We are not alone:

Collaborations, articulations, partnerships and other strange creatures!

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1. Abstract

The limited transferability of diploma programs to university degrees poses a serious restriction to students who may desire to further their educational goals, or modify an existing career path. Given that today's society demands increasingly higher-levels of academic credentials it is imperative that institutions address the issues relevant to transferability. If serious consideration is not given to this problem, institutions will continue to seriously undermine the student's ability to make meaningful choices in the pursuit of life-long learning.

This paper will review Grande Prairie Regional College's (GPRC) experience in dealing with the fundamental challenges inherent in pursuing this goal, specifically with regard to the Computing Science programs. The department engaged in various approaches in an attempt to provide greater course transferability and improved program flexibility; this included implementing a complete curriculum revision of their diploma program, engaging in several block transfer arrangements, and initiating a collaboration agreement with a university.

Initially GPRC offered two separate and distinct computing programs. The diploma was a terminal non-transferable credential and the degree stream was a one-year course-by-course transfer to the University of Alberta. These have since evolved into: a diploma program, which offers numerous laddering opportunities, an expansion of the UT transfer program which now includes a complete second year, and significantly greater transferability of courses to other institutions. Although we experienced numerous negative aspects to these articulation strategies, we feel that the benefits derived have more than compensated for the shortcomings encountered.

Keywords: Articulation agreements, course transfers, block transfers, laddering, life-long learning

2. Introduction

The Canadian community college system started in the early 1960s in part in response to a national/international trend for increased demand for post secondary training in academics, career and vocational areas [1]. Growth in the college system was further fueled by the need to provide local educational opportunities for students wishing to

pursue university level education. Today the continued internationalization of economies creates an ever-more pressing demand for training skilled knowledge workers in order to maintain a competitive advantage with our global neighbours[2].

Students are keenly aware of these imperatives, which is manifest by the number of them who wish to complete a Bachelor's degree. The authors of one paper were even so bold as to state that "the university degree has become to developed societies in the 21st century what the high school diploma was throughout most of the 20th"[3]. This sentiment is corroborated by an American study conducted in 1997, which reported that 77% of all high school seniors anticipate graduating from a four-year college/university program [4]. Anecdotal evidence is provided from the fact that we have seen an increasing number of employer contacts expressing a preference for Baccalaureate level credentials. Many of our alumni who graduated from our Computer Systems Technology (CST) Diploma program, tell us that current students would benefit greatly by obtaining more advanced qualifications.

Although two-year diplomas have a purpose, students are very interested in knowing what kind of educational growth opportunities they will have after they complete the diplomas. Part of the vernacular of the current post secondary educational milieu is the concept of life-long learning; hence there seems to be a growing expectation from students and educators alike, that a diploma should be non-terminal, and fully expect it to efficiently ladder into degree or other post diploma programs. Regional and national level groups are being tasked with the goal of improving the ability of learners to enjoy smooth and valuable transitions from institution to institution [6,7,8].

In this paper we will review some of our College/Departmental level experiences in dealing with the fundamental issues inherent in pursuing this goal of providing greater course transferability and improved program flexibility in the Computing Science programs. There are consequences to collaborations, transfers and articulation agreements, and we hope to shed some light on the many advantages we have realized and provide guidance for avoiding some of the pitfalls.

3. Definitions

Discussion involving course transfers are littered with many terms, often with conflicting, redundant and confusing terminology. Words like articulation, collaboration, coordination, partnerships and brokering arrangements are bandied about without much consideration for specific interpretations, and often the terminology is used interchangeably. We offer the following definition of terms, as we interpret them, to help clarify our subsequent discussion.

Articulation Agreements

An articulation agreement implies that a formal agreement regarding individual courses, programs, and transfer arrangements exists between two or more institutions.

Course by course
Articulation agreements for university transfer courses are typically facilitated and coordinated by a provincial body e.g. Alberta Council on Admissions and Transfer or ACAT [9,10]. Basically this involves a course-by-course evaluation rather than complete program transfers. A student who desires to transfer to another institution within the same province simply examines the provincial transfer guides to determine the transfer status of a given slate of courses. Most college departments attempt to offer one or two complete years of transfer to a specific university's program rather than offering an ad-hoc collection of courses.

