many changes in education.

staff. In general, respondents felt that “the system”—and in some cases administrators—were placing excessive demands on teachers. In addition to being concerned about workload, many respondents felt that the leadership was not hearing them. School boards, district administrators, school-level administrators, the Alberta Teachers' Association and the Government of Alberta were all criticized for at times failing to consult.

Technology and Flexible Teaching Environments

Enthusiasts have touted various technologies to render instruction more flexible with respect to time and space. These technologies range from instant messaging and video conferencing to interactive whiteboards to digital marking and reporting software. Study participants were asked two questions about a variety of technologies: (1) How often do you use this technology in your personal or professional life? and (2) How useful is this technology in your current teaching situation?

Figure 9 maps participants' responses with respect to frequency of use and perceived usefulness. The rankings for each activity shown in the chart were standardized using the overall mean and dispersion of the usefulness and frequency-of-use scores. As a result, all inferences drawn from this chart are relative to the other online activities shown.

Interactive whiteboards and such administrative technologies as learning management systems tended to score high with respect to both frequency of use and usefulness. These technologies are mandated in many school jurisdictions. Conversely, social networking technologies such as instant messaging and online social networks tended to score high with respect to frequency of use but extremely low with respect to perceived usefulness. Focus group participants raised two concerns about social networks that may explain the gap between the frequency with which they are used and the perception that they are not useful: (1) they may increase the prospect that teachers inadvertently overstep the professional boundaries between themselves and their students and (2) students may

In Their Own Words

- The government and board keep adding little things to the workload that take away from time planning quality lessons.
- My division is dissatisfied with diploma results, yet expects us to be “zero intolerant,” and new administrative policy forbids us from reporting to students and parents class averages, all the while using that very measure in provincial comparison as justification of concern for Grade 12 results—totally contradictory and hypocritical.... We are all suffering from low morale at the hands of “the trend of the week” central office staff who haven't been in a contemporary learning environment beyond a short PR visit in quite a while.

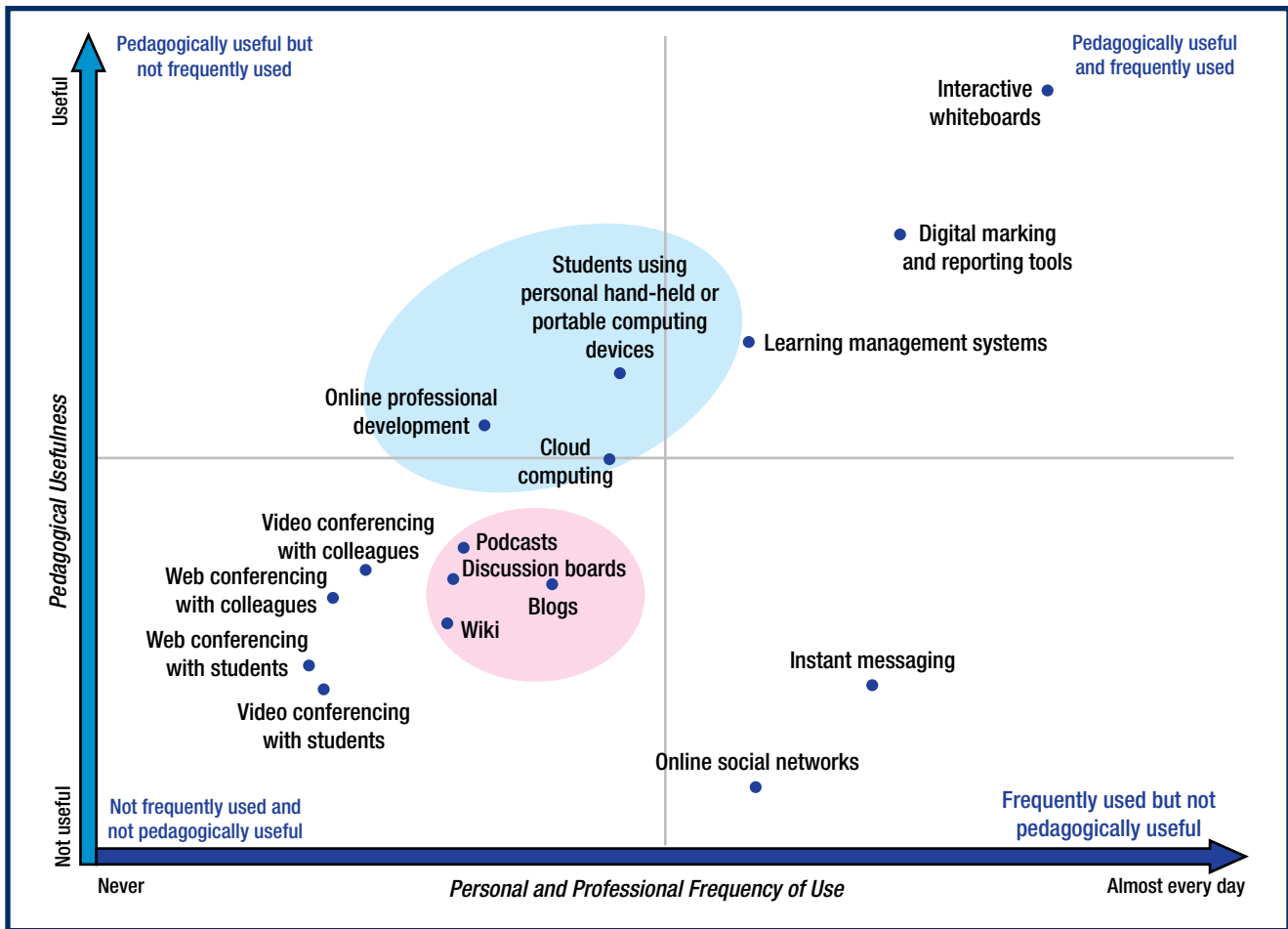


Figure 9: Frequency of Use and Perceived Usefulness of Various Technologies

Group Comparisons

- Compared with teachers in distance learning/outreach schools and in face-to-face classrooms, teachers in primarily digitally mediated learning environments engage more frequently in such online activities as instant messaging, holding video conferences, using online tools and holding web conferences. They also find these activities more useful in meeting their teaching requirements.
- Of the three groups, outreach teachers use digital marking and reporting tools most frequently (68 per cent of them use these technologies almost every day).
- Compared with teachers in the other groups, face-to-face teachers use interactive whiteboards the most frequently (53 per cent of them use interactive whiteboards almost every day).
- Teachers with 14 years of experience or less use online social networks, blogs and interactive whiteboards more frequently than those with 25 or more years of experience.

