

OECD/CERI ICT Programme

A Case Study of ICT and Teacher Development in Westwinds College, Alberta, Canada

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AN OVERVIEW

Mickey Souris dragged his groggy self across the room to the clock radio/telephone with its digital red 9:30 telling him it was still too early to get up. He terminated the annoying ring by picking up the handset.

Mickey? chirped a woman's voice, It's Mrs. Benson at Westwinds. Mr. Chagall is wondering if you will have the force and motion assignment for him today.

Huh? Talk about a rude awakening! Oh, yeah, Physics. Right. I have to be at work by 1:30, but I will send him an attachment before I go.

That's great, Mickey. Everything else OK?

Well, yeah, I still got a lot of reading before I can start the English 30 essay, but I am getting there.

OK, then, I'll tell Mr. Chagall to check his email around 2:00. Bye.

Yeah, thanks, bye.

Westwinds is saving my butt, Mickey thought, but getting up like this is still a pain in the butt.

Mickey is 20 years old and still has three courses left to finish high school. He left at 16 and has been working in fast food restaurants and playing bass guitar for various bands ever since. Westwinds College lets him complete courses over the computer using WebCT at a pace and on a schedule that fits with his other activities. He hopes this time next year to be attending a local college studying who knows what, but he knows he is on a path to something more than flipping burgers.

This vignette illustrates how Westwinds College uses ICT to help students like Mickey reach their goals. Westwinds College, formerly Sir Robert Borden High School, is part of a 100-year-old adult education tradition in its urban Alberta community; e.g., at Sir Robert Borden during World War II, women were taught how to work on assembly lines and how to cook differently. Programs at Westwinds continue to reflect the innovations and changes in the community, including interests in technology. For those students who dropped out but now wish finish high school, the online program uses Information Communication Technologies (ICT) to provide high school courses that meet Alberta course requirements. Staff expertise in online development and delivery has led Westwinds to adopt a teacher development role for the

city's school system.

The mission of Westwinds College is to offer lifelong learning services at multiple sites and through independent learning and online opportunities. Over 1,000 students are enrolled in a variety of high school and adult education programs, including international and ESL programs at Westwinds College. Staff at Westwinds envision growth in the online program that will ...use the technology to build a different kind of community. This report focuses on the online academic program.

THE PAST

Ten years ago Westwinds focused on delivering computer assisted learning programs using aging hardware. This initiative failed and Westwinds looked at other local technology initiatives. Within the local Alberta school system, the early technology initiatives of the Board of Education (BoE) involved the use of teacher consultants and the development of teacher explorer centres--sites of exemplary practice where staff were committed to sharing expertise with other system teachers. Westwinds College developed its leadership role in technology-based learning by focusing upon the use of both the teacher consultant and the explorer centre models in its online learning program.

Westwinds Technology Initiative

Westwinds developed the technology specialist role on a more proactive basis by developing connections with all high schools in the city. According to a systems administrator, Westwinds created a cyber school district, not just a cyber school. She says Westwinds enlarged upon the explorer centre concept by focusing on professional development for teachers.

The online program at the former Sir Robert Borden High School had great latitude and flexibility in developing structure, hiring staff, and initiating program changes since standards were set internally. When Sir Robert Borden High School became Westwinds College, its flexibility in developing its online program shifted. Sheila Golding, current program director for Westwinds, believes that as a college, Westwinds must ensure that it complies with college standards for course development, accreditation, etc.; however, the trade off is that program offerings can be expanded for the community. With the change to Westwinds College, new program initiatives and organizational structures were introduced. Sheila was hired as the associate for virtual learning and the team for virtual learning grew from 1 to 38 people within three years

This revolution attracted attention. Businesses with a technical agenda moved into the educational domain. For example, the business community donated computers for Westwinds College. A system administrator reported that a local businessman who traveled in the Sahara and China kept in touch online with schools here in Canada, including Westwinds. Working on committees with corporate representatives, the Westwinds College representative offered some

balance in terms of how education needs to lead the thinking in managing and directing some of the use of technologies.

Early Resistance

While Westwinds chose to enhance learning through technology, a system administrator acknowledges that there was some resistance from the BofE. Resistance centred on the lack of available funding, philosophical differences, and power struggles within the board. Some senior administrators demonstrated significant resistance, perhaps due to lack of understanding. Cliff Chagall, a teacher and technical coordinator at Westwinds, believes some BofE members preferred to view online learning as a potential way of generating revenue and not as a great tool for our students.