Block Transfer
Program block transfers are specialized articulation agreements, which recognize that although similar programs in different institutions may not have an exact one-to-one correspondence in course syllabus, they are substantially equivalent in curriculum content. The fundamental premise here is that: "Knowledge is knowledge, skills are skills, either students have acquired the skills or they have not"[3].

This approach can facilitate transfers by allowing students to bypass defined institutional course requirements when continuing into programs at a different institution. Typically, block transfers are not a guarantee of admission into another institution, merely an acknowledgement that the sending program has met the minimum admission requirements. Often block transfers are used for students entering post-diploma programs or when laddering into an advanced program of studies.

Collaboration
A collaboration implies that there is input, planning, and cooperation from both sending and receiving institutions. Typically, a collaboration is more comprehensive and rigid than a comparable block transfer. Core curriculum, options, residency requirements, and recommended course sequences are explicitly outlined. Collaborations often involve specialized funding, which implies Full Load Equivalent (FLE) counting, accountability for financial expenditures, and usually is overseen by an appropriate provincial authority.

Partnership
A partnership is similar to a collaboration, however it is usually based on a looser arrangement between institutions, the primary focus being on the proper academic preparation of students (including philosophical underpinnings such as a bias towards applied vs. theoretical). The expectation from the junior partner being that all students who have met the required program requirements and have maintained a sufficiently high academic standing will be admitted to the receiving institution. Accountability falls exclusively to the respective institutions with minimal, if any, intervention from provincial level authorities (except when the partnership is imposed).

Laddering (2+2 or 3+1)
Students start at one institution, complete a program of studies, and use these courses as a credential to continue into a related program of study at another institution, such as an applied or traditional degree streams. The most common laddering arrangements are 2+2

programs where students take two years of courses at one institution, and take the remaining two years at the receiving institution. This could take the form of either a block transfer, collaborative or partnership arrangement.

The advantage that laddering programs have, is that they are not restricted to delivering the exact course complement defined by specific university transfer programs. By eliminating some program constraints, the sending institution has greater flexibility in developing and maintaining relevant and autonomous diploma programming.

We consider laddering to be different than the typical protocol in place for most university transfer programs. Students are effectively taking the university's program at a college campus, and there is an implicit expectation (at least from the student's perspective) that both institutions are participating collectively to deliver a virtual multi-campus program.

Brokering Arrangements
One institution pays another for the right to offer a program, or parts thereof, that another institution has developed.

4. Evolution of Computing Science programs at GPRC

What follows is a summary of the major changes to the Computing Science curriculum at GPRC over the past decade.

Curriculum Revision

Eight years ago, GPRC had two separate and distinct computing science programs—a two-year diploma in Computer Systems Technology (CST), and a one-year University Transfer program to the University of Alberta's Computing Science degree [5]. At that point in time, the programs were in separate departments, had no courses in common, no faculty in common, and none of the CST diploma courses were transferable to any university programs. Courses were not even transferable to in-house UT courses, even though some were only nominally different in content. It was readily apparent that this was unfair to students in the diploma program. In order to address this concern we set out to revise the diploma program with the major goal being: maximize the transferability of CST courses to our primary transfer institution.

Before we initiated changes to the programs, the UT program and the CST diploma program were as follows:

- The CST diploma curriculum was made up of five computing, four business and one mathematics course in the first year and eight computing courses, one business and one mathematics course in second year.

- The UT CS students were required to take three computing science courses, one full course in English, three mathematics courses, and two additional science courses in year one.

Our first step was to develop a common set of CS courses for students in both the CST diploma and CS UT programs. Over the course of a couple of years we revised the core curriculum for all first year students to be four Computing Science courses, one Mathematics course, one English course, and two UT courses for a total of nine first year UT transfer courses. Diploma students are still missing two calculus courses that are core requirements in the University of Alberta UT CS program (our primary transfer institution), however diploma students can take these two calculus courses in lieu of option courses and thus fulfill 9 of the 10 first year UT CS course program requirements.

Modifications to the second year of the CST diploma were not as extensive. Since our primary transfer institution had only four CS courses in its second year, we made these courses mandatory for the CST program.

