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Bridging the Home and School: A Case Study of One Web-Enabled Technology, 6(11)

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Abstract

In today's society, there are many new technologies that educators have at their disposal to use both inside and outside of the classroom. One such technology was the focus of the first stage of an on-going project on the "open school" model. This "open school" model is designed to provide access to information on a child's schooling to both students and parents outside of the traditional school day. This article considers the use of one web-enabled technology called ThinkWave in two one term, elective courses.

Introduction

Over the past two decades, technology has dramatically changed the way in which we access information in our society. However, for the most part schools have not kept pace with these changes when it comes to how parents obtain information on their child's progress. Twenty years ago, ten years ago, even today, schools issue quarterly reports and parents meet with teachers at scheduled times two or three times a year. Other than these scheduled intervals, the majority of contact between the school and the home is when teachers need to call home to discuss discipline issues.

Unlike other aspects of society, where things like electronic mail make people easily accessible and the world wide web allows people to access personal information (e.g., banking) from the comfort of their own homes, schools have yet to take advantage of all that the digital age has to offer. At present, there are a number of web-enabled technologies that allow the school to make a student's records available to the home in an online, password protected environment. One such web-enabled technology is ThinkWave.

The ThinkWave system, available at http://wwww.thinkwave.com, is a free web service that helps teachers easily communicate with students and parents. Teachers can use the ThinkWave system to provide real-time information about assignments, results, attendance and course curricula to students and parents. By using ThinkWave, teachers are providing a means for parents to become more involved in their children's education. At the same time, students have access to course material outside of the traditional school hours.

Literature Review

"Imagine teaching six classes of thirty students – with four tests, ten quizzes, fifteen homework assignments, attendance calculations – and trying to keep all students and parents up to date." (IPW Staff 2002) This is a problem that faces many secondary school teachers. While many have adopted the use of computerized marks programs that allow them to keep track of a student's attendance and grades, very few have made the leap to a computerized program that publishes the student's performance to the Internet.

While there are many concerns about the security of placing student performance information on the Internet, the ThinkWave system does have the advantage that it "[makes] parent-teacher conferences shorter but more frequent." (Unknown 1999) No longer would a parent have to wait for those twice annual periods when they get the chance to stand around in a school gymnasium for thirty minutes to have a five-minute conversation with one of their child's teachers, only to have to repeat the process another five or six times.

According to principal Susan Van Zant, the ThinkWave system

saves her a lot of time because parents just check the Web site for e-mail the teacher and aren't as apt to call the principal with problems. And it keeps the kids honest. "You know how kids tell their parents they got all As and Bs, and forget to mention the Cs and Ds. Or they say they've done all their assignments and are all caught up. Or they report that everyone in the class did as badly as they did on a certain test," she said. "Well, now the parents can really check up and see what's missing and how their child is doing, compared with other students." (Million 2000)

However, the ThinkWave system isn't just for parents. According to teacher Jim Couillard, "it has definitely been as popular with the students than with the parents.… About two thirds of his 127 students have clicked on the site, more than one third use it on a regular basis." (Squires 2001)

The ThinkWave system has uses which assist teachers in their own administrative duties, provide parents the ability to maintain greater communication with the school, and allow students to take more responsibility for their own learning. As it was stated by the National School Boards Association, "everywhere we go, we find users that say this has changed the way their classroom works – especially for students." (Unknown 2000)

Discovery Collegiate

Discovery Collegiate is the largest school in the Vista School District with approximately 550 students. The school itself is located at the entrance of the community of Bonavista and serves students from over a dozen small rural communities, the two largest of which are Bonavista and Catalina. The economy of the area is in a dramatic transition from the economy that existed only a decade earlier. The collapse of the cod fishery was a dramatic blow to the workforce of the Bonavista peninsula, with the two largest employers in the Bonavista and Catalina areas being the Fisheries Products International fish plants. Having transformed these plants to process other species of fish, primarily crab, the recent reduction in the crab quota has only served as another setback in the economic growth of the area. The unemployment rate in the Bonavista-Catalina area is above forty per cent. The growth of tourism has been a bright spot in the economy of the area, but that still remains a seasonal source of employment.