Instructor resistance centred on concerns about contracts, comfort, change, tradition, and funding. A system administrator says Westwinds operates outside of the regular school system and particularly around some union issues. Teachers are paid by the hour and most of the teachers, if not all, are contract instructors. To develop the skills required to work within the online program requires extra hours that are not covered within the contract. Some teachers who tried the technology did not feel comfortable with it. A few feared change. Some felt allegiance to the traditional class (i.e., the on line programs steal students from traditional classrooms) and the traditional environment (i.e., a teacher is often a people person who wants the personal contact). Some teachers mentioned concerns about limited funding (e.g., one early instructor mentioned that she bought her own computer). However, the concern mentioned most frequently in the interview sessions was related to the fear that students knew more about computers than teachers. To overcome this fear, teachers needed to learn about computers.

It s 1998 and a group of Westwinds teachers are on the road to attend the Symposium on Online Learning. Alberta s early development of virtual schools resulted in the creation of an online consortium for teacher development, comparable to the regional consortia that provide workshops and courses throughout the province. The symposium is the major annual event for the online consortium.

Sheila Golding arranged for this group of teachers to attend the symposium, confident they would learn to share her enthusiasm for new kinds of delivery. But it wasn t so. I didn t understand half of what I heard. Why would I want to teach if I couldn t see the kids? Who has time for all that work? I d be embarrassed the kids know so much about technology.

Lesson learned. Sheila took teachers to the symposium every year after that, but they were handpicked individuals who had shown interest and curiosity. They came back eager to learn more.

The negative experience of that first symposium was a setback. According to Cliff Chagall, even though teachers in the independent learning program are required to use email, there has never been a mandate requiring all teachers at Westwinds to use technology in their teaching.

Not all of the teachers in the independent learning program are even using the shell courses.

The system administrator interviewed credits Sheila Golding with playing a primary role in overcoming resistance. She made the appropriate connections for developing the online program, e.g., with Alberta Learning, high school teachers, principals, etc. Her low key, grass roots approach was quiet, purposeful, and successful. Since she sat on many senior administrative level committees with superintendents, she noted their lack of knowledge about technology and its potential impact on learning. Senior administrators with the board were invited to take the development course (but few did). Teachers who were resistant to using computers were given opportunities to play and experiment with computers. She invited instructors known to be open to trying new ideas to use the new technology. Technological proficiency was not required. Resistance to the online program has lessened as more teachers have come online. The system administrator shared a story with the interviewers of how principals who initially resisted Westwinds funding initiatives were eventually persuaded by their own teachers to reverse positions: the principals agreed to pay Westwinds \$5000 per year for teacher development activity.

Technology Decisions

The initial technology problems encountered in developing the online program centred on the variety of systems and servers being used; e.g., different email systems, chat programs, web page formats, and servers were in use. Those involved in developing the online program at Westwinds felt that many of the existing technology alternatives were too technologically sophisticated and, therefore, required steep learning curves. If the goal was to create a program to make something that was going to include more people, then the online program had to have a more manageable learning curve for instructors. WebCT, an online management system developed by educators for the grass roots level, was chosen for the online program.

WebCT is known to be robust, versatile, and secure. It was chosen by Community and Continuing Education to be used for all on-line high school credit courses, and Westwinds College chose it for its online courses after looking at sixteen course development and delivery packages. WebCT was a way to centre the vision in this new community and provide tools for teachers with limited technical skills.

Unfortunately, some BofE members regarded WebCT as a third rate product. Cliff Chagall suggested that this opinion might have been due to the BofE's view of online learning in terms of its potential to generate revenue. Due to this resistance, WebCT was unlikely to become a system-wide initiative. Westwinds decided to develop the WebCT courses on its own, despite the resistance. Since WebCT does not require payment until the first student uses it, Westwinds did not have to pay a license fee during the first six months of development. Seven courses were developed with WebCT and piloted to see if the WebCT tools would work and if instructors and students required more training in order to be successful in the online setting.

Program Development

Sheila reported that as part of working to improve ICT standards . . . an ICT curriculum was

developed and integrated into mainstream programs of studies in Alberta. . . .The province came forward with some funding structures that schools and jurisdictions could access, mainly around hardware although some software as well. Where there has been a deficiency is in the professional development and training components to support this change. Since the change is significant, teachers are faced with new learning outcomes and steep learning curves. The province implemented some training courses, but Westwinds has been responsible for offering about five thousand courses a semester^[1] which are taken by certificated instructors here at Westwinds College to support computer training. Although the BofE identified eight ICT specialists, they have to provide support for too many schools. The long and short of it is we have to do it ourselves. Three full time professional development staff members go beyond the technology focus and do professional development for all teaching staff.