The consequences of these combined changes are that current CST diploma graduates receive direct transfer of up to fourteen courses toward their degree at the University of Alberta.

In order to minimize timetabling difficulties and maximize coordination of faculty workloads, the CST diploma program and faculty were merged with the Department of Science, which at the time was responsible for offering the UT CS program.

Block Transfers

As part of the Campus Alberta Initiative, the Alberta Government introduced the concept of applied degrees as a recognized credential. The applied degree is three years of academic study followed by one year approved and supervised practical work experience.

GPRC participated in these discussions, and although our preference was to offer our own applied degree, only **NAIT and SAIT** were initially granted approval to offer applied degrees in computing. However, the government did stipulate that NAIT and SAIT would be required to accept block transfers of diploma graduates from comparable programs within the province. Both institutions subsequently granted our diploma graduates two-year block transfer into their applied degrees. As a consequence our CST diploma graduates had the option to continue in several applied degree streams.

Also, in keeping with the Campus Alberta vision, the **University of Lethbridge (**UofL) initiated a bold move, which broke with traditional admission practice. The UofL decided to unilaterally grant block transfer to all computing science diploma graduates (in the province) into their B.Sc in Computing Science—a traditional four-year degree. The only requirement that Lethbridge imposed was that graduates from diploma programs must have achieved a cumulative GPA of 2.5 or higher on a 4-point scale.

Athabasca University decided to admit all CIPS accredited computing diploma graduated into their BA in Information Systems Degree. Currently Athabasca University also permits our diploma graduates to block transfer into the collaborative B.Sc. in Computing and Information Systems. This was the first block transfer arrangement that our computing students were able to participate in.

Collaborative Arrangements

Also during this time, we applied for and were granted special Access Funding (part of the Campus Alberta initiative) for a collaborative B.Sc. degree in Computing and Information Systems with Athabasca University. This is a traditional four-year 120 credit B.Sc. degree.

Students take 99 credits of instructor delivered face-to-face courses at GPRC, 12 credits of distance courses facilitated by an on site instructor at GPRC. Finally an additional 9 credits of distance courses are required to complete the credits and residency requirements for this degree.

It was our intention from the very onset of discussions with Athabasca University that our CST diploma graduates be able to ladder into this degree. Not only did we consider laddering our diploma into the degree, but we also provided an exit option whereby degree stream students would qualify for a diploma when all its requirements were met. During the course of the 120 credit degree program, students will typically complete the requirements for the CST diploma some time in year three, depending on the sequence of courses taken.

Partnerships/ Articulation Agreements

In the past couple of years we have been actively pursuing partnerships and additional articulation agreements outside of Alberta; currently we have only dealt with institutions in British Columbia.

5. Impact, Results and Consequences

Nearly a decade of changes has resulted in a significant transformation of the computing science program at GPRC. Initially the college offered two separate and distinct computing programs, where the diploma was a terminal non-transferable credential and the other was a one-year course-by-course transfer to the University of Alberta (See figure 1). These have since evolved into: a diploma program, offering numerous laddering opportunities and increased course transferability; and an expansion of the UT transfer program which currently encompasses two full years of transferability.

The following summarizes what we consider to be the most significant benefits for our **CST diploma** students:

- Transferability of up to 14 courses from the diploma program to our primary transfer institution. These are explicitly listed in the Alberta Transfer Guide.
- Block transfer into applied degree programs at NAIT and SAIT.
- Block transfer to University of Lethbridge's four-year B.Sc. in CS.
- Laddering into the four-year collaborative B.Sc. in CSIS with Athabasca University.
- Course-by-course transfers to institutions in B.C.
- Potential for additional articulation agreements with other institutions in B.C.

Similarly, the following list summarizes what we consider to be the most significant benefits for our **CS Degree Stream** students (which includes both University of Alberta as well as Athabasca Collaborative program students):

- UofA transfer students can earn up to 60 credits towards their degree.
- UofA transfer students can receive 60 credits into the collaborative B.Sc. in CSIS with Athabasca University (AU).
- AU students can complete more than 3 years on campus towards the collaborative B.Sc. in CSIS with Athabasca University (AU).
- Both UofA and AU students can opt into the CST diploma program with minimal or no loss of credits.
- Potential for 3+1 partnership with institution(s) in B.C.

