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Ministry plans for replacing BCeSIS

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The BC Ministry of Education has issued an RFP (Request for Proposals) for a replacement for BCeSIS (BC enterprise Student Information System), the current system that holds information on students in public and private schools in BC. It hopes to have a new student information system in place for initial use in 2014 and full implementation a year later.

For the ministry to get it right this time is incredibly important for any teacher who plans to be around for many more years. The ministry is looking for a contract to span a dozen years, shaping the work of teaching and learning through nearly the entire career of a student from Kindergarten to Grade 12.

Ursula Franklin admonishes us that “every tool shapes the task.” Any information system a teacher uses to keep track of data on students will shape the way they carry out the work of teaching those students. Aspects of learning on which data are collected will inevitably be more important than things on which data are not collected. Technology is not neutral.

So what are the dangers in this round of creating a student information system?

Asking for more than can be delivered

The ministry went through a process of building the requirements for the new system. They engaged nearly four dozen administrators, counsellors, and some teachers, to contribute to defining what the system should do. These are called the “functional requirements” and cover about fifty pages in the RFP.

Two themes jump out of these functional requirements.

One theme is looking back—create a new version of the same, but better than BCeSIS. Many of the functional requirements are what BCeSIS promised but could not deliver. This is the look back, asking now for what could not be built before. User-friendly, using a graphic interface, is the expectation. And features that are more flexible than the single way permitted in the old program.

The other theme is looking forward. The ministry says that the education system will be transformed by the BC Education Plan. It will not be based on grades and credits, and instead

will aim at broad, ambiguous, and deep objectives like critical and innovative thinking. The classroom will no longer frame the learning as students explore the world beyond the school.

What should a student information system look like to meet this vision, should it ever come about? The functional requirements call for the information system to deal with these effectively, even though they are at best a work in progress without any firm definition.

Can an information system be built that will effectively serve both a past and a quite-different, projected, future system?

The ministry says “Yes”. They have been told by consultants that progress has been made in creating student information systems in the US. Huge expenditures on state-wide systems have been made to meet the reporting requirements for federal funding.

The kicker is this—these information systems are being built based on a newly-centralized, multi-state curriculum through US national standards. They are being built on the basis of the kind of system we are supposedly leaving behind.

These various contradictions mean that skepticism is the most positive attitude possible about meeting the hundreds of aspects defined as functional requirements.

Same design, but more complex demands

BCeSIS is a centralized system. All the information in the system is held on servers in one central place. Every teacher reaches the servers through the internet, mostly through the ministry’s limited-capacity Provincial Learning Network.

While inadequacies of the software were the source of many user complaints, limited access at peak times was also a matter of frustration.

The more data included in the centralized database, the more volume can slow the system down.

Yet the new system is supposed to continue this entirely centralized model—but with even more information and lots more time spent by teachers to supply the data.

BCeSIS only keeps most data, other than demographics, for one year. The plan for the new system is that it will keep all data on an ongoing basis. Student information from the pre-school Strong Start program through graduation will be held in the database—data on well over a million students over the 12-year proposed contract time.

A much broader range of data is projected to be kept in the new system—formative assessments, project data, notes on incidents, etc.—that every teacher will be expected to enter on every student on a frequent basis.

Parents and guardians, students, and teachers are to have access at all times to the student data—that’s more than a million folks for the 600,000 current students. Parents were supposed to have access to BCeSIS, but no one even tried to put that into practice, since it couldn’t even adequately serve the teachers alone. Will a new system on the same centralized design—with many more data points—actually work any better than BCeSIS?

Quality is beyond measure

Alfie Kohn’s recent work has him talking about “quality beyond measure.” What he means is that many of the qualities we want to encourage and shape in our students cannot be measured. Attempting to put them into a measurement system actually leads us away from important aspects of the teaching and learning process.

Kohn's concept is very relevant to the proposed student information system.

The centralized and extensive data approach is based on an assumption that the information can be used to improve education. This is the claim of the ministry's Chief Information Officer (our provincial government and Ministry of Education both have one).