Shortly after the introduction of the ThinkWave software to the educational market, it was discussed in a graduate course of one of the teachers at Discovery Collegiate. After the discussion of the software in that class, and later discussion between a group of teachers at Discovery Collegiate (all of whom were in graduate programmes), a couple of teachers decided use this software in one of their courses as a means to pilot its effectiveness in a rural Newfoundland, secondary school context.

During the 1999-2000 and 2000-01 school years, the ThinkWave system was piloted in two one-term, elective courses. The first course, taught during the 1999-2000 school year, was Design Technology 2109. In the secondary school curriculum in Newfoundland and Labrador, students are required to complete two full years of Mathematics, two full years of Science, and two full years of Mathematics and/or Science and/or Technology in order to graduate. The vast majority of students take three full years of Mathematics and Science, which is enough to fulfil all three requirements. This means that, for most students, technology courses such as Design Technology 2109 are elective courses.

The second course, taught during the 2000-01 school year, was Cultural Tourism 3127. This course is a locally approved course in the Vista School District which meet half of the graduation requirements for economic education. In addition to this course, the students would have been required to complete another one-term course in order to fulfil the economic education requirements for graduation. There were also two other full-year courses available to students which also meet the graduation requirements.

Methodology

The data that are presented in this article were collected through two sources. The first was the ThinkWave system itself. The ThinkWave system tracks login information, so that teachers are able to determine how many times each user (either student and parent) has accessed the ThinkWave system. The second source that was used to collect the data presented in this article was a survey that was administered to both students and parents.

In order to gauge the impressions of the system, a survey was administered to both students and their parents/guardians. (See Appendix A for a copy of the survey administered to students and parents.) For the students, both classes were provided an optional survey late in the school year. The students were given class time to complete this survey. For the parents, the survey was mailed to each home, and parents were asked to return the survey in one of three ways: by mailing it to the school; by faxing it to the school; or by having their child bring it to the

school. Both students and parents were asked not to provide their names on the survey and were also assured that they would not be individually identified.

Design Technology 2109

Although the ThinkWave system was active for a full four months, usage to the system was light. There were a number of possible reasons for this lack of use. Two of the main reasons for this lack of use were the lack of computers in the home and a lack of understanding on how to use the Internet.

In total there were twenty-three student logins and eight parent/guardian logins. It should be noted that student usage is inflated as they had to access the system in May in order to obtain one of their assignments. This usage is illustrated in Table 1.

Table 1 - Student and Parent Usage

| Student	Usage	Parent Usage
001	3	0
002	1	0
003	1	0
004	1	0
005	1	0
006	2	1
007	1	0
008	1	0
009	2	0
010	5	0
011	0	3
012	3	0
013	1	0
014	1	4

There were a number of problems that also decreased the usage, particularly by students. When the students were forced to use the system to access one of their assignments, many students had problems getting into the system. Either due to the amount of use that the ThinkWave .com site was experiencing or because of the slow connection utilized by the school, many students were 'timed out' and unable to even get into the system or it took them numerous attempts to access the system. This problem was compounded by the time of day at which the Design Technology class occurred. Four of the five times that this class met, it was during a 2:00-3:00 p.m. time slot (the other one being from 10:58 to 11:55 a.m.). After 10:30 a.m. NST, many American sites experience increased traffic due to the business and school day beginning in the heavily populated Eastern Time Zone. However, by 2:00 p.m. NST, everyone on the North American continent (with the exception of Alaska) has begun their business day. As North America has one of the largest numbers of Internet users in the world, this caused major delays in the system (and in many cases prevented students from even accessing the system).

