
Articulation Costing

Phase II

March 2004

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SUPPORTING BC'S
EDUCATION SYSTEM

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Table of Contents

FINDINGS	5
CONCLUSIONS	6
1.0 INTRODUCTION.....	7
2.0 METHODOLOGY	8
2.1 <i>Deriving Costs</i>	8
2.2 <i>Extrapolating Costs</i>	9
2.3 <i>Case Study</i>	11
2.4 <i>Identifying Issues</i>	11
2.5 <i>Summary and Recommendations</i>	11
3.0 COSTS OF ARTICULATION	12
3.1 <i>Cost components</i>	12
3.2 <i>System-wide cost breakdown</i>	16
3.3 <i>Case Study</i>	16
4.0 ISSUES ARISING.....	18
4.1 <i>Benefit/Cost of Developing an Articulation Agreement</i>	18
4.2 <i>Partial Articulation</i>	18
4.3 <i>Hidden Costs of Articulation</i>	19
4.4 <i>Inclusion of private institutions</i>	19
5.0 FUTURE WORK	20
APPENDIX I Tables	22
APPENDIX II Definitions	30

Executive Summary

Commissioned by the B.C. Council on Admissions and Transfer (BCCAT), this is a study of the costs of the course and program articulation process between colleges, institutes, university colleges and universities in British Columbia. Within the B. C. Transfer System the process of articulation is that series of transactions that are used to request transfer credit for a specific course.¹

The costs for the most part consist of time spent by administration and faculty members at the various institutions. In many cases, particularly among faculty members, it is made up of many individuals spending short periods of time being involved in the articulation process. There is no formal tracking of this time, so the only way to derive an estimate of the cost of the time spent was to interview a sufficiently wide range of participants and ask them to estimate their time commitment.

The interview process was utilised for this study; and an attempt was made to select interviewees from a cross section of institutions, disciplines and locations. Forty individual interviews were conducted with individuals representing ten receiving institutions, five sending institutions and ten disciplines.

Findings

Since the sample size was not selected randomly, and the cost estimates provided were based on “best guesses” by the interviewees, there is not intended to be any statistical validity to the results. Instead, the results have been presented as a range of likely costs by taking the average cost and then bounding it by the first and third quartile of the responses. In this way, an estimate of a likely range of costs has been developed.

The total cost of the articulation process in British Columbia post-secondary education institutions, as managed by BCCAT via the Online Transfer Guide, is estimated at slightly over \$6 million per year, within a likely range of \$4 million and \$7½ million. The largest components of this cost are the annual articulation meetings and the ongoing articulation of individual courses. Both of these tasks are performed by regular faculty members.

Another way of presenting the findings is to say that, based on the total number of transfer agreements and articulated courses in the B.C. Transfer System, each transfer agreement costs on average \$122 per annum to maintain. This is equivalent to a cost of \$795 per sending institution articulated course, based on an average 6.7 agreements for every sending institution course. However, such figures should be used with caution, since it is not clear how much of these costs are variable based on the number of agreements or courses articulated. There is also a wide variation between different disciplines and institutions.

¹ The process starts with a course outline which, once approved for inclusion in an institution’s calendar, is normally sent to several receiving institutions with a request for transfer credit. At the receiving institution the course is assessed and a decision is made. That decision is then recorded in the Online Transfer Guide.

Conclusions

As new institutions in British Columbia are granted degree granting status, there will be increasing pressure to add more institutions and therefore more transfer agreements into the existing transfer system. This study has provided a starting point for quantifying some of the costs of the current system, so that the cost of expanding it can be considered.

By identifying those areas where costs are highest, the results of this study can be used to consider ways of reducing costs and improving efficiency. BCCAT has recently streamlined the articulation process by developing a web based transfer credit evaluation form. This in itself may reduce the costs in the system. It would be useful to quantify this potential saving.

Further work needs to be done to examine the costs of transferring credits on a case by case basis where there is no articulation agreement. It would be useful to know the optimal point at which it makes economic sense to create an articulation agreement. It would also be useful to institute a process that more accurately tracks the time spent by individual faculty members in dealing with articulation.

This study has reviewed the costs, but does not include a systematic study of the benefits of articulation. An economic study to quantify the benefits of a provincial system of articulation is required before an assessment can be made of the cost effectiveness of the current system.

1.0 Introduction

Within the British Columbia post-secondary system, significant numbers of students transfer among colleges, institutes, universities and university colleges. These transfers may be handled individually student by student or through a set of articulation agreements administered and facilitated by the British Columbia Council on Admissions and Transfer (BCCAT). Either way, the administration of transfers exacts costs on the institutions and BCCAT. This study was initiated by BCCAT to estimate the costs of the current articulation system in B.C.