THE PRESENT

The systems administrator describes the online program at Westwinds as being concerned with enhancing learning through the use of technologies, providing quality learning experiences, being more flexible and adaptable, and opening up the learning process to make it more transparent and accessible It s part of a revolution in education and we are changing the way that learning happens. Sheila Golding started on this because I saw this as an opportunity for students, but I see it more and more as the saving grace of education. Cliff Chagall indicates that the online program model at Westwinds is structured to provide early successes, timely feedback, and face-to-face sessions to help students become self-directed independent learners. From his Westwinds experience, he suggests the following development plan for online programs:

1. map out a limited number of courses to begin online,
2. develop a design process for editing and review,
3. select high quality material for the few courses,
4. add new material and new courses slowly,
5. avoid excluding individuals, and
6. support the technology.

According to Sheila Golding, all new courses must fit the instructional design standards and development standards. This represents a more rigorous implementation of curriculum standards than might ordinarily be observed. Westwinds has taken on emerging online responsibilities with the development of the program:

1. The first phase of responsibility was linked to the needs of older adolescents and adult learners returning to a learning environment. Flexible self-pacing environments responsive to a variety of learning styles were required.

2. The second phase was linked to the needs of lifelong learning, especially for learners who have been unsuccessful in traditional classroom practice. Best practices in teaching and learning were used to create learning communities online for active learning with clear and high expectations. As a result of this second response and the changing technology requirements (need for companion applications such as video cams and palm pilot, for plug-ins such as Acrobat Reader and Flash, for increased band width and SuperNet access, etc.), WebCT will be replaced by a new program called Quickplace which is being brought in on a provincial level and will be used at Westwinds for designing six courses.
3. The third phase is linked to the disruption and innovation of changing technology. Standards are being addressed including a) delivery standards (learning philosophy, prerequisite knowledge, student preparation, prior learning identification, and community participation/support network), b) instructional standards (community professional development, interactions, goals, evaluation and assessment strategies, troubleshooting, and customizing learning), c) working standards (hours, access, roles, and support/development), and d) feedback/evaluation standards. (In addressing these standards, prior outside standards must be taken into consideration, e.g., the development standards must take into consideration the standards of the BofE , the provincial teaching quality standards, and instructional design standards.
4. The fourth phase involves the development of seven different models for distributive learning that are intended to meet a variety of learning needs.

Westwinds does most of the online learning development in the school district although the online initiative is part of the Superintendent's office. This arm's length arrangement means that team leaders report to the Superintendent, not Westwinds. Westwinds maintains its own close connection with every school. In addition to the continuing education work, Westwinds is being asked by the B of E to lead not only online innovations but also international programs. For example, teachers from Thailand are involved in programs at Westwinds.

Instruction Options

Westwinds College has the legal authority to administer high school diplomas. Students must have completed six semesters of high school before enrolling at Westwinds to complete the courses needed for a diploma. Students at Westwinds who wish to earn high school credits can enrol in regular classroom courses or in the Independent Learning Program (ILP). Within ILP, students have the choice of print classes (six intakes per year) or online courses (six intakes per year). In addition, students may take the regularly scheduled classes as independent studies. If a student is not successful in one mode, he/she may transfer to another. Over 200 students are enrolled in on line courses, and Sheila Golding says that students are being turned away. The Westwinds College information brochure available to students suggests that the online program is more difficult (than face-to-face instruction) since students must be able to work independently and have organizational skills. Westwinds has twice as many students in the print program as in the online program because our adult learners tell us that they are not comfortable using these technologies.

Independent Learning Program

Students in ILP can access tutorials and resources in the Learning Resource Centre (LRC). The LRC has tapes, books, CD ROMs, videos, special collections (for ESL, literacy, and math), computer programs, Internet access, database access, career resources, and computer assisted learning (CAL) or computer tutorials for self-directed information literacy). ILP courses meet Alberta Learning guidelines. Courses include high school courses and electives (e.g., English, mathematics, science, social studies, sociology, and psychology) and Career and Technology Studies courses (Information Processing, Financial Management, Job Preparation, and Foods/Fashion). Five-credit courses are 16 weeks, and one-credit courses are six weeks.

The students follow their own schedules, access tutorials and LRC resources, and phone/fax/or email instructors. Students are required to contact instructors at least once a week to remain in the program. Students in the print class must register for an orientation session to meet the instructor, to receive course materials, and to receive information about expectations. Students in the online course take an online orientation and a Fast Track to Online Learning course (approximately five hours). Some online courses might have face-to-face meetings for labs, seminars, or tests. Online students must have computers and Internet access.