Student Impressions

For the most part, students gave the ThinkWave.com system a passing grade. This was indicated by two measures: the fact that the vast majority of students used the system (87%) and the fact that most of the students felt that it should be used more in their educational experience. In fact, sixty per cent of students indicated that ThinkWave should be used more in their schooling. Two thirds of the students indicated that they would access this system, even if they weren't required to, if there teachers used the system next year and eighty per cent of those indicated that they would access the system more.

Another strong measure of the students' interest in the ThinkWave system was the variety of use. While students were forced to use the system once to access one of their assignments, many students made multiple visits to the system (see earlier Table 1) and even those who made single visits indicated that they used the system for more than just to access their assignment ('To see an up-coming assignment'). The results from this question can be viewed in Chart 1.

Chart 1 - Variety of ThinkWave Use
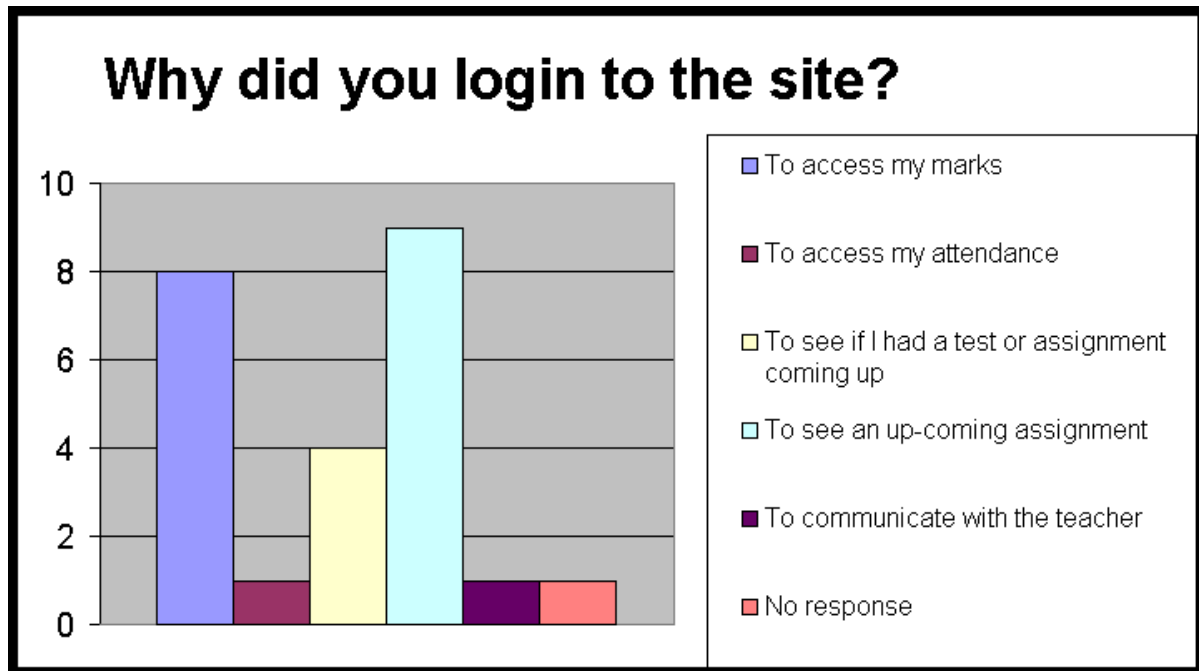
When asked if they felt that ThinkWave.com was something that teachers should be using to keep students and their parents/guardians more informed about the students' schooling, two thirds (67%) of the students indicated that they felt that teachers should use the system. The rationale for this sentiment provided by the students is presented in Table 2.

Table 2 - Why Teachers Should/Should Not Use ThinkWave

Student Sentiment	Comments
Yes	Parents may be interested in their children's school work.
	Keep a good view of my marks.
	Because!
	Keep us in line, make sure we do our work.
	It helps keep your grades at a constant level. If you notice your marks low, you can bring them up before its too late.
	It would help out.
	Instead of only knowing your marks when a report card is issued, you can know your marks all throughout the year.
	No because no one really uses it.
	Because computers are becoming a part of everyone's lives and it will keep people informed.