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object to allowing teachers to access their social networks for pedagogical purposes.

Participants deemed video conferencing to have very little value in increasing the flexibility of instruction. Indeed, 83 per cent of respondents reported that they do not hold video conferences with students, and only 20 per cent of respondents felt that video conferencing was useful in making instruction more flexible. Furthermore, only 24 per cent felt that using video conferences with colleagues was useful. As Figure 9 illustrates, web conferencing with students and/or between colleagues yielded similar results.

Personal hand-held or portable computing devices used by students, cloud computing and online professional development are on the cusp of being used frequently and being deemed useful (or not). As a result, they bear watching in the future.

In general, technologies that were used frequently also tended to be perceived as useful. However, the nature of the data makes it impossible to determine whether participants found a technology more useful

because they used it more often, or whether participants used a technology more often because they found it in fact to be more useful.

Changes to the Teaching Context

The online survey provides a snapshot of teachers' impressions of their working environments at a particular moment in time. However, teachers were also asked to comment on how their teaching situation had changed over time. Figure 10 summarizes participants' responses to a series of questions about the extent to which various aspects of their teaching situation had worsened, stayed the same or improved over the past year. The items listed in Figure 10 are elements of the educational environment that had been specifically targeted for improvement. The response "No change" was deemed to constitute an outcome counter to the identified goals and, for that reason, was grouped with the "Worsened" responses on the left of the y-axis.

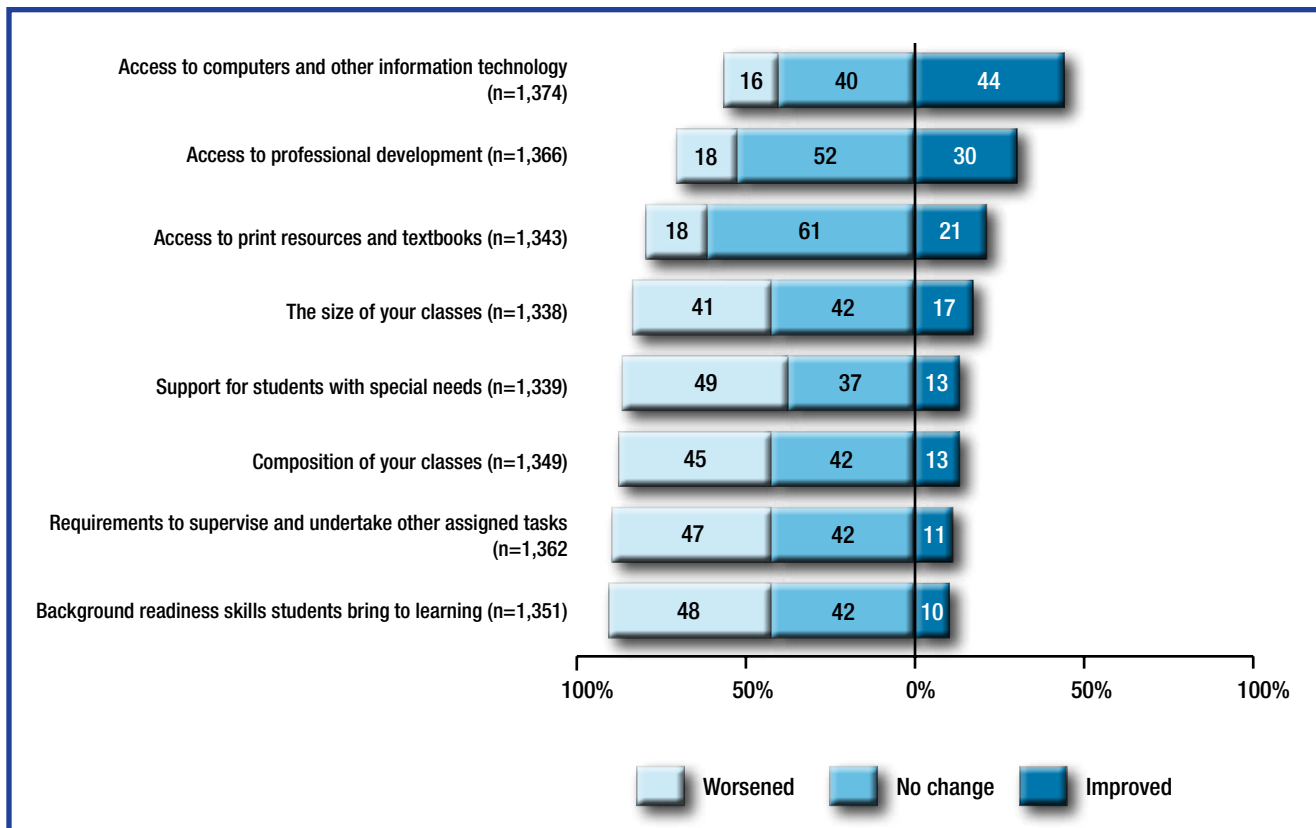


Figure 10: Changes to Teaching Context in the Past 12 Months

In only one case—access to information and communications technology—did more respondents report that conditions had improved as opposed to remaining the same or getting worse. Teachers were most negative in their assessments of items related to the size and composition of their classes. According to participants, the background readiness, willingness and ability of students had worsened significantly in the last year. How focus group participants defined readiness depended on the specifics of their teaching situation. In general, however, participants focused on two aspects of readiness:

1. *Physical and emotional readiness*: Students who are not physically and emotionally ready to learn are less likely to achieve their learning goals. Their lack of readiness may be the result of such factors as hunger, sleep deprivation, anxiety or emotional distress. What participants had to say about physical and emotional readiness varied greatly within and across focus groups and was directly related to the participant’s particular teaching situation.
2. *Academic readiness*: To progress in school, students need to have strong foundational skills upon which to build new knowledge. Teachers assess a student’s academic readiness in order to determine the appropriate level and pace of instruction. Several participants in the focus groups observed that students’ academic readiness is declining. Participants also noted that students vary in their digital readiness and that, as a result, educators should not assume that all students have the requisite digital skills to succeed in a flexible

learning environment. Because students vary in their academic and digital readiness, teachers have to spend extra time and energy ensuring that students have a common understanding of basic concepts.