Student Skills

Shen Xuan saw the bright Westwinds binder on the counter by her customer's coffee mug. He was reading, but she thought it would be ok to interrupt.

Hi. You go to Westwinds? Me too.

I don't really go to Westwinds. I mean, I take their courses, but I do the work at home or in here.

I work here too. I mean I do school work when it's slow. I am also in the online program at Westwinds, but I can't do much at home cause we don't have a computer.

Whoa! How do you manage? I mean we've always had at least one computer. I have my own now, but my dad has had one for years.

It's not bad. We came here from Taiwan 7 years ago, and we don't have the money for a computer yet. Too many other expenses. But I used to use the labs at Westwinds or the computers in the library. My daughter is at the university now, so I go there with her and there

are plenty of computers I can use. And I use all the other resources at the university library.

You must get a lot of good stuff there.. I ll have to try that, but I got to admit, I like the net a lot more than the library.

Oh, not me. I hated computers when I started.

Then how could you do the work? I mean between word processing, net searching, Power Point presentations, and web page development, it seems my whole education depends on my computer skills. I actually left regular high school cause I couldn t cope with books and papers.

Westwinds has this whole information processing skills course I had to take at the very beginning. I even had to learn typing. I was scared and confused a lot in the beginning, but the teachers built in some talking help and some click here demos. Eventually, I got it; I learned to use email, chat discussion groups, web browsers, and lots of other stuff.

Well, I gotta respect that. Hey, do you know Cynthia? She comes in here too. She s a full time student at my old school, but she takes a Westwinds course every term for fun. I guess it takes all kinds.

Yeah. More coffee?

To ensure that students entering the online program have the necessary technology skills, they are required to take the Information Processing course prior to enrolling in online courses. (HC) The Information Processing course (part of Career and Technology Studies) is a one-credit course of 17-25 hours. Interactions between students and with instructors are through email, chat, and bulletin board. Students are expected to a) contact the instructor 1-2 times per week, b) schedule time for their course work, c) set up a personal work area, and d) set realistic deadlines. The advisor is expected to help students achieve success. The administrative assistant troubleshoots email problems.

Course components include the following: a) student work plan which must be updated; b) due dates for which marks are awarded if dates are met; c) assignments which include both written and project assignments related to software applications; d) work station routine demonstrations which include understanding of copyright issues, ability to manage files, etc.; and e) final assessment which includes self-assessment.

Professional Development and Teacher Resources

Rather than taking graduate ICT courses, teachers in the online program at Westwinds more often pick up the needed skills on their own and receive help from other teachers in the online program.

Greta is an online teacher. She says, It s a sharing environment--people are learning things.

She and others credit the early Westwinds teachers for supporting those new to the environment. I hear a lot more dialogue about teaching and learning than I have seen in other staff rooms at other schools. Most of the Westwinds teachers take evening courses on their own time to find out about teaching and learning in online courses, training for WebCT, and guidelines for the use of Power Point. Another instructor, Martha, says that working with a partner has been an important element in her online teaching.

Teachers interested in the online program or shell course must go through a professional development program (Level 1). At the end of the Level 1 course, which is delivered online, teachers can decide if they want to be part of the online program. About 20% decline to be involved. The Level 2 course (Active Teaching) redefines their role in an online course and provides ongoing opportunities to share mutual teaching problem and idea exchange. Staff development online also includes face-to-face- meetings. In one year, Westwinds trained over 150 teachers within the school district. Teachers are on waiting lists for the training (300 on one waiting list).

A team of teachers is currently designing and developing further levels (e.g., instructional design) in the professional development program. The professional development program is funded by charging for the training offered to teachers outside of the B of E (\$500 for a Level 1 course).

Teachers attend conferences, e.g., the provincial symposium. They have all day training sessions as part of regular professional development. We can schedule all kinds of professional development, Sheila argues, but it s the relationships that are built around support and around learning that create a lot of the learning environment . . .we have a learning community here emerging among our professional staff. . . .

Technical support is also available from technical coordinators and technical staff. The technical coordinator has had to become familiar with all courses involved in the program. The Teaching and Learning Office at Westwinds College offers activities and provides resources to aid instructors in developing their courses. For example, a) the Virtual Staff Centre is a Web CT environment in which staff are shown how to post messages, send email, and chat; b) virtual team leaders and associates aid staff members; c) informal noon hour information sessions provide topics of interest to the ILP. Three full-time professional development staff train all teaching staff and run the virtual staff centre.