	Yes because some students lie to their parents about their marks in school, but now parents can check for themselves.
No	Students can tell parents about their subjects on their own when they feel like it.
	Because if you are 17 or over these records should be confidential between only you and the school, like medical records are.
	Like to keep grades secret, might make parents angry.
	Because if you are failing you don't want your parents to know.
	I said no because I don't think that parents should know every mark.

The final measure of student impression that was considered was the idea of e-learning. For most of the students, their use of the ThinkWave system was their first experience with e-learning. However, when asked if they felt that more of their schooling should occur in an online environment, seventy-three per cent indicated that some of their curriculum should be online (see Chart 2 for a breakdown).

Chart 2 - Should your courses be taught online
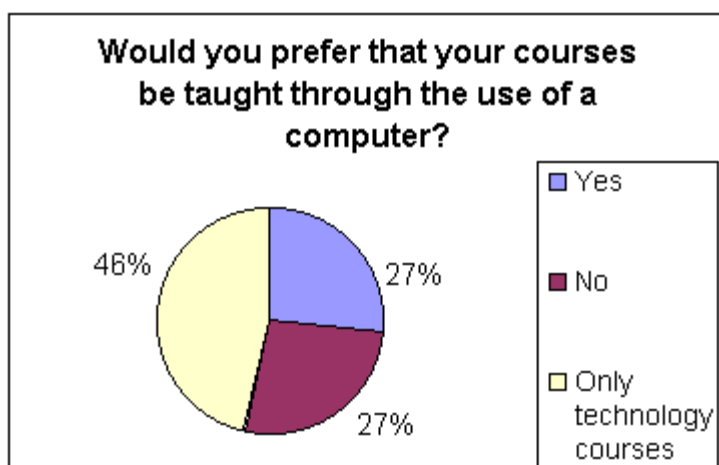
Parent/Guardian Impressions

In order to obtain the impressions of parents/guardians, a survey was mailed to the home. Parents/guardians were asked to return the survey via their children, mail or fax. Unfortunately, only six of the fourteen parents returned their surveys.

However, of those six surveys two indicated that they had used the ThinkWave system to become more involved in their child's education (in both of these instances, there was a computer available in the home). These parents indicated three reasons for accessing the system:

1. To access their child's marks (2)
2. To access their child's attendance (1)
3. To see what their child was doing in the course (1)

Both parents felt that the ThinkWave system should be used more in their child's schooling.

There were a variety of reasons why the other four parents did not access the system. They included:

1. Did not have access to a computer at home (2)
2. Did not know how to use the computer/get on the Internet (2)
3. Their child kept them well informed of their progress in school (2)
4. It only provided information on one of their child's eight courses (1)

However, even with this lack of use among parents, all six respondents indicated that they felt that ThinkWave should be used more in their child's schooling and five out of the six indicated that if the system was used again next year they would access it and access it more often.

There were a number of reasons for these sentiments. Some of the comments made by parents included:

- If everyone knew how to access the site it would be an excellent way to keep track of your child's grades.
- I feel that if your child doesn't give you the information on his or her schooling, you could always go on the Internet to find it.
- Even though I haven't got the Internet at home, I could still go to one of my relatives that has the Internet and log on to get the information I need. Keep up the good work and I feel it's a good idea.
- If a parent is unable to attend the parent-teacher interviews and such they could check with ThinkWave and the teacher could leave comments there.
- It solves the "paper chase" problem and gives an overall view of the students' progress.

Overall, there was a general level of satisfaction among students and parents with their first experience using the ThinkWave system. It is also encouraging to note that the majority of students and their parents, both indicated that they would like ThinkWave to be used again (and more often) within the school system.