Assessment and Online Reporting

Responsibilities associated with individualized instruction and assessment were major stressors for teachers. In all, 58 per cent of respondents indicated that creating individual program plans caused them high levels of stress, and 55 per cent stated that “developing school-based assessments in line with 21st century literacies” caused them a high degree of stress. These high levels of stress were reported primarily by teachers working in a face-to-face environment. Approximately 60 per cent of face-to-face teachers reported high stress levels, compared with 30 to 40 per cent of teachers working in outreach and digitally mediated environments.

With reference to online reporting requirements, a majority (53 per cent) of teachers felt that online reporting tools had increased their workload, while only 13 per cent reported that these tools had decreased their workload. The perceived increase in workload is especially high among more experienced teachers. Many respondents observed not only that online reporting tools are unreliable and time-consuming but also that parents are increasingly expecting teachers to post student results almost

In Their Own Words

- With the expectation to include such a vast amount of information on the report card, parents are not reading it, and I feel they understand even less about how their child is performing in school. The number of hours spent on creating reports is not improving communication with home.
- Online reporting tools do not improve/enhance instruction or assessment. In fact, with the new reporting [tools], my job will increase. This type of reporting will, in my view, have a negative impact on assessment.
- Online reporting provides no more information than the older form. The major drawback is the unreliability of the technology and the countless extra hours that are required to work with it. It provides no real advantage but creates a ton of extra work and a ton of waste paper for the shredder. Everything still has to be printed for each reporting period and then shredded when a new report is prepared (wasted time and money).

Group Comparisons

- Teachers working in face-to-face environments and in outreach schools felt that online reporting tools had a smaller impact on the level of instruction and assessment (23 per cent and 20 per cent, respectively) than teachers working in digitally mediated environments (40 per cent).
- The perceived improvements in communication with parents and students resulting from online reporting tools is higher in digitally mediated learning environments than in face-to-face environments and outreach schools.

immediately. Among the factors cited as increasing teachers' workloads were constantly fluctuating reporting policies and the sheer number of reporting periods per year.

Although online reporting tools negatively affected teacher workload, 64 per cent of survey respondents felt that such tools had at least a "moderate" effect on

the quality of the communications about student achievement they had with parents, and 64 per cent felt that the tools had a "moderate" effect on the quality of their relationships with students. In addition, 56 per cent of teachers felt that online reporting tools were responsible for at least a "moderate" improvement in the level of instruction and assessment in their classroom.

Conclusion

We shape our tools and they, in turn, shape us.

—Marshall McLuhan

This study identified various ways in which the flexible timing and pacing of instruction significantly affects both Alberta teachers and their teaching and learning environments. The data collected from the more than 1,450 survey responses and the seven focus groups reveals a number of consistent themes and issues concerning the use of technology in making teaching and learning more flexible. The study is relevant not only because the concept of “flexible learning” is increasingly dominating system-level discussions about the informed transformation of the education system but also because the exponential growth in digital technologies is profoundly affecting our personal and professional lives and the ways in which we interact as a society.

Overall, study participants rated their current experience working in flexible teaching environments as positive. Outreach teachers were the most positive group, while those working in a primarily digitally mediated learning environment were, by comparison, the most negative. Although study participants had many good things to say about their teaching situation, they also raised a number of significant concerns about their conditions of professional practice. Among the factors that respondents cited as contributing to their increased workload were larger and more diverse classes, supervision requirements and the expansion of their role as pedagogical leaders. Many participants observed that staff reductions had contributed to their increased workload. In some cases, for example, teachers have had to provide technical support or take on the responsibility of counselling students with complex social and emotional needs. These additional responsibilities diminish the ability of teachers to create engaging and effective learning environments and build strong pedagogic relationships with their students.

The study suggests that competing demands on time is the most significant factor restricting a teacher’s ability to provide instruction. Such duties as reporting student progress online, developing individualized

program plans, organizing extracurricular activities and communicating frequently with parents all reduce the amount of time that teachers have for interacting with and teaching students. Many participants noted that online reporting tools, because they enable information to be shared immediately with parents, dissolve the boundaries between work and personal time. In essence, more flexible systems that afford “anytime” access are creating the expectation that teachers will provide “anytime” service. In the absence of overarching guidelines to manage expectations around parent–teacher interactions, individual teachers are being left to establish and maintain boundaries on their own. In some cases, these same online reporting tools appear to be creating a distance between parents and teachers because a quantitative number is being used to communicate student progress rather than a more meaningful conversation with the teacher.

Interestingly, the survey reveals that teacher–student ratios differ considerably across the three teaching environments. The ratio of students to teachers is particularly high in primarily digitally mediated environments. This situation, coupled with the fact that some teachers in digitally mediated environments are on temporary contracts, caused some respondents to remark that they felt like “paid markers.” The digitally mediated respondents noted that the fully online learning space is increasingly being misperceived as a “dumping grounds” for students who are unable to succeed in group-paced courses. Some participants suggested that students should be evaluated to determine whether they have the knowledge, skills and attributes necessary to succeed in nontraditional or more flexible teaching and learning environments.