THE HYPOTHESES

Hypothesis 1 (H1) Technology Catalyst

Pro: *Technology is a strong catalyst for educational reform.* One teacher suggested that technology is a catalyst for innovation. I am not here because I embrace technology; I m here because it creates innovation. It is a catalyst for innovation, it s a catalyst for re-thinking and re-design, and it brings the debate back to the table. And it must be rejected for as many reasons as it is brought forward and nurtured.

Another teacher suggested that Technology should not be the defining trait of best practice. But I have found that it has been my experience that it has allowed us to examine practice again and rise the bar everywhere. So it s been that catalyst. It can elevate standards.

Con: *A rival hypothesis to H1 is that technology serves only as an additional resource and not as a catalyst.* While technology does occasionally serve as a catalyst for educational reform, administrators and teachers interviewed at Westwinds strongly support the role of technology as a tool. According to the systems administrator, the focus at Westwinds has always been using technology to enhance the learning experience, not just using technology to provide the learning experience. According to Sheila Golding, learners are coming to Westwinds for the technology because they need those tools.

Teachers use the technology to enhance learning and deliver content in a new way. While teachers need technical instruction, e.g., how to compress sound files using Web CT, they reported in the interviews that they essentially view the technology as just one more tool. A science teacher is enthusiastic about being able to replace old science videos with online experiments, which he would not be allowed to do in a student laboratory, experiments with hazardous compounds or human fluids. In addition, he can use colour and motion in the experiments and in his exams. Another teacher mentions the ease of customizing lessons. The computer enabled me to do this individualized tailored set of activities. . . . I went a lot further to tailor making activities and so on than I ever did when I was doing it without computer use.

Hypothesis 2 (H2) Traditional Diffusion Pattern

Pro: *The traditional path of diffusion for reforms and innovations outlined by Rogers (1995) was the diffusion pattern for ICT).* Early adopters of the online program had to learn about the technology; they were self-taught. They spent enormous energy and time to develop their online courses and freely shared best practices and lessons with other early adopters.

Innovative student projects motivated teachers in the program to learn additional technical skills, and enthusiastic teachers in the program shared experiences and motivated other teachers to become involved. Evening courses were developed for teachers who wished to learn the technical skills necessary for teaching on line. Experienced teachers in the online program became the course facilitators for the professional development courses. Teachers were invited to WebCT demonstrations and professional development courses. Perhaps the most critical

development in persuading teachers to accept the online program has been the development of a sharing environment. The initial group of early adopters shared successes and failures; the sharing continues.

Westwinds already has minimum requirements for professional development. The Alberta Teacher Professional Growth Plans of Alberta Learning require teachers to consider professional plans and the impact on practice. Technological expertise is the focus of many of the professional development courses offered at Westwinds.

The numbers of courses online and instructors teaching these courses have increased. The initial course for teachers had 24-36 enrolled; the most recent course had 80 teachers interested in using technology in their courses. Almost all academic courses at Westwinds have been touched by ICT (e.g., graphing content in math courses, cell magnification through computers in biology, etc.) .

Sheila Golding suggests that the distributed learning model and the standards being set at Westwinds are their greatest innovation. Since Westwinds has the support of the BofE in this work, this model will ripple not only throughout the learning environments here, independent learning and classroom learning, but it will ripple throughout our jurisdiction. . . . So I guess in terms of innovation we have created a model that can be shared widely and broadly.

Con: A rival hypothesis to H2 is that a different diffusion pattern occurs because technology differs from traditional reforms and innovations. The sharing dynamic described above hardly seems like a universal feature of the adoption of innovations. It is not simply a matter of the innovation gaining force and popularity; it is a matter of teachers seeking to share what they know. Whether this sharing is a function of the professional choices and obligations that come with teaching or a feature of technological innovation cannot be determined from the data available in this study.

Hypothesis 3 (H3) Student Competence

Pro: ICT implementation depends on technological infrastructure and ICT competence of students. Infrastructure ceased to be an issue at Westwinds because they made computer access the student's responsibility. Equipment is available in the school, but students can also get access elsewhere since the courses are on the Internet. The fact that some students and some teachers at Westwinds opt to work in print formats might be taken as evidence that the student's competence is a key issue in determining whether a program might succeed; but in an environment of choice, students who have the competencies can gain access to a program that meets their needs. It seems as though the impetus at Westwinds is the desire to increase the technical competencies of teachers.