Cultural Tourism 3127

Unlike the first experience with the ThinkWave system, the 2000-01 pilot class made greater use of the system than the earlier Design Technology 2109 class. One of the reasons for this increased usage may be the composition of the Cultural Tourism 3127 class, compared to the Design Technology 2109 students. The main difference between the two classes was academic ability, as the Design Technology 2109 had a higher percentage of middle and low ability students than the Cultural Tourism 3127 class.

As is illustrated by Table 3, the usage among students was dramatically higher than the students in the Design Technology 2109. However, the usage by the parents of students in the Cultural Tourism 3127 class was not that different than the usage of parents one year earlier.

Table 3 - Student and Parent Usage

Student	Usage	Parent Usage
001	50	1
002	23	0
003	19	2
004	18	0
005	16	0
006	15	0
007	13	0
008	13	0
009	12	3
010	10	0
011	9	0
012	8	0
013	8	0
014	8	1
015	7	0
016	6	0

017	6	0
018	6	0
019	5	0
020	4	0
021	4	0
022	4	0
023	4	0
024	4	0
025	3	0
026	2	0
027	2	3
028	2	0
029	1	0

In addition to the composition of the class, another reason for the increased usage by the students of this class was because of the increased use by the instructor. In the Design Technology 2109 pilot, the instructor gave one assignment that was solely available through the ThinkWave system. This assignment was also provided near the end of the term. During the Cultural Tourism 3127 pilot, the instructor also gave only one assignment through the ThinkWave system; however, this assignment was provided at the beginning of the term. This different allocation gave students the forced experience of using the ThinkWave system earlier in the term and provided students with a greater period of time to use the system.
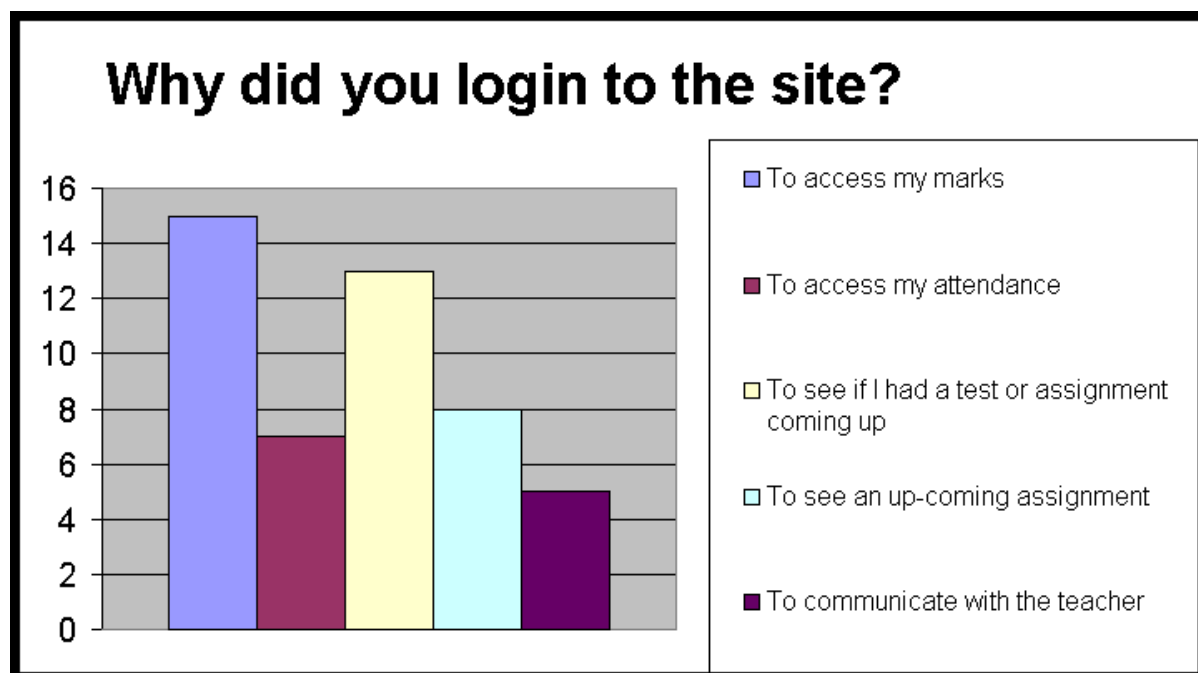
However, even with the increased usage the students in the Cultural Tourism 3127 pilot also had difficulties with times when connecting to the ThinkWave system was quite slow. These students also experienced difficulties with the ThinkWave system booting them out of the system, both due to an unreliable connection and due to the length of time it would take to type out the information required for their assignments. Both of these problems increased student frustration with their usage of the ThinkWave system.