Respondents teaching in digitally mediated environments also believe that they should have the same level of flexibility with respect to scheduling their work as do their students. Many respondents reported that they were being asked to support self-paced students within the confines of the traditional workday. As a result, teachers were often not available when their students needed them. Respondents also pointed out that the funding models, work schedules and role definitions that

apply to traditional face-to-face environments cannot be applied wholesale to nontraditional teaching contexts.

In terms of the potential of technology to render the timing and pacing of instruction more flexible, both teachers and administrators were overwhelmingly positive. They often remarked that technology helped them to personalize and improve instruction and to make it more flexible in terms of timing and pacing. The study also reveals that some jurisdictions have taken what some participants called a “ready-fire-aim” approach to technology: implementing new technologies before teachers have had an opportunity to learn how they work. The research underscores the importance of ensuring that new technologies are introduced more thoughtfully so that they can be properly tested and so that teachers receive adequate training in the use of technology to enhance learning. Pre- and post-implementation supports for teachers and administrators are crucial to the change process.

This study also raises questions about the financial expenditures and human resources that have been allocated in Alberta to implementing video conferencing as a province-wide strategy for rendering instruction and learning more flexible. This study clearly indicates that the vast majority of teachers (83 per cent) seldom use video conferencing, a technology that only one fifth of the study participants find pedagogically useful. Video conferencing should, therefore, be a funding priority only in areas in which there is a specific and defined need. Video conferencing might be useful, for example, in rural schools that do not have easy access to professional development or specific pedagogical expertise.

Given the scarcity of financial, technical and human resources across the Alberta system, policymakers should focus on investing in technologies only in areas in which there is a defined and pedagogically appropriate need. When allocating funding for technology and professional development in the near future, the province would be well advised to take

into account what this study reveals about the perceived pedagogical usefulness of various technologies and the frequency with which they are actually used (see Figure 1). School jurisdictions should also ensure that teachers are involved in making decisions about which technologies—such as online reporting tools and/or interactive whiteboards—are selected to enhance student learning.

Finally, this study revealed many questions that might form the basis of future research on flexible learning environments. Here are some of them:

1. What does it mean for a student to be self-directed in a flexible teaching and learning environment, and how is student success affected by such factors as age, gender, education level and the type of flexible learning environment chosen?
2. How will the curriculum (that is, programs of study, assessment tools and learning and teaching resources) need to change in order to support learning that is more personalized and more flexible in terms of time and space?
3. How can professional development and teacher learning be personalized to better reflect the realities of different flexible learning environments?
4. To what extent can wraparound and inclusive education services be provided to students in non-brick-and-mortar learning environments?
5. What learner attributes are linked to success in a flexible learning environment, and what supports do these students need in order to succeed?
6. What basic proficiencies and pedagogical knowledge do teachers require to succeed in flexible teaching and learning environments, and how are new teachers being prepared to enter these environments?
7. How effective have earlier provincial education policies been in transforming the teaching and learning process, and what is the legacy of these policies?

Afterword

As Alberta and other jurisdictions move away from the industrial model of education, we will need to carefully consider the ways in which we hope to personalize learning (with and without technology), thereby ensuring that students have the skills and knowledge required to navigate through an uncertain future. Educators and policymakers will need to engage in mindful discussions about the purposes of schooling and the kind of citizens that we want our learning communities to produce.

This research underscores the Association's ongoing need to explore and discuss the interrelationship between curriculum, pedagogy and technology. In particular, it suggests the need to examine how the current industrial model of schooling can be modified to enhance the highly relational space of learning and more fully take into account today's complex societal needs. In undertaking this examination, our focus must always be on what is best for students. Furthermore, we must remain committed to public

education and to the core values of innovation, creativity, social responsibility and community. Doing what is best for students was also the major theme of *Using Technology to Support Real Learning First in Alberta Schools*, a comprehensive research study that the Association undertook of the education sector's investment in emerging technologies in Alberta during the past decade.

The Association hopes that this research will stimulate a vigorous debate about the true nature of learning in a digital era and about the role that technologies can play in transforming the teaching and learning process so that it optimizes student learning in a balanced and humanistic way. In addition to having ongoing conversations about what constitutes effective flexible learning environments for students and appropriate conditions of professional practice for teachers, Albertans also need to talk about the kind of society they want to create.

Appendix I: Research Methodology

Research Procedure

1. The online survey was accessible from November 23, 2010, to February 7, 2011. The existence of the survey was advertised in the *ATA News*, announced at teachers' conventions, noted in electronic listservs and publicized in personal and professional networks. To ensure that a broad range of potential participants were aware of the study, a link to the survey was also placed on the ATA's website.
2. Researchers facilitated seven focus groups throughout the province that involved more than 40 participants. Five of these sessions were conducted face-to-face, while the remaining two were conducted via teleconference to accommodate people who were unable to attend a face-to-face session.
3. The study findings were triangulated with a review of the literature on flexible learning environments.

Focus Group Activity

The focus groups, which took place after the online survey was completed, were held in different parts of the province to reduce travel and encourage as many people as possible to participate. The larger focus groups were broken into smaller groups of between five and seven people to ensure that all members had a chance to be heard. In creating the smaller groups, the researchers separated people working in the same school or environment and made sure that teachers were not in the same group as their direct supervisor or administrator. The intent of separating respondents in this way was to ensure that existing power relationships did not inhibit people from speaking out. The facilitators were also careful to ensure that participants did not censor one another or yield to group conformity and that no one person dominated the discussion. An analysis of the transcripts suggests that the participants were confident and respectful in discussing contentious issues related to their conditions of professional practice.

Near the end of each focus group, the facilitator presented a selection of results from the online survey and asked participants to help them interpret the findings. The intent of this activity was to help clarify findings that the research committee deemed to be somewhat ambiguous.

Appendix II: Summary of Qualitative Data

What factors affect your overall workload?