Con: A rival hypothesis to H3 is that ICT implementation is dependent on staff competence in integrating ICT into instruction. While technology infrastructure is required, it has not been an

insurmountable obstacle. With minimal infrastructure funding, dedicated teachers have made online teaching a reality. While online instruction is dependent on computer infrastructure, instructors are able to cope when the system goes down.

Student ICT competence is important: however, students can learn the required skills in the orientation program. Sheila Golding put it this way: The level of student ICT skills in the adolescent group is very high but it is average to low among the adult group. Students are required to take the Information Processing courses before enrolling in online courses. The students do eight assignments before entering on line courses. Interviewers noted in their classroom observations (ESL class) that teachers and other students helped individual students.

Despite the importance of infrastructure and student ICT competence, the instructors and administrators interviewed at Westwinds agree that implementation is primarily dependent on staff competence. For this reason, instructors choose professional development courses that focus on technical expertise. Skills and lessons are shared among the teachers, and technical expertise is available. Specialized staff members are available at Westwinds to help teachers with video graphics, with web page design, and with spinning (designing/developing) courses. In addition, a full-time editor was hired to support the standards and the professional development initiative was extended to an eight level program. Initially three people developed the program content; last year they worked with 80 teachers to develop the content currently being used.

According to the teachers interviewed at Westwinds, content of ICT courses is not a problem if teachers are given resources and time to develop online courses. Work is adapted to the needs, interests, and styles of individual teachers. The shell courses developed for teachers allow the teacher to customize and personalize the print recourse, e.g., with names, pictures, and examples. This procedure, spinning a course, allows the teacher to put his/her stamp on the course. As described by Sheila Golding, the distributed learning models that Westwinds has developed are models for change that can expand into all learning environments This is innovative because it empowers teachers. . . . We know that teachers teach best when they are empowered with their own materials.

Dave Johnson does not consider himself a techie teacher, but he uses WebCT to teach his social studies courses at Westwinds College.

I was using a computer to prepare exams and lesson plans, and I started using email to communicate with friends and family. A student asked me to email something to him, and it all began to fit together.

Shell courses and spinning make it all possible for Dave. The developers do a great job of preparing a kind of generic course, but then I can take out stuff I don t want and add my own material even my picture. I can change the discussion topics or the assignments to suit my style. I don t need much more than basic computer skills, but I feel I can do everything I need.

Teachers use technology in other ways in their own work, i.e., accepting student assignments as attachment, using RTF and other formats to develop files, using WebCT for recording grades,

creating quizzes in WebCT, etc. Teachers not teaching in the online courses can also implement ICT activities within their own courses.

Hypothesis 4 (H4) Performance and Equal Access

***Pro:** Gaps in performance due to income levels will be enlarged when all students have equal access to ICT.*

***Con:** A rival hypothesis is that when all students have equal access to ICT, the gaps in performance due to income levels will be diminished.*

Students at Westwinds seem to have equal access to ICT. When the program began, the decision to avoid fixing computers and upgrading software led to the requirement that students must obtain their own computer access. Cliff Chagall recalls only one call concerning a student having problems obtaining computer access. While most students do own computers, the students can do their work in the library or wherever Internet access is available. The online courses are web based so students do not require advanced technology. They require only basic programs such as word processing, spreadsheets, and perhaps some design tools. In short, the program at Westwinds does not provide a basis for drawing conclusions about the impact of technology on reducing or increasing the educational effects of poverty. Since Westwinds students gain access on their own, it is not possible to determine whether a gap actually exists. Staff seem to think it is not the case. Westwinds is contributing to reducing inequities among students, but it is not clear whether income differences are a source of inequity that affects this innovation. However, there are a number of related issues pertaining to equity in a broader sense.

For example, there do seem to be differences in students interested in the online program. According to one teacher, males are drawn to the exploratory nature of ICT whereas the females are pragmatic in their use of ICT. Students who have trouble in the traditional classroom may be drawn to these technologies, but it is not clear if it is because they think it is easier or more entertaining. High end users are drawn because they want to fast track. The middle range student does not seem to be drawn. Cliff Chagall suggests that the online program itself might be one more obstacle for students with low ability. While students do not have to be high ability students, they must have the ability to learn independently. Students who do not have time management or self-management skills are not likely to do well in the program.

It is important to note that Westwinds draws mainly adult students or high school non-completers who have not found traditional education accessible. Like many other virtual schools, Westwinds finds itself serving those who self-select out of traditional education. This includes students with special educational needs. Cliff told about one particularly compelling example:

The school loomed in front of Jamie. It was maybe 75 meters from where the car was parked. It was a sunny, clear fall day. Most people would have said perfect weather, but not Jamie. Weather was never good weather was outdoors. Jamie was agoraphobic.