The reason for creating this mass of data in a centralized system is to develop a data warehouse that feeds analytics tools that produce tracking and trends. These are supposed to give us information that should enable us to improve teaching.

Teaching, as we know it now, is primarily a craft. Teachers learn to monitor a student's learning—individually and collectively—to find patterns and to judge success. Our judgments are frequently holistic, taking into account concrete data but also incorporating intuition and sensitivity that help to identify the many dimensions of growth we observe so that we can challenge our students for future growth. That is at the heart of what people mean when they talk about a teacher who was a powerful influence on their life.

Yes, some data can be very useful. But building a system in which decisions become primarily data-based, in the sense of mining a data warehouse, is a direction we should question.

Maintaining a massive database of everything a student does in their childhood from pre-K to Grade 12 can only be justified if we believe that data analytics is better than teacher judgment in helping our students to grow and develop. And we don't.

Surveillance is a side-effect

Whether intentional or not, surveillance is a side-effect of entering into this data-intensive approach to a student information system.

This surveillance is of the student, via the data in the system, and also of the teacher. We all know that the era of closing the classroom door and getting on with teaching is no longer the reality. Everything and anything in our environment can end up on YouTube.

We should, still, do what we can to protect childhood, which should be a time of exploring and testing for young people, developing who they are and how they want to relate to the world. This exploration, and even "bad behavior," should not be a life sentence for an individual, sticking with them perpetually in their virtual profile.

Security has to be an obsession

The more data that exist, the more people it is gathered on, and the longer it is kept, the more that system security has to be an obsession.

If the ministry RFP for a new system produces the system described (not a sure thing), imagine how many people could have access on a single day: 50,000 teachers and clerical workers, 600,000 students in public and private schools, and more than a million parents and guardians of those students.

What is needed is a foolproof, unhackable system that includes complex authentication for every individual potentially on the system, frequent password changes, and help available at all times. This kind of guard labour uses a significant amount of the resources allocated to maintaining the system. It also uses teacher time that could be spent working with students.

An analysis of the RFP: another centralized information system, and on the cheap

The central premise of the plan to replace BCeSIS is that there must be a single record for every individual student in the province and that it must be held centrally and permanently—what the ministry calls an “enterprise” approach. At the same time, they are looking to create a system on the cheap.

First a look at the “on the cheap” aspect, then an examination of the rationale behind the centralized system.

On the cheap

Spending more than \$100 million on an information system may not sound cheap. However, a little more than that amount is what the ministry plans to spend over 12 years.

Compare that to the more than \$100 million spent on BCeSIS in the eight years since 2004. And look at the details of the \$100 million or so for the new system.

The details are in the RFP issued by the ministry on December 5, 2012. Anyone can view the 100-plus pages by going to the “BC Education Plan” website, at www.bcedplan.ca/actions/technology/request-for-proposals.php.

The ministry says that it wants the new system to cost a fixed amount. It is seeking “Stable, predictable pricing that fits within the ministry’s operating funding framework.” (p. 12) For years 5 to 10 (2017–18 to 2022–23), the ministry would pay \$10.5 million a year. In the first four years the amounts will start at \$3.5 million and go up to \$7.7 million—possibly more, if BCeSIS gets retired earlier.

Imagine that the ministry’s employees were told that over a 12-year period there would be no increases in their pay. That is what the ministry is telling whoever bids on and receives the contract for the new information system:

The Ministry does not expect funding increases will be available during the 12-year Contract term. As such, all amounts shown (e.g., annual TSC amounts) are nominal dollars and will not be subject to inflation increases or cost of living increases.

And:

With the exception of funding associated with some unique, one-off projects, for example application changes associated with a major change in education delivery no additional funding from any other sources, including Ministry, other government, or School District funding is anticipated. (RFP, p. 20)

So that is the long-term obligation a company is expected to pick up—to provide the service on a fixed-cost basis over a dozen years.