Category	Number of Comments	Typical Comments
Class Size, Number of Students	268	<ul style="list-style-type: none"> I find it very difficult getting through the curriculum before the course finishes. I need smaller classes to help students reach their full potential. I have 30 in my class, which creates a lot of marking outside of school. When teaching, it is hard to give the one-to-one attention needed. It is hard to implement personalized learning for each student when you have so many of them and only a short amount of time to get through curriculum.
Differentiated Learning, Special Needs	236	<ul style="list-style-type: none"> The biggest impact on my workload is the inclusion of special needs students. It is a huge task providing programs to meet individual needs of students one year below or above grade level. When a special needs child, functioning several years below grade level, is put into the mix, the planning required is overwhelming. The wide range of student abilities is difficult to cope with. The biggest difficulty is students with special needs or lower ability.
Planning and Adapting to New Curriculum	221	<ul style="list-style-type: none"> I am teaching eight different courses, and the amount of preparation required to do this is enormous and unreasonable. It is nice to plan and use a SMART board, but it is time-consuming and it all falls on personal time. Using other manipulative material (in math and science) requires preparation too, as well as keeping up to date with new resources and curriculum. Time for planning and organizing lessons is too little.
Reporting and Assessment	198	<ul style="list-style-type: none"> Filling out report cards. With the new requirement to fill in standards, a lot more time is required. These requirements have created a significant amount of stress. All of the new nonsense on the report cards was difficult to enter. Report cards for each class took two weekends to complete. Amount of time spent on assessment, marking, reporting student achievement. No extra time given to do this work.
Technology and Online Environment	177	<ul style="list-style-type: none"> The preparation of online instructional materials requires a much greater time investment than traditional resources. Use of technology: having a SMART board in the classroom is great, but I find I spend hours looking for and creating documents to use on it. Again, no extra prep time is given. Technology that is thrust upon us, but no time is given to practise what we are being exposed to. How are we supposed to remember all the new technology when we don't get a chance to practise it. We have no time allocated for this and, even if we did, it would mean more stress on our part as it would require us to prepare and plan for subs.
Extracurricular Obligations	144	<ul style="list-style-type: none"> The extracurriculars that are supposed to be voluntary but that are actually expected can become very time-consuming. They take time away from my planning and teaching and sometimes have a negative impact on my teaching. After-school activities such as movie nights, meetings, interviews with parents, library nights and concerts that we are expected to attend regularly.
Meetings and Communication	131	<ul style="list-style-type: none"> Meetings, meetings, meetings. Countless e-mails to read through every day reduces productivity.

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Administration and Leadership	122	<ul style="list-style-type: none"> • Poor leadership (lack of continuity in staffing for teaching and administration as well as support staff positions) and lack of vision at the school level. • Administration does not understand my program and is unwilling to step out of the box to accommodate it. Rather, they expect everyone to be accountable for the same things. • Constant initiatives from the board that look great on paper but are not conducive to student learning. I spend more time doing paperwork and working on my computer to fulfill all my obligations on these projects than I do actually teaching.
Paperwork and Tasks	116	<ul style="list-style-type: none"> • I am finding that I am given an enormous amount of small tasks that end up taking a majority of my time. I feel that if I had fewer of these menial tasks to accomplish, I could focus more on instruction and planning engaging lessons. • Increasing amounts of paperwork designed for accountability, but which are truly king-sized redundancies and completely irrelevant to the day-to-day goings-on in the classroom. • The clerical work and other tasks downloaded to teachers take away teaching time. More is expected with no more time allowance.
Teaching Assignments	98	<ul style="list-style-type: none"> • I'm expected to teach about 15 different courses across three divisions, and those divisions do not include the one division I'm actually trained in. • The biggest factor impacting my overall workload is my ever-changing course load. We small, rural school teachers are often teaching from elementary to high school. From one year to the next, our teaching load can change, requiring planning for new courses. • One-on-one teaching takes more time than classroom teaching, and no consideration is given for this factor in the workload that I am assigned.
Staff and Support	95	<ul style="list-style-type: none"> • Little to no support with at-risk students (been waiting four months for a speech person to come in). • In our small school, there is no special education teacher to help those students who need extra one-on-one assistance and no general teaching assistant time. • I work in a K–12 school and I have to teach many subjects, preventing me from really specializing. We need more staff here.
Resources	87	<ul style="list-style-type: none"> • Lack of resources developed for our students and their needs has become a mountainous barrier. • We are lacking resources in our school to be able to provide students with a digitally enhanced classroom. Therefore it's difficult to support 21st century learning when we are still working with older PCs, lack of SMART boards, etc.
Expectations and Demands	84	<ul style="list-style-type: none"> • Expectations can be very unrealistic given the time frame in which tasks need to be completed. • I feel that, in the areas where I can be autonomous, my workload is reasonable. However, my workload often becomes a burden when external forces or pressures are applied or involved.
Training and Professional Development	67	<ul style="list-style-type: none"> • I have to do all the professional development at my school and music professional development on my own time, usually Saturdays. • To become digitally fluent so that I can be a model for staff and students requires significant hours outside of school. Learning software applications, programs and troubleshooting is very time-consuming.
Supervision	59	<ul style="list-style-type: none"> • Requirement to do 30 hallway, cafeteria, library supervisions per year (45 minutes each) during our spares or lunch hours, as well as exam supervisions. • Lunchroom supervision and excessive playground supervision is very tiring.
Other	156	<ul style="list-style-type: none"> • A high number of students in a wide geographical area requiring a great deal of travel and some overnight stays. • Students that go on holiday any time of the year without the parents realizing that the student needs to catch up on missed lessons. • My school is very focused on ensuring professionalism, innovation and creativity, activities that outweigh the typical focus on workload. Workload is so 19th century. We can't be innovative and creative if we hang on to old structures.

Do you have any additional comments?