Student Impressions

Even with this frustration, students in the Cultural Tourism 3127 class also indicated their approval of the ThinkWave system. According to the same survey that was administered to the Design Technology 2109 students, when asked if they would like the ThinkWave system to be used more in their schooling, approximately two thirds (61%) of the students in the Cultural Tourism 3127 class indicated in the affirmative. This was approximately the same result as the previous year. Slightly less than the previous year, seventy-one per cent of the students indicated that they would access the ThinkWave system again, if their teachers used the system next year.

Unlike the previous year, the reasons why the Cultural Tourism students accessed the ThinkWave system were quite varied. The two most popular selections continued to be "to access my marks" and "to see if I had a test or assignment coming up." The full range of reasons and the number of times they were selected by students are indicated in Chart 3.

Chart 3 - Variety of ThinkWave Use

Why did you login to the site?

Legend:
- To access my marks
- To access my attendance
- To see if I had a test or assignment coming up
- To see an up-coming assignment
- To communicate with the teacher

In addition to using the system and indicating that they would use it in the future, approximately two thirds (68%) of students indicated that they felt that a system like ThinkWave should be used to keep their parents more informed about their schooling. The reasons provided by the students for this sentiment are presented in Table 4.

Table 4 - Why Teachers Should/Should Not Use ThinkWave

Student Sentiment	Comments
Yes	Easier for parents to see how their children are doing.
	It's a good way to keep track of progress
	Because if grades drop at any point, you can be able to bring them back up again.
	Because it can help you find out if you need to bring your marks up.
	Because it lets you know how you are doing in the particular course before term reports. It also gives you access to up-coming assignments which give you more time to work on them.
	I think this because some people are not honest with their parents, this way parents can see for themselves what is done and expected by the student.
	I think that it's a good program.
	Yes, because it lets us and our parents know how we are doing in the course.
	I feel this way because maybe students who do bad in school don't tell parents their marks. By this system children cannot hide their marks and parents are aware of the student's academics.
	The system should be used by teachers to keep your parents informed about your schooling so they will know how you are doing and if you need to improve.
	I feel this way because it keeps you up to date on your marks.
	Due to the lack of information that most students bring home to their parents, I think that they should have this everywhere.

	Because it enables you to check up on how you are doing in a particular course, when you have a test or an assignment and it allows you to contact the teacher if you are sick and out of school.
	You would know what your marks are at all times throughout the school year.
	This is because it helps parents to see how their child is doing if they wish.
	Most children do not want to tell their marks. ThinkWave is an excellent way for parents to find out marks and help their child in problem areas.
	Yes so that they can know what is going on in your school work.
	Because it's good to let your parents know your progress.
No	Because it takes too much time.
	Because some people may not have access to a computer at home, even though they could use a school computer.
	Cause if your parents want to know they can ask the school.
	The student can tell them.
	Because a lot of people do not have computers to login to ThinkWave.
	Because then your parents can find out your marks when you don't want them to.
	I hate the Internet and its not real reliable (we have meet the teacher night for this).
	No, I do not think that ThinkWave.com should be used because many people do not have access to a computer at home. If a parent or teacher would like to get in contact with each other, they should do it on the phone or in person.
	Students in high school should be mature and responsible enough to let their parents know how they are doing without being monitored by something such as ThinkWave.