Now, given how rapidly technology changes, imagine what may have happened in that area by 2025—the last year, a phase-down year, at the end of the contract. No, you can’t imagine it: think back a dozen years to 2001—no iPhone, no tablets, no Android smart phones, no netbooks. Will a system based on more-than-12-year-old technology seem like a good deal to a corporation or to teachers or to anyone in 2025?

What about the short term? The biggest costs to the contractor will come up front—hardware, software, customizing the software to fit the specifics of BC education, designing the system to

follow BC privacy legislation, creating the training manuals and modules, data conversion from BCeSIS, and more. However, the least money comes to the company in the first years, starting with \$3.5 million in 2012–14. In years 3 and 4, amounts of \$5.4 and \$7.7 may be larger if BCeSIS can be phased out early. The reduced amounts in the first years are because the ministry has to continue paying for the costs of BCeSIS within the total available for these projects.

Financing, profits, and risks to the corporate bidder

What corporate suckers will be prepared to pay for start-up costs at the front end without those costs being covered? The ministry recognizes the problem:

The upward sloping funding curve could mean that the cash flow available to the Service Provider will be below Service Provider cost (or cost plus financial margin expectations) during the first several years of the Contract. The Ministry expects the Service Provider will implicitly finance these costs and anticipates that the Service Provider will recover these previously unrecovered costs in the latter part of the Contract, likely during steady state operations.... (p. 20)

“Steady state operations”? Really? No new servers needed for a dozen years, no new versions of Oracle or whatever underlying software, no pay increases for the folks working in your server centre and helpline services?

This requirement of substantial, up front financing by the Service Provider is recognized by who will be allowed to submit a proposal. No start-up software developer, nor even most companies whose primary work has been providing student information systems, need apply. The bidder has to show that it has revenues of at least \$100 million a year or profits of \$10 million annually.

Suppose you are Pearson, or one of very few other companies big enough to bid. What are the risks, beyond the assumptions of profits later through “steady state” operations? Do you subsidize the data system as a loss leader in return for getting other products into the education system, such as standardized tests, etextbooks, online resources, and teacher evaluation (all Pearson products)?

A big risk to the bidder is that school districts may not sign up for the service. The contract doesn’t guarantee that the Service Provider will get \$10.5 million a year in the final years—that is a *maximum*. The actual amount is based on a per-student amount to a maximum of 500,000 students in the data system—if there are fewer than 500,000 then the amount will be less. The per-student allocation will be capped, with no additional per-student payment if the number active in the system is more than 500,000. (Current enrolment, according to the RFP, is 580,000 in public schools and 70,000 in independent schools.)

Currently, BCeSIS is not mandatory, and four school districts still refuse to use it, despite pressure to get everyone on board. When BCeSIS was being promoted to replace outdated district student information services, many boards thought they had to sign up because the techies gave advice that “there is no alternative.”

Now we know there are alternatives: OpenStudent software is being developed by the Saanich school district with the aim of convincing other districts to use its system instead of the ministry-selected, corporate service. Also, companies with decades of experience in producing student information systems at a school level could also do this at a district level. Any district carrying out “due diligence” before making a commitment to a system for a decade will want to look seriously at all alternatives.

What is promised to reduce corporate risk?

The ministry promises it “will strongly encourage the School Districts to adopt the Service.”

The Ministry is highly motivated to ensure that School Districts adopt the Service. Not only does the Ministry see enormous benefits for broad adoption of the Service by School Districts, but the Ministry will receive per student fee payments from the School Districts associated with each Active Student Record. Given these reasons, senior executives at the Ministry, as well as the SIS-ESC responsible for this procurement are committed to encourage all School Districts onto the Service, as quickly as feasible. (RFP, p. 19)

In addition, one hint, but not promise, suggests potential revenue from expansion: “the Ministry may want to extend the provision of the Service to other jurisdictions within Canada, or expand the use of the Service by the Province’s education system beyond Pre-K–12.” But the province would want a share of any gains “through expansion of the Service.” (RFP, p. 17)

An “enterprise solution”—with the whole province as the enterprise—is *not* the only option

The ministry is focused on an “enterprise solution.” That is, one student information system that includes every student in the province in a single application. The record on each student must also integrate with “provincial identity management infrastructure.” (RFP, p. 29)

“Provincial identity management infrastructure” is code for a single number and piece of ID that will link across every government service—driver’s license, health care, pharmacare, social services, various kinds of licences, and more. Notice, as well, that the education database is supposed to include “pre-K,” and already Strong Start participants must have a PEN (Personal Education Number) and be in the BCeSIS database. Presumably we will get our “identity management” number with our birth certificate and be linked to it until death.