Category	Number of Comments	Typical Comments
Technology Is Problematic or Ineffective	67	<ul style="list-style-type: none"> • The idea sounds great, but the reality is that the expense of the technology is not significantly improving learning. It is also not making the job easier. • For the past two years [technology] has been a major pain in the neck as the school board has been upgrading the system just before reporting periods. Thus major glitches have caused teachers more work and headaches. System upgrades should take place long before teachers need to work on report cards so that glitches can be fixed in a timely fashion. • Technology problems have caused us to have to input the same data multiple times as it just “vanishes.” The idea is great, but the implementation is horrible. These programs are inadequate and a hindrance.
Parents and Students Are Unwilling or Unable to Use Online Tools	47	<ul style="list-style-type: none"> • Not all parents are willing to change with the times, so half my class requires paper materials and the other half wants everything online, thus creating two jobs for each item. • Many of our parents do not have computers in their homes, and if they do, they have land lines for Internet service.
Technology Increases Workload	42	<ul style="list-style-type: none"> • One to two hours is required to transfer marks to our online reporting tool. This discourages me from doing it when there are higher priority tasks to be completed. • I think online reporting is a great tool; however, it increases workload as you still have to keep paper records and you still have to complete report cards.
Demands Placed on Teachers	34	<ul style="list-style-type: none"> • I am off on stress leave. Why? Because it is impossible to cope with all of the demands made on teachers to do more than teach. I am not a counsellor. I am not a specialist for teaching students that belong in knowledge and employability classes. My workload goes up for one child with special needs in each class. • I feel overwhelmed by the many new expectations placed upon me as a teacher. Time and support are insufficient. Furthermore, how many more expectations can be added without taking anything else away?
Positive Comments About Technology and Online Reporting	33	<ul style="list-style-type: none"> • It is more work to update and maintain the online reporting tools, but it takes responsibility off me and puts more in the hands of the parents and students. It also opens up the lines of communication between parents, students and teachers. • Online reporting works. We use [technology] as some of the mechanisms for contacting students, [and] parents are learning to use [technology] to assess student progress. It works.
Criticism of Leadership	30	<ul style="list-style-type: none"> • The practical side of applying all of these new expectations must be carefully considered. At the very least, the [school district] and Alberta Education must communicate with each other about the timing of new expectations each of them puts upon teachers and make some attempt to coordinate them. • Get the ATA, Alberta Education and the school board off my back so I can work. • My school district has gone crazy with initiatives, jargon, boutique programming and a whole lot of other useless, expensive stuff. I heard a quote in a book calling this madness “repetitive change syndrome.” Not sure of the book title, but it sure seems to fit how I feel about it!
Shortage of Support and Resources	21	<ul style="list-style-type: none"> • Digital learning opportunities for kids can only happen with a tremendous increase in funding and appropriate opportunities for teachers to be immersed in professional development. • Need to have less students in the classroom in secondary schools so instruction and personalization can improve. • There is no technical support or training for teachers with regard to online reporting and is not currently in place for parents or students to use. When teachers have issues with the reporting system, there is no assistance to support them.

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Need for Professional Development	14	<ul style="list-style-type: none">• It is difficult to use digital tools when you have to share with multiple teachers and when there is no time given to learn how to use these tools or to input information.• More practical, hands-on professional development opportunities related to new technologies such as cloud computing must be made available to all teachers now so that we can best meet the needs of our 21st century students. I am concerned that there will be a gap between the digitally savvy haves and have-nots unless all teachers receive more training with new technologies.
Other	52	<ul style="list-style-type: none">• Constantly changing reporting is very difficult to keep up with. We have new curriculums, changing classroom students, and then ever-changing report cards. Can we not find something that works and then stick with it? We often spend so much time working on new assessment strategies, report cards and parent–teacher–student conferences and lose time to plan new and innovative things for students.• It would be nice for each school district to have a place where teachers can create a free webpage for themselves (school use). This would help with marks sharing, website sharing, resource sharing and general communication with students and parents.

Appendix III: The Online Survey

A. Current Teaching and Learning Conditions

1. Which of the following best describes your work setting:

- Face-to-face teaching environments in which digital technologies are used as a component of students' learning experiences
- Primarily digitally mediated learning environments such as online learning, e-learning and/or distributed learning
- Outreach schools or distance education
- Other

2. If other, please describe your work setting:

3. Overall, how would you rate the experience of teaching in your current teaching context?

1	2	3	4	5
Very negative	Somewhat negative	Neutral	Somewhat positive	Very positive

4. Please indicate your satisfaction with each of the following elements related to your working conditions as a teacher:

	1	2	3	4	5	6
	Very dissatisfied	Somewhat dissatisfied	Neutral	Somewhat satisfied	Very satisfied	Not applicable
a. Job security	1	2	3	4	5	6
b. Salary and fringe benefits	1	2	3	4	5	6
c. Physical condition of your workspace	1	2	3	4	5	6
d. Number of students that you instruct	1	2	3	4	5	6
e. Availability of material and other resources for instructional purposes (eg, learning resources, information technology)	1	2	3	4	5	6
f. Technical support (eg, equipment, bandwidth)	1	2	3	4	5	6
g. Clerical support	1	2	3	4	5	6
h. Professional autonomy	1	2	3	4	5	6
i. Level of responsibility in your school	1	2	3	4	5	6
j. Expectations regarding report cards and reporting to parents	1	2	3	4	5	6
k. The work climate in your school (if applicable)	1	2	3	4	5	6
l. The way your school functions (if applicable)	1	2	3	4	5	6
m. Overall workload given your full-time equivalent status	1	2	3	4	5	6

Please explain what factors impact your overall workload:

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5. What are the two or three factors that are most significant in enhancing your ability to instruct students in your current teaching context?

1

2

3

6. What are the two or three factors that are most significant in restricting your ability to instruct students in your current teaching context?

1

2

3

7. In a typical week, approximately how many hours do you spend on work-related activities at each of the following locations?

On-site at my school /district office

Off-site doing school/home visits

In my home office

8. In a typical week, what percentage of your time (excluding preparation time) do you spend on each of the following modes of instruction? (Please ensure responses total 100 per cent.)

Face-to-face teaching environments in which digital technologies are used as a component of students' learning experiences.

Primarily digitally mediated learning environments such as online learning, e-learning, and/or distributed learning

Outreach schools or distance education

Other

9. In your current teaching context, approximately what percentage of your time do you spend each week on the following activities? (Please ensure responses total 100 per cent.)