All of the above transfer and laddering options are summarized in figure 2.

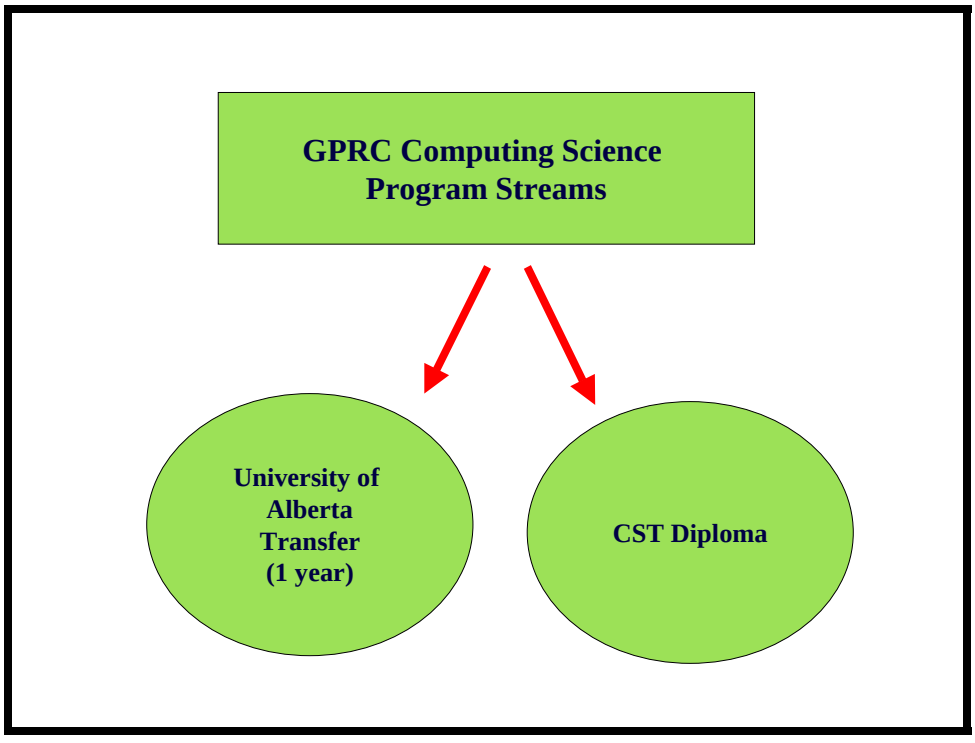

Figure 1 – GPRC CS programs: pre-articulation strategies

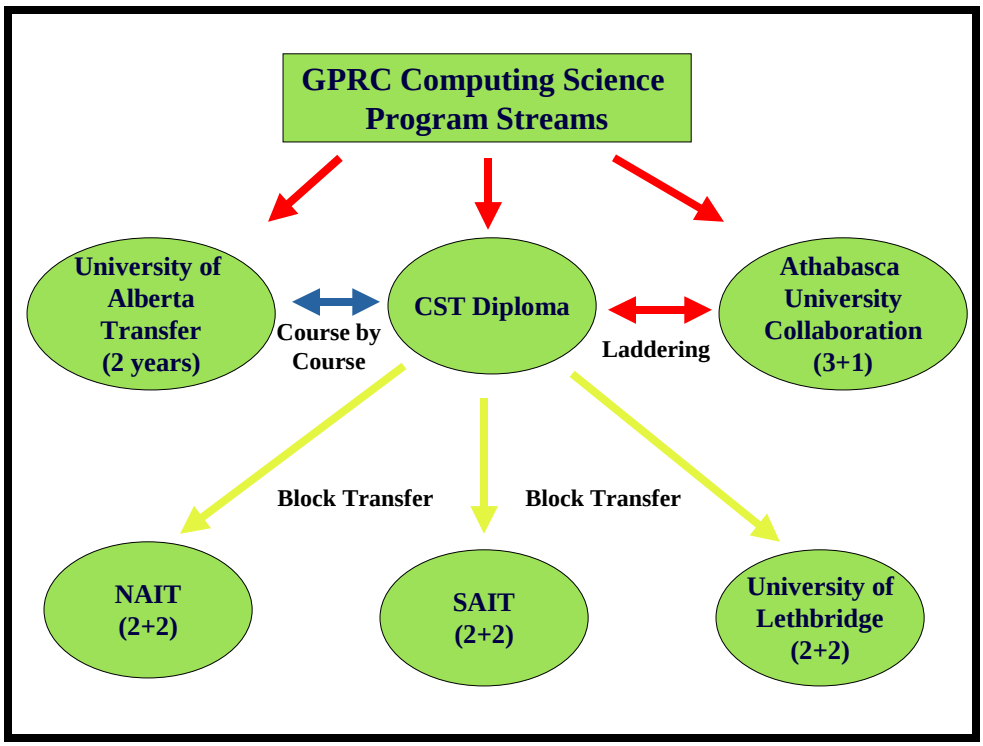

Figure 2 - Transfer and Laddering Options: post-articulation strategies

The impact that these changes had on students becomes readily apparent when we examine the educational options pursued by post-graduation diploma students. Prior to instituting our curriculum changes and before any of the laddering options became available, only 2% of our CST diploma graduates chose to continue their education (in computing science) beyond the diploma level. Afterwards, 66% of diploma graduates did continue into a degree stream, either applied or traditional.

This breaks down as follows (see Figure 3):

- 11% continued into applied degrees at NAIT/SAIT
- 55% continued into a traditional degree (standard 4-year program)
    - 44% - into the AU collaborative degree
    - 12% - into other institutions