He clenched his teeth, sucked up his nerve, looked both

ways several times, and set out. It was terrifying; the Alberta sky goes on forever. Inside the gigantic doors were gigantic hallways. Jamie couldn't feel safe here either, but at least it was inside. He saw a face he recognized from a web page.

Mr. Chagall, he said, I'm Jamie. I sure hope you can help me enough to make this all worth it.

Jamie was 22. He had been out of circulation since he was 16. He found Westwinds College and took Math 10 online his first outside communication (except family and health professionals) in six years. There came a time when he needed to sit down at a computer with a teacher. He took the risk and went to the school. He then went on to complete other courses. At the time of the site visit, he was in a work placement assisting the course developers at Westwinds. Much of his work is online, but he visits periodically, and Cliff Chagall says he is making excellent progress.

Hypothesis 5 (H5) Academic Standards and Outcomes

Pro: Despite the low quality of some ICT material, ICT implementation will lead to the same or higher academic standards since academic standards are a function of teacher and school expectations. .

It seems to be axiomatic at Westwinds that online learning materials should be of high quality. Westwinds is addressing five levels of standards in order to respond to online learning needs. Learning philosophy and student preparations are part of the delivery standards being addressed. The standards provincially tend to be more technical rather than instructional or design standard, reported Sheila. In addition, teachers are required to take professional development courses to aid them in providing the online instruction. Standards are set for retraining teachers. Sheila discussed the role Westwinds has played in partnering on courses related to those standards. We have dozens of examples of computer-assisted learning. If we simply wrap up some courses here and throw them out saying, Here you are. Plug in and turn on, we will defy all of the thinking that has gone into this work. . . . We said right at the outset that instructors--trained instructors--are critical to student success.

These initiatives to develop high quality ICT material and to uphold standards in online program material are meant to maintain high academic standards. Assessment of the program's success will be done at the end of the year. While it is too early to assess, anecdotal comments suggest that some students improve their grades. The systems administrator suggests that the program keeps students engaged in learning. Students in the Northwest Territories seem to have higher completion rates. According to a Westwinds teacher interviewed, most students completed online math courses; only 10% completed the print course for math. (However, other variables may be at work since the print course requires an even more independent learner.) Another teacher reported, I had 18 students in the class and all of them completed all of the tasks. It seems to me that it was the first time that I had that happen.

Teachers interviewed spoke about the different role of online students. These students cannot easily fault the class atmosphere or teacher role and, therefore, must take responsibility for their performance. The student's online role is more active since each student communicates regularly with the teacher. Indeed, communication is the key to online instruction. Teachers have been surprised by the amount of interaction, responsibility, innovation, responsiveness, and excitement generated in the program. Sheila reports that a teacher recently told her: I've never taught a course before where 90% of my time was spent working with students.

According to some teachers, students in the online courses seem to respond to questions on the Internet that they wouldn't in class. Students interviewed suggested that flexibility, self-pacing, and teacher attention are benefits of the online course. Students receive individual and timely feedback from the teacher. Students often work in pairs or small groups; they ask questions. The teachers suggest that lifelong, collaborative learning is important. The innovative work of individual skilled students is an incentive for less technically skilled student to learn skills.

Cliff suggests that interaction using ICT can be an advantage. For example, in an online science laboratory focusing on creating a virtual microscope, the students get to interact with the microscope and get specimens they would never get to see in a high school lab, . . . and then they respond online to test in quiz format which draws them to the microscope again and again.

The most positive impact of ICT is the channel of communication between the learner and the instructor. Students are more engaged and the learners feel they can communicate more clearly one to one. One teacher suggested that The online students tend to be highly motivated to date.

Hi. You must be Shen. Gary told me you work here and go to Westwinds. I'm Cynthia.

Did he say I **go** to Westwinds?

Actually, he did. He said it never occurred to him that people would actually **go** there rather than learn at home.

Gary is quite the techie, isn't he?

Sort of. I mean he likes it and all that, but he's not a nerd.

But you go to regular school **and** Westwinds is that cause you want the techie touch?

Sort of. I mean, at first I did. I was goofing around in chat sessions and ICQ and stuff and I thought, Geez, I might as well learn this way. But once I started, it was completely different. I get messages from my Westwinds teachers like every day. Even Sunday, like, don't they ever rest? Anyways, it seems

odd and nobody believes me, but I keep going to Westwinds because I get more feedback on my work from the teachers. And because I meet a whole new group of people. Like, is your last name spelled X-U-A-N ? I think you are in English 20 with me.