Developing course materials	<input type="text"/>
Providing instruction to students	<input type="text"/>
Marking/assessment	<input type="text"/>
Contacting students/parents	<input type="text"/>
Serving on a committee	<input type="text"/>
Administration	<input type="text"/>
Professional development	<input type="text"/>
Other	<input type="text"/>

10. Please indicate your level of satisfaction with the support you receive in each of the following areas:

	1	2	3	4	5
	Very dissatisfied		Neutral		Very satisfied
a. Time for designing courses or teaching materials	1	2	3	4	5
b. Your ability to access quality professional development before you began working in your current teaching context	1	2	3	4	5
c. Your ability to access professional development support for differentiated instruction or meeting diverse student needs	1	2	3	4	5
d. Time for providing instruction and feedback to students	1	2	3	4	5
e. Opportunities to engage and support students	1	2	3	4	5
f. Time to provide counselling and support for students	1	2	3	4	5
g. Current access to professional development related to working with digital technologies	1	2	3	4	5
h. Access to technical training (ie, troubleshooting, emerging technologies)	1	2	3	4	5
i. Decisions regarding filtering and firewalls	1	2	3	4	5
j. Opportunities to meaningfully assess, evaluate and report student progress	1	2	3	4	5
k. Availability of access to substitute teachers for my courses	1	2	3	4	5

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11. For each of the mainly online activities listed below, indicate (a) how often you engage in the activity for personal or professional reasons and (b) how useful you believe the activity is in helping you meet the requirements of teaching in your current teaching context.

Frequency of Use					Usefulness in Your Current Teaching Context				
Never	Less than once a month	Between once a week and once a month	A few times a week	Almost every day	Not at all useful (1)	(2)	Some-what use-ful (3)	(4)	Very use-ful (5)

- a. Instant messaging
- b. Updating an online social network (eg, Facebook, Twitter, personal website)
- c. Holding a video conference with students
- d. Holding a video conference with colleagues
- e. Participating in online professional development
- f. Writing on a discussion board
- g. Reading or contributing to a blog
- h. Creating or listening to a podcast
- i. Reading or contributing to a wiki
- j. Using digital marking and reporting tools (eg, Students Achieve, Desire2Learn)
- k. Using cloud computing (eg, Google Docs, Dropbox)
- l. Using a learning management system (eg, Blackboard, Web- CT, Desire2Learn, Moodle)
- m. Using an interactive whiteboard
- n. Holding a web conference with students
- o. Holding a web conference with colleagues
- p. Having students use their own personal handheld or portable computing devices
- q. Other

Other, please specify:

12. How many courses are you currently teaching:

a. Face-to-face with digital technology

b. Online

c. Print correspondence

d. Other

13. In your current teaching context, indicate the approximate number of students in each division for whom you provide instruction:

	Face-to-face with digital technology	Online	Print correspondence	Other
a. Division I (K–3)				
b. Division II (4–6)				
c. Division III (7–9)				
d. Division IV (10–12)				
e. Total students				

B. Your Experiences in Your Current Teaching Context

14. How likely would you be to recommend your current teaching context to other teachers?

1	2	3	4	5
Very unlikely	Somewhat unlikely	Neutral	Somewhat likely	Very likely

15. The Alberta government has made a commitment to improving teaching and learning conditions in the K–12 system. Please indicate the degree to which the following conditions have changed this school year compared with last:

1	2	3	4	5	6	
Significantly worsened		No change		Significantly improved	Not sure/Don't know	
a. The size of your classes	1	2	3	4	5	6
b. Composition of your classes	1	2	3	4	5	6
c. Support for students with special needs	1	2	3	4	5	6
d. Access to computers and other information technology	1	2	3	4	5	6
e. Access to print resources and textbooks	1	2	3	4	5	6
f. Access to professional development	1	2	3	4	5	6
g. Requirements to supervise and undertake other assigned tasks	1	2	3	4	5	6
h. Background readiness skills students bring to learning	1	2	3	4	5	6

16. Please indicate the level of stress you experienced associated with various student reporting and assessment requirements during the school year:

1	2	3	4	5	
Very low		Moderate		Very high	
a. Developing school-based assessments in line with 21st century literacies	1	2	3	4	5
b. Completing Individual Program Plans (IPPs)	1	2	3	4	5

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17. How has the use of online reporting tools changed your workload as a teacher?

1	2	3	4	5	6
Significantly decreased		Not changed		Significantly increased	Not applicable

18. To what extent have online reporting tools:

1	2	3	4	5	6
Very low		Moderate		Very high	Not applicable

- | | | | | | | |
|--|---|---|---|---|---|---|
| a. improved the level of instruction and assessment in your classroom? | 1 | 2 | 3 | 4 | 5 | 6 |
| b. facilitated and improved communication with students? | 1 | 2 | 3 | 4 | 5 | 6 |
| c. facilitated and improved communication with parents? | 1 | 2 | 3 | 4 | 5 | 6 |

19. Do you have any additional comments?

C. Demographic Data

The information collected below will be used only to compare and analyze the aggregate data collected in this and other related surveys of Alberta teachers.

20. Do you live in the same geographic proximity as the school jurisdiction for which you work?

- Yes
 No

21. Which teachers' convention do you attend?

- Mighty Peace
 Northeast
 North Central
 Greater Edmonton
 Central East
 Central Alberta
 Palliser
 Calgary City
 South West
 Southeast

22. How many years of teaching experience do you have, including the current year?

- 1
- 2–4
- 5–9
- 10–14
- 15–19
- 20–30
- Over 30

23. What is your employment status?

- Full-time
- Part-time

24. What is your current designation?

- Classroom teacher
- Administrator
- Classroom teacher/administrator
- Other _____

25. What is your age?

- 25 or younger
- 26–30
- 31–35
- 36–40
- 41–45
- 46–50
- 51–55
- 56–60
- 61–65
- Over 65

26. What is your gender?

- Male
- Female

Appendix IV: Focus Group Moderator Guide

Introductions (10 minutes)

- Welcome and thank participants.
- Introduce the facilitator and participants.
- Explain what the researchers mean by flexible learning environments and the three survey classifications: face-to-face with digital technologies, outreach and distance education, and primarily digitally mediated.
- Ask participants to read and sign the consent form to participate in the focus group.