The data seems to corroborate our initial suspicions regarding the students' desire for continued learning opportunities. These results however, maybe be somewhat skewed by the fact that many of our potential AU collaborative students choose to register in the diploma program first, before declaring themselves as AU collaborative students. The rationale being that since they will not lose any credits, why not ensure themselves of a two-year credential before committing to the longer four-year program (try before you buy philosophy). Isn't this what life-long learning is all about!

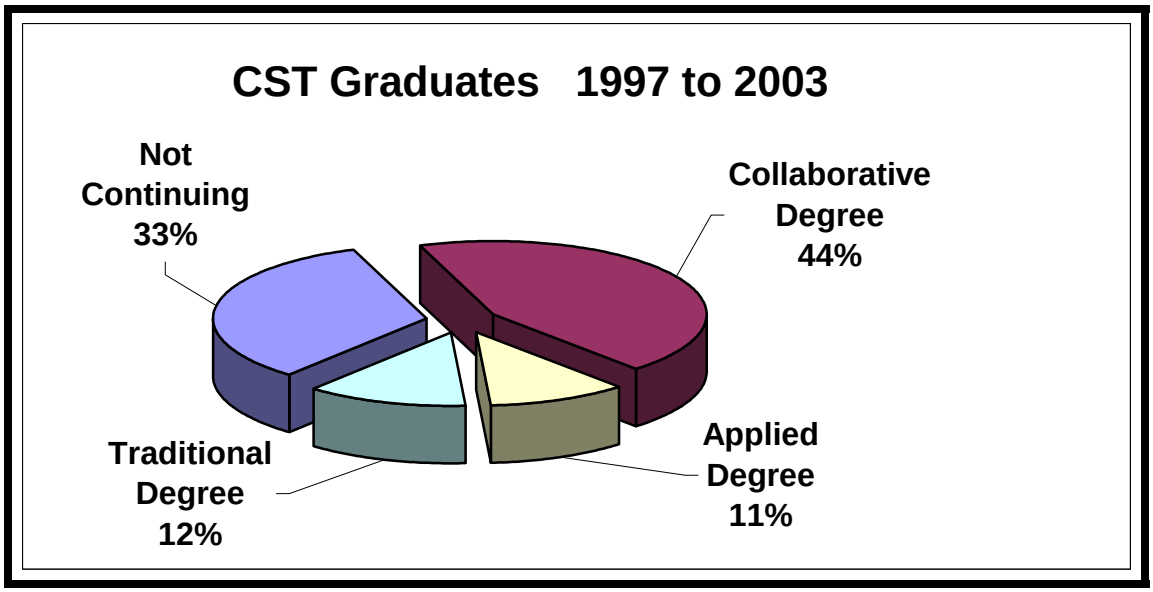

Figure 3 - Status of CST Graduates Post Diploma

Although we have never formally tracked how successful all of our diploma graduates have been, it is our impression that most students have done exceedingly well when they chose to ladder into degree level programs. This has been explicitly confirmed by verbal discussions with NAIT faculty. Informal correspondence with the CS department at Lethbridge also indicates that student transition (from many institutions – not only ours) has been successful. In fact they state that approximately 20% of all their CS majors entered the B.Sc. program under the diploma-block transfer arrangement.