Given this context, the RFP lays out the requirements critical to the system:

- a) an Enterprise solution supporting common business processes, cross enrollment (student enrolled in one or more schools concurrently), and supports the requirement for a single student record containing all relevant enrolment, demographic, and achievement information covering the educational career of the student from pre-K to completion of school; [two spellings of “enrolment” in the original]
- b) tracking and articulating each students’ individual learning progress from kindergarten to school completion and using the student data to proactively guide the educational process;
- c) online access by students and Parents to enable ongoing access to records of learning progress on a continual basis and to support exchange of information between Parents and educators; [“parents” capitalized in the original—not “students” or “educators”]
- d) many students participate in schools that run on a continuous education cycle. Many students take courses concurrently from a combination of distance learning and traditional ‘bricks and mortar’ schools. School Districts and the Ministry require flexibility in maintaining course, schedule, and achievement information.

- e) a rich suite of standard reports, flexible ad hoc reporting and analytics to access operational and historical data at the student, school, School District and provincial levels; and
- f) SIS software that is easy to learn, easy to use, and supported by self-serve documentation and training. (RFP, pp. 28–29)

Some might look through this list and get the feeling that the primary reason for an “enterprise” solution is to create effectively a surveillance and control system, complete with every detail of a student’s life, that reaches directly into every classroom. Others might see it as a way of creating efficiencies, evaluating teachers by student outcomes, and holding down costs.

Given the statement of intention for this enterprise system, something much less invasive might well be preferred by many.

Public education—individual consumer or social citizen?

There are other reasons, as well, that an enterprise system might not be the right choice.

The enterprise, centralized approach is not based on a technical requirement, but on a value choice. It sees the student as an individual who can make choices as a shopper, and the student record is the equivalent of the receipt one gets that summarizes the purchases at the supermarket checkout.

We see the future of this approach already in the Distributed Learning (DL) program. DL teachers report that students and parents go “shopping” for programs and courses—sometimes for the program that provides the biggest payment for parents to buy resources and services (generally about \$1,000 per student, for DL schools to be competitive); sometimes for the easiest course to get a high mark.

The enterprise approach also lends itself to provincial, data-based decision-making, using analytics in ways similar to what corporations do when they study consumer behaviour to learn how to get them to buy, or sales data to evaluate employees.

This collection of masses of data to feed a system of analytics is described as “big data.” The implication for the role of the teacher, in this system, is an expectation that they would depend on the data patterns reported by the system to direct their teaching to meet the needs of their students, rather than on their craft knowledge and tacit judgment as a teacher, within the social context of a cohort of students in a class.

An alternative, holistic way of looking at an individual’s development sees them as part of a school community—basically a citizenship model rather than a consumer model. The citizenship model focuses on relationships as well as on achievement. Many of the most important elements of a student’s learning experience are not likely to be captured by data directed at pre-determined categories that do not take into account their development as an engaged citizen who can make context-appropriate judgments and choices.

Another rationale given for a centralized, enterprise approach is that it provides easy access to information about the student if he/she moves around within the province or signs up for a DL course from another district.

An alternative approach is to have the student records maintained at the school where the student is registered. A student could still make a choice of courses at other schools or by DL, but would need to have the information reported to their school for it to become a part of their record. Essential data could also be moved from one school to another with the student—if data

standards are set for what is transmitted and the required format. Again, with the citizenship rather than the consumer model, the student would need to talk to the school about what they are doing, rather than making a shopping choice, so that the information could be reported to the home school for the student record.