Oh, **that** Cynthia. You know what you were saying about Shakespeare. . . .

Con: A rival hypothesis to H5 is that ICT implementation will lead to a lowering of academic standards since students will be involved in marginally beneficial searches and will be using poor quality web and coursework content.

Sheila Golding suggests that Some students are inappropriately drawn to it. . . .They are still waiting for someone else to do the thinking. She wonders if this is a design issue or is it an organizational issue or is it because this learner isn't really ready?

We're losing thirty to forty percent of our (potential) students right now who will tell us they're not either prepared to enter into this arrangement or they find it unsuitable for meeting the objectives that they have.

Cliff Chagall suggests that The most negative aspect of ICT may be that it creates an illusion of being easy. Students familiar with computers who are accepted into the program may not realize that they still have to read and perhaps work hard because of the independent nature of online learning. Another danger is that so much work is required to design meaningful material, not just entertaining material. Finally, students may become socially isolated and while this is not necessarily a fault of the technology, it can be a problem associated with the technology.

Sheila Golding acknowledges that there is a level of abuse in which students copy from the Internet just as they might copy from the encyclopaedia. Students also connect to sites which are not always learning. Westwinds does have an acceptable use policy and can remove Internet privilege where there is inappropriate use. But, quite honestly, we miss far more than we catch.

THE FUTURE AND SUSTAINABILITY

As discussed in this report, Westwinds College has unique elements, which have contributed to the success of their online program. In addition, the province has unique elements which support implementation of technology-based innovations. For example, the online program has been supported by Alberta Learning, the district, and the province. The teacher quality standards of the ATA address being a user of technology. Alberta Learning provided additional funding for schools for technological infrastructure. The Chief Superintendent and senior administration supported the program; the district provided additional personnel and budgetary support. The online consortium (48-50 jurisdictions in the province) support and share innovations in technology. Westwinds sought and nurtured the support of these various organizations; it seems likely that Westwinds will endeavour to maintain these relationships.

Westwinds invited representatives from all interested groups to be part of the development of the innovative technology. Stakeholders forming the steering committee include educators, parents, corporate representatives, etc. Some of these stakeholders were strong supporters of technology, but some were not. The mix has worked.

Student access is an important element of sustainability; Westwinds has created online learning available to all schools in the district. As discussed by one of the teachers, Because the school district is hardwired and has fiber to every school, the innovative program can be shared. Four years ago a survey of students showed that 40% had access to the Internet and used it on a weekly basis. The surveys are now done every six months. The number accessing the Internet was 78% at the time of the interview. And, 60% within a two-month span were accessing the Internet from home.

Dissemination of information about the program has been by word of mouth. The grassroots approach has been successful.

The success that Westwinds has had in sharing its methodology and its course with other schools in the system and with training teachers from other systems speaks well for the transferability of much of what goes on there. However, it is questionable whether the Westwinds phenomenon could be reproduced elsewhere since a combination of the following unique elements contributed to its development:

- A history of success in adult education
- A cost-recovery financial system that demands innovation for survival
- A broader environment (Alberta) with strong traditions of entrepreneurship, distance education and home schooling
- A dynamic and dedicated leader (Golding)
- A creative and industrious technical coordinator, teacher and developer (Chagall)

Westwinds may stand as proof-of-concept, but recreating its impact elsewhere will be a challenge.

Appendix A

Methodology

There were five members of the research team involved at various times during the week of the onsite visits. Two teacher groups were interviewed for periods of about 2-3 hours. A two-hour interview was held with a central administrator with direct supervisory responsibility for Westwinds. Three interviews of two to three hours were conducted with program administrator responsible for Westwinds College (a principal-equivalent). Interviews of approximately 2 to 2 1/2 hours were held with the technical coordinator and course developers.

A group of four local students was interviewed onsite and two distance students (from the

Northwest Territories) were interviewed via audio conference. These interviews were about an hour and a quarter in length.

All interviews were tape-recorded and included at least two interviewers with one asking the prescribed questions and at least one other actively taking notes and asking follow-up questions as needed.

Observations were made both in classrooms and in the areas where the computers were located but since the program is online, observations were not especially useful. A variety of program documents (e.g., course booklet, class timetable, course outlines, newsletters) were collected and included as data sources.

[\[1\]](#) In response to an interviewer's probe, this figure was clarified to mean that five thousand course registrations had taken place.