Again, unlike the previous year where none of the students in the Design Technology class had any experience with e-learning, there were two students in the Cultural Tourism class who had been a part of the ThinkWave pilot the previous year and another group of students who were taking a university-level Advanced Placement course in an online format through Web Course Tools (also known as WebCT). However, even with this level of experience with using a computer as a delivery method for course content, only thirty-one per cent of students indicated that they would prefer their courses be taught through the use of a computer, with twenty-four per cent of those indicating that only technology courses should be taught in that manner. This was down significantly from the previous year, when three quarters of the students indicated that all courses or only technology courses should be taught through using a computer.

Parent/Guardian Impressions

As with the parents of the Design Technology students, very few parents accessed the ThinkWave system or completed and returned the survey. In terms of usage, only five of twenty-nine parents actually accessed the system. The response rate of parents to the survey that was sent home was similarly low, with only four of twenty-nine parents returning a completed survey.

Of the four parents who responded to the survey, only one had accessed the ThinkWave system. This may be due to the fact that only half (50%) of these parents had access to a computer at home. Of those parents who did not access the ThinkWave system, there were a variety of reasons which included:

1. Their child kept them well informed of their progress in school (2)
2. Did not have access to a computer at home (2)
3. My child did not bring home the letters (2)
4. Did not know how to use the computer/get on the Internet (1)

While the majority of parents who completed the survey did not access the ThinkWave system, all (100%) felt that the system was something that should be used by teachers to keep them informed about their child's schooling. In responding to this question, parents made the following comments:

- Would like to be kept up-to-date of child's progress. Easy access would really be okay.
- Because most of the time they don't tell how they are doing.
- It is easier access. You are not restricted to a certain time.

These results from the parents of the Cultural Tourism students was very similar to the results a year earlier of the parents of the Design Technology students.

When asked if they would like to make any additional comments, the parents of the Cultural Tourism students stated:

- What to post to the ThinkWave if possible: schedule of homework (may be difficult); up-coming test/assignments/projects; comment on behaviour/interest in school.
- I believe it is a good program if it is kept up to date.

These comments, along with the observations above, indicate that parents are interested in information on their child's schooling being more readily available to them.

Conclusion

Overall, there was a general level of satisfaction among students and parents with their first experience using the ThinkWave system. It is also encouraging to note that the majority of students and their parents both indicated that they would like ThinkWave to be used again (and more often) within the school system. This general interest in the ThinkWave system provides the teachers at Discovery Collegiate with the opportunity to expand their use of this or other similar systems.

However, there are also some recommendations that need to be followed if use of this or other similar systems is expanded to include additional teachers, one of which is the inability to access the Internet from home. As indicated in the initial letter to parents, there are two Community Access Programme (CAP) sites in the Bonavista area which could be used to access the Internet. As many students indicated that, while they did not have access to a home computer, many of their relatives did. This may provide another avenue for parents to access the system, particularly if it becomes more worth their while (for example, if more teachers are using the system).

The issue of the technology gap between students and their parents also needs to be addressed. If parents had the technical knowledge to use the system, it would make it easier and seem like less of a task to access the system. Increased knowledge is also usually an indicator of increased interest. There were attempts to address this problem with a scheduled training session at the school. However, no parents attended this event. In future uses, it would be useful to arrange the training sessions to occur at the CAP sites in addition to the school site, as this may also bring parents into their local CAP site for the first time and remove some of the barriers to access their child's information from this location.

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Appendix A

ThinkWave.com Student Survey

ThinkWave.com is a WWW site available at http://www.thinkwave.com. This WWW site allows parents/guardians and students to access marks, attendance, as well as up-coming assignments and tests. The site is accessed using an individual account and password. Each student and parent/guardian has their own account and password, which has meant that no one else could gain access to the students' information other than that student and their parents/guardians. Please mark each response with a check mark or "X".