Practical issues—record-keeping or teaching?

Again, Ursula Franklin warns that “every tool shapes the task.” What might that mean in the student information system?

Let’s start with “business requirements.” In the IT field, this refers to the way in which tasks are carried out that will be built into the software and how it is used. The “Functional Requirements” in the ministry’s RFP are a statement of some of these business requirements. Existing software built for other clients reflects their business requirements. When this other software is put up against BC requirements, two choices are possible. The software can be modified to fit the BC requirements, or teachers can be told they have to change their teaching and reporting practices (“business processes”) to fit the existing software.

Here is how the situation with business processes is described in the RFP:

In some cases, based on Ministry acceptance, it may be possible to change business processes in order to address and close gaps, rather than make changes and adaptations to the SIS. (RFP, p. 14)

Next, look at how much teaching time and time outside class will be taken up with record-keeping, rather than teaching and preparation for teaching—a situation that already shapes the work of DL teachers, who say reporting for audits diverts attention from pedagogy and practice of teaching. The RFP describes these “Potential Future Requirements” arising from the BC Education Plan:

Potential Future Requirements

Additional business requirements are not certain at this time. To the extent that potential future requirements require customization, they will be addressed over the term of the Contract through Services as Needed. They include, but are not limited to:

- a) potential future requirements related to “courses within school configuration”;
 - i. allow multiple courses to share the same learning outcome/learning standard,
 - ii. allow multiple teachers to assess the competencies for each Student in a course, and
 - iii. allow multiple teachers to assess the same learning outcome/learning standard in a course;
- b) potential future requirements related to “assessment within achievement”
 - i. ability to track all learning (assessable items) that a student has encountered or achieved. This could consist of a letter grade with comments, or a descriptive indicator such as Fully Meeting Expectations with a descriptive comment. A student may be working on learning standards in multiple subject areas at different learning levels at the same time. A student may be working on a project that combines learning standards from multiple areas of learning (e.g., Science and Art),

- ii. ability to support and report on multiple achievement indicators across areas of learning, competencies and grades. Recognize student learning across multiple levels and grades. Report on levels of proficiency such as Performance standards, letter grade, percentages, comments and other indicators (e.g. a student may have a level of proficiency and comment for the competency of communication and a letter grade, percentage and comment for English Language Arts 12),
 - iii. ability to assess against a number of different learning standards from different areas and track the completion (may be covered by a grade book),
 - iv. ability to report learning standards that are completed (may be covered by a grade book),
 - v. ability to track learning as a continuum, and
 - vi. ability to track pre-school early learning ages 0–5 years (BCeSIS is used only to track attendance for early learning programs);
- c) potential future requirement related to “communication of student progress/learning within assessment”:
- i. ability to report on competencies across courses and curriculum (e.g. a student will have a mark and comment for the competency of communication). (RFP, p. 32)

As is often the case, the record-keeping technology more clearly describes the practice being encouraged and demanded than do philosophical statements such as those in the “BC Education Plan.”

Conclusions

1. Teachers should discuss and debate whether teachers want a centralized enterprise student information system or one that is school and district based.
2. Teachers should discuss what kind of information and how much should be collected on students, and whether it should be data-mined and maintained in an archive through the time a student is in school and for years after that.
3. Ministry and school districts should ensure that whatever system or systems replace BCeSIS, they are easy to use and are not intrusive into the time intended to be spent working directly with students.
4. School districts should carry out due diligence by examining all possible choices for a student information system for their district before agreeing to a centralized ministry student information system. Consultation by districts should include input from teachers though their local, not just technical staff.
5. The ministry should ensure that a corporate bidder is not entering into a contract for a student information system in order to gain access to BC as a market for other products such as textbooks, multi-media resources, teacher assessment systems, tests, and the like.
6. The timetable for a decision on the RFP is for the province to enter into a contract in June of 2013, a month after the provincial election. This is an important decision, with a proposed 12-year commitment, that should not be made until an education minister is appointed and has an opportunity to consider all the issues.