6. Positive Elements of Transferability

Students are interested in keeping their career options open. We found that rather than enroll in programs that are terminal they prefer to take courses that ladder into other learning opportunities. They want to enroll in diploma programs that are accepted by Universities, and they want to take University transfer courses that are recognized by as many institutions as possible.

Students are the primary beneficiaries of increased transferability:

- They benefit from increased flexibility in their choice of available programs, Diploma, Applied Degree and Baccalaureate degree, and in choice of institutions. Students are able to make changes in their program streams as their career goals and aspirations evolve. We regularly observe, and facilitate, students changing from diploma to university transfer streams and visa versa.
- They can make substantive changes to their educational pursuits while minimizing “lost” courses.
- They can realize significant financial benefits by taking courses and programs closer to home, where tuition is usually lower at the colleges than at the Universities.

If our primary transfer institution were to permit block transfers for our diploma program we would most likely completely merge the two existing CS streams. Not only would this free up some resources, but it would also result in another tangible benefit for UT students, who would then be eligible to receive an intermediate credential, in this case the diploma.

We also discovered that students were not the only group who were positively impacted by implementing these various transfer options. By getting involved in articulation agreements, individual faculty members and the department as a whole has built stronger ties with their counterparts at other institutions. This was especially prevalent with respect to our collaborative arrangements with Athabasca University. Overall, this resulted in imparting a true sense of ownership, commitment and loyalty to the transfer arrangements, which we developed. The investment in time contributed by the participants has helped to solidify collegial bonds between faculty at these institutions. Ultimately, improved faculty rapport and inter-institutional coordination has lead to more direct input into decision making for future program evolution.

The 3+1 collaboration agreement has been the most work for us, it requires constant monitoring: reviewing the choice of courses to be delivered; dealing with student concerns; monitoring success rates, however this model has permitted us the most voice when dealing with transfer partners. Our input is given serious consideration and we feel more empowered. This has generated a greater affinity to our partnering institution and to the overall success of the students in the program.

7. Negative Aspects of Transferability

Unfortunately, there are also negative elements pertaining to increased transferability. These can, and do, impact both the receiving as well as the sending institutions.

One of the most compelling drawbacks is loss of autonomy. This is particularly relevant to the sending institution, which may have to sacrifice the ability to make programming changes quickly. This compromises the program's ability to meet niche market demands and keep abreast with cutting edge technologies. The sending institution is often constrained by requirements of the receiving institution—changes initiated by the receiving institution must be reflected in the programming of the "junior partner". The greater the number of program transfer arrangements that an institution has, the greater the loss of autonomy—unless of course you have *really* deep pockets, which mitigates against reasons for having formed these arrangements in the first place.

Given the fact that most institutions are extremely aware of their FLE count, there is competition between institutions as to who is awarded credit for FLE's. Alberta Learning, over the past ten years, has effectively created an environment that encourages institutions to compete in the educational marketplace. Each institution has institutional growth targets that translate into "performance bonuses" for those who meet and exceed their designated objectives. The FLE counting predicament is not as serious an issue

with course-by-course transfer, however it can be a serious matter with collaborative arrangements.

There are other potential hazards, especially with multi-institutional program transfers, where one college has transfers to many universities. One of these risks is a domino effect. A change by a senior partner can directly impact the junior partner's program which could compromise its ability to deliver all of its programming for its other standing arrangements. This problem is further exacerbated if several of the receiving institutions make conflicting changes. It may be very difficult for the sending institution to make the required changes and still satisfy existing program requirements.