Objectives of the Session (5 minutes)

- To gather data from participants on how they use digital technology to make student learning more personalized through the flexible timing and pacing of instruction.
- To familiarize focus group participants with the process of gathering data via a focus group discussion.
- To answer any questions about the agenda or the flow of the session.

Working Assumptions

- Everyone has wisdom in this room.
- We need all of this wisdom for the best results.
- There are no wrong answers.

Small Group Discussions (30 minutes)

1. How can flexible learning environments be improved?
2. How should digital technologies be used to support teaching in flexible learning environments?
3. With respect to teaching in flexible learning environments, what does the ATA need to advocate for?

Large Group Reflection on Future Directions (45 minutes)

Finding 1: Although 83 per cent of teachers positively rated their teaching context, only 63 per cent would recommend their context to others.

1. Why do you think teachers in flexible learning environments are generally satisfied but would not recommend their teaching context to others?

Finding 2: In all, 48 per cent of teachers felt the “background readiness skills students bring to learning” has worsened in the past year.

2. How do you define readiness in this context (ie, technological skill, existing knowledge, rested and well fed) and why do you think readiness is worsening?
3. Is readiness closely related to the teaching and learning context?

Finding 3: Almost 50 per cent of teachers have never participated in online professional development and only 34 per cent indicated it was a useful activity.

4. What are your thoughts on the effectiveness of online professional development, and how it could better support teaching in flexible learning environments?

Finding 4: Although 46 per cent of teachers “update an online social network” at least once a month, only 12 per cent thought this activity was useful in “helping you meet the requirements of teaching in your current context.”

5. What factors do you think affected the low usefulness ratings for online social networks? How do you (or your district) manage boundaries and compartmentalization between students and teachers on social networks?

General Questions:

1. What does this data (and your practical wisdom) tell you about what could be done differently regarding supporting teaching in flexible learning environments in Alberta schools?
2. What should be the role of the Alberta Teachers’ Association with respect to advocating for conditions of professional practice that support teaching in flexible learning environments and enhance overall student learning?

References

- Alberta Education. 2010. *Inspiring Action on Education*. Edmonton, Alta: Alberta Education. Available from <http://engage.education.alberta.ca/uploads/1006/20100621inspiringact86934.pdf> (accessed October 15, 2010).
- Alberta Teachers' Association (ATA). 2010. *Using Technology to Support Real Learning First in Alberta Schools*. Edmonton, Alta: ATA.
- Bonk, C. 2002. "Online Teaching in an Online World." *United States Distance Learning Association Journal* 16, no 1.
- Cavanaugh, C S. 2001. *The Effectiveness of Interactive Distance Education Technologies In K-12 Learning: A Meta-Analysis*. Jacksonville, Fla: College of Education and Human Services, University of Florida.
- Cavanaugh, J. 2005. "Teaching Online: A Time Comparison." *Online Journal of Distance Learning and Administration* 8, no 1. www.westga.edu/~distance/ojdla/spring81/cavanaugh81.thm (accessed May 9, 2011).
- Fuller, D, R Norby, K Pearce and S Strand. 2000. "Internet Teaching by Style: Profiling the Online Professor." *Educational Technology & Society* 3, no 2: 71-85.
- Greenberg, A. 2004. *Navigating the Sea of Research on Video Conferencing-Based Distance Education: A Platform for Understanding Research into the Technology's Effectiveness and Value*. Duxbury, Mass: Wainhouse Research.
- Hurd, M. 1999. "Anchoring and Acquiescence Bias in Measuring Assets in Household Surveys." *Journal of Risk and Uncertainty* 19, nos1-3: 111-36.
- Kearsley, G, and R Blomeyer. 2004. "Preparing K-12 Teachers to Teach Online." *Educational Technology* 44 (January-February): 49-52.
- McRae, P. 2011. "The Politics of Personalization in the 21st Century." *The ATA Magazine* 91, no 2.
- McRae, P, S Varnhagen, J C Couture and B Arkison. 2009. "A Study of Alberta Teachers' Working Conditions in Distributed Learning Environments: Flexibility, Accessibility and Permeable Boundaries." Proceedings of the American Education Research Association (AERA) annual conference, San Diego, Calif.
- Murphy, E, and M A Rodriguez-Manzanares. 2009. "Sage Without a Stage: Expanding the Object of Teaching in a Web-Based High School Classroom." *International Review of Research in Open and Distance Learning* 10, no 3: 1-19.
- Schifter, C. 2002. "Perception Differences About Participating in Distance Education." *Online Journal of Distance Learning Administration* 5, no 1. www.westga.edu/~distance/ojdla/spring51/schifter51.pdf (accessed May 9, 2011).
- Sellani, R J, and W Harrington. 2002. "Addressing Administrator/Faculty Conflict in an Academic Online Environment." *Internet and Higher Education* 5: 131-45.
- Spector, J. 2005. "Time Demands in Online Instruction." *Distance Learning* 26, no 1.
- Stanford, P, M W Crowe and H Flice. 2010. "Differentiating with Technology." *TEACHING Exceptional Children Plus* 6, no 4. Available from <http://escholarship.bc.edu/education/tecplus/vol6/iss4/art2> (accessed March 24, 2010).
- Thompson, M. 2004. "Engagement or 'Encagement' Faculty Workload in the Online Environment." Paper presented at the 20th Annual Conference on Distance Teaching and Learning.
- Tomei, L. 2004. "The Impact of Online Teaching on Faculty Load." *The International Journal of Instructional Technology and Distance Learning* 1, no 1. Available from www.itdl.org/journal/jan_04/article04.htm (accessed May 9, 2011).



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