1. Have you used the ThinkWave.com system?

Yes   No

2. Why did you login to the site? (mark all that apply)

To access my marks
To access my attendance
To see if I had a test or assignment coming up
To see an up-coming assignment
To communicate with the teacher

3. Do you have access to a computer in your own home?

Yes   No

4. Where did you access the ThinkWave.com system?

At home
At a friend's or relative's
At school or work
At the local library

5. Would you like the ThinkWave.com system to be used more in your schooling?

Yes   No

6. Would you like to see ThinkWave.com used more in your schooling?

Yes   No

7. Do you feel that ThinkWave.com should be used by teachers to keep you and your parents/guardians more informed about your schooling?

Yes   No

8. Using your response to question 7, explain why you feel this way.

9. If your teachers use the ThinkWave.com system next year, will you access to the system?

Yes   If "Yes", More Often   or Less Often

No

10. Would you use the ThinkWave.com system more if your course was primarily taught through the use of a computer (with the teacher acting as a facilitator or trouble-shooter)?

Yes   No

11. Would you prefer that your courses be taught through the use of a computer?

Yes   No   Only Technology Courses

12. What grade are you in?

Grade 11   Grade 12

13. Are there any other comments that you would like to share about the ThinkWave.com system or your participation in this pilot project?

ThinkWave.com Parent/Guardian Survey

ThinkWave.com is a WWW site available at http://www.thinkwave.com. This WWW site allows parents/guardians and students to access marks, attendance, as well as up-coming assignments and tests. The site is accessed using an individual account and password. Each student and parent/guardian has their own account and password, which has meant that no one else could gain access to the students' information other than that student and their parents/guardians. Please mark each response with a check mark or "X".

1. Have you logged in to the ThinkWave.com system to view your child's marks or attendance?

Yes   No

If you selected "No," please skip to question 6.

2. Why did you login to the site? (mark all that apply)

To access my child's marks
To access my child's attendance
To see if my child had a test or assignment coming up
To see my child's up-coming assignment
To communicate with the teacher

3. Do you have access to a computer in your own home?

Yes   No

4. Where did you access the ThinkWave.com system?

At home
At a friend's or relative's
At school or work
At the local library

5. Would you like to see ThinkWave.com used more in your child's schooling?

Yes   No

If you answered question 5, move ahead to question 7.

6. Why did you choose not to use the ThinkWave.com system? (mark all that apply)

My child did not bring home the letters
Did not have access to a computer at home
Do not know how to use computer/get on the Internet
Did not have enough time
My child kept me well informed on how they were doing
It only provided information on one of my child's eight courses

Other

7. Do you feel that ThinkWave.com should be used by teachers to keep the parent/guardian more informed about your child's schooling?

Yes   No

8. Using your response to question 7, explain why you feel this way.

9. If your teachers use the ThinkWave.com system next year, will you access to the system?

Yes   If "Yes", More Often   or Less Often

No

10. Would you use the ThinkWave.com system more if your course was primarily taught through the use of a computer (with the teacher acting as a facilitator or trouble-shooter)?

Yes   No

11. Would you prefer that your courses be taught through the use of a computer?

Yes   No   Only Technology Courses

12. Are there any other comments that you would like to share about the ThinkWave.com system or your participation in this pilot project?

Author Notes

Michael K. Barbour mkb@ncf.ca is a teacher at Discovery Collegiate in Bonavista, Newfoundland, Canada. Over the past three years, Barbour has experimented with a number of web-enabled technologies that are designed to provide an "open school" model. In addition to the ThinkWave system, the "Connecting the Home and School through Electronic Dialogue" (CHASED) research initiative has experimented with the Blackboard and myGradebook systems, along with online calendars.