In general course-by-course transfers seem to involve the least discussion between institutions. The receiving institution has a defined curriculum; either you match it, or come close, otherwise no transfer is granted. In fact our primary transfer institution rarely informs us directly of any impending changes to their existing curriculum. Often we only become aware of curriculum/course modifications when they finally appear in their calendar. We are not sure if this is a departmental level flaw or a systemic failure pervasive to all such arrangements. Also since departments at different universities probably have different focus it is unlikely that a sending institution will be able to successfully establish complete multiyear transfers to more than 1 institution (pick 1 and commit to it). The decision as to which institution we align with is often based on geographic constraints rather than ideological/pedagogical similarities.

Giving students the ability to transfer to various institutions potentially undermines retention for in-house programs. For example students may not want to stay in Grande Prairie to finish a Computing Science degree when they can move to other cities with more appealing recreational, cultural and educational facilities. On a similar note: our institution is currently facing the issue of having to justify to the minister that degree granting in Computing Science at Grande Prairie is viable when existing collaboration and degree completion agreements are already in effect (since you can already complete most of a degree through GPRC, why do you need your own?).

Advising can become significantly more complicated, especially when a student is confused regarding specific career goals and is trying to keep as many doors open as possible. This can have significant financial implications to the sending institution. "Complicated" transfer arrangements may discourage institutions from getting involved, it is better to not have transfer rather than pay the price of potentially improper or inaccurate advising.

As an example most of our students transfer to the University of Alberta, though some would rather continue their studies at the University of Calgary. However, the two universities have different sets of courses that are offered to first and second year students, and since our transfer courses are modeled after those at the University of Alberta, we find that it is very difficult for our graduates to smoothly integrate into the sequence of courses at Calgary.

Although most students were very satisfied with the preparation they were given in the revised diploma program, we sometimes ask ourselves if we culled some students who might have been successful in a less rigorous version of our CST diploma. Did we unnecessarily penalize students who did not want, nor were expecting the higher order academic requirements demanded by university level courses?

Transfer arrangements require a commitment of time, manpower, and finances at all levels: senior administration, departmental, and faculty.

8. Conclusions

Students today want higher credentials and greater flexibility in educational planning; more opportunities to choose institutions; less ambiguity and less reliance on ad hoc transfer processes. Students want the reassurance inherent to formal articulation agreements rather than verbal reassurances that their courses will transfer.

When we initially looked at various routes to increase the transferability of our diploma program we were motivated by, perhaps obsessed, with the concept of "assurance of quality". We came to the conclusion that **curriculum revision** was the only real option for us. We chose to abandon existing diploma courses in favor of courses, which already had or could be modified so that they would be accepted as University transfer. Although we were able to make this work, it resulted in a major restructuring of the CST diploma program: 15 of 20 courses were replaced or underwent significant modification. In fact the changes we made were so profound that it even resulted in a departmental restructuring. In hindsight we would not recommend this as the first approach nor the preferred choice for any departments undertaking a similar endeavor.

From our perspective, **block transfers** between institutions seem to make the most sense. Sending institutions can retain autonomy in curriculum development while still ensuring that students are not trapped in a terminal career stream. Although this approach can be fraught with potential hazards, especially within the domain of inadequate academic preparation, predefined core requirements can go a long way towards obviating this critically important issue. If universities would collaborate to establish a common core of first and second year courses, similar to ACM curriculum guidelines [11,12], this would simplify transfers. Moreover if colleges were to agree to meet these core guidelines content should no longer be an issue. The universities may still have some concerns regarding quality, however they still have two years to ensure that these transfer students measure up to their university standard.

We do not believe this would result in giving false hope by misleading weaker students into believing they can succeed, when in fact they cannot. Most students seem to develop fairly realistic expectations of their own capabilities during their diploma studies. In other words, if they barely graduated, it is highly unlikely that they will want to continue torturing themselves by seeking to transfer into a degree program. This self-policing will also help minimize problems associated with potentially inadequate preparation.

Overall, our Computing Science programs have undergone substantive changes with regards to course and program transferability. As a department we expended a great deal of time and energy in planning, discussions, and implementation. We experienced numerous challenges and dealt with a variety of detrimental aspects associated with implementing the goal of increased transferability. Nevertheless, the results seem to have justified these costs, as both students and faculty have been satisfied with the changes.

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