Phase I of the study² was a pilot project completed in May 2002 in preparation for this more comprehensive analysis of the costs of articulation in British Columbia. The pilot project surveyed individuals involved in the articulation process to find out how much time and resources were dedicated to articulation. The results of the pilot suggested that there is considerable variation in the time commitment both across disciplines and institutions, and indeed even within disciplines and institutions. Time spent can vary year-to-year, depending on a number of factors. An extrapolation of sample results in such an environment would have been risky as the sample-to-sample variations in the pilot were high.

The current study improves accuracy by reviewing more institutions, including those outside the Lower Mainland, and institutions of different sizes. The number of disciplines reviewed was also expanded, to ensure more comprehensive coverage of all program types. The selection of disciplines was coordinated with BCCAT staff who have experience of the various factors that impact the work load and effectiveness of the articulation process.

It was noted in Phase I that major program changes have a significant impact on the system, and the level of impact can be unpredictable. Some analysis of the cause and impact of these changes is also provided as a tool to manage future changes.

In the course of the study, several significant issues were brought to light. This study describes those issues and recommends future work to resolve these issues as well as further work to extend the analysis.

² J. Jarvis and Associates, "Articulation Costing," Pilot Study for BCCAT, May 2002.

2.0 Methodology

The central methodology used throughout this study was the interview process. Individuals at all levels of the articulation system were interviewed to assess the costs and benefits of the articulation process. It should be emphasised that many of the costs are “soft” costs of institutional staff and faculty time. These have usually not been tracked by the individuals interviewed, and are therefore the best estimates of those involved. Only the direct costs of resources allocated to articulation have been included.

This study has been treated as a cost accounting exercise; with the intent of deriving the *product* cost, where the product is the provision of articulation. Many of the underlying costs (e.g. time spent by those involved) have never been formally recorded, so the end result is inevitably inexact. As a result, the study has focused on obtaining a reasonable cost estimate that can be used for further study.

Throughout this study, the term “a reasonable estimate” has been used to signify that the author has used his judgement and experience as a professional accountant to determine that the costs derived are meaningful. In keeping with generally accepted accounting practice, a conservative approach has been taken in the use of estimates.

The steps followed for this study were:

1. Deriving costs
2. Extrapolating costs
3. Undertaking a Case Study
4. Assessing benefits
5. Identifying issues

2.1 Deriving Costs

Estimates of the cost of articulation have been derived by interviewing individuals involved at different levels of the articulation process and then extrapolating the results to estimate a system wide cost. This process was started in Phase I of this project and the results of that Phase have been combined with the current study.

Interviews were conducted by telephone and in person between October 2002 and March 2003.

As identified in Phase I, the articulation process can be divided into four areas:

1. BCCAT co-ordination;
2. administration at the institutions;
3. hosting and attending articulation meetings; and
4. ongoing course articulation.

1. BCCAT co-ordination

Administrative and contract staff at BCCAT were interviewed and estimates obtained of their time commitment to articulation.

2. Central Administration

The original sample of three large Lower Mainland institutions (one University, one University College and one College) was expanded to include five additional institutions (two Universities, two University Colleges and a smaller College) from outside the Lower Mainland. Interviews were conducted with representatives involved with the

administration of articulation at these institutions. Depending on the size of institution, this usually involved the office of the Registrar and certain faculty administrators.

3. Hosting and attending articulation meetings

The original sample of five disciplines (Business, English, Computer Science, Psychology and Philosophy) was expanded to include Math, Early Childhood Education, Chemistry and Nursing.

Articulation meetings provide a forum for faculty members to discuss articulation issues and establish the relationships necessary for ongoing articulation between institutions and to identify the changing needs of the receiving institutions.

Articulation committees will often establish a sub-committee if substantive issues arise that need to be resolved.

Interviews were conducted with committee chairs, sub-committee members and faculty representatives on the articulation committees. The focus of the interviews was to ascertain the work flow, time commitment and the type of issues that were addressed at these meetings.

4. Ongoing course articulation

Issues revolving around curriculum changes, and the ongoing review of new courses are often the responsibility of the faculty member responsible for a particular course or group of courses.

Interviews with faculty members in the disciplines identified in the previous section were expanded to cover the average time commitment to reviewing individual courses for articulation.

2.2 Extrapolating Costs

For each of the areas where costs have been accumulated, these costs were extrapolated to estimate the system wide impact of articulation. Because of the range of costs, and the inherent inaccuracy of many of the estimates, calculations were performed for average costs and then for the first and third quartile in each area. This allows for the removal of any outliers and also provides a range of the likely costs.

The following methodology was used:

2.2.1 Central Administration

The extrapolation of costs was done in two ways to ensure that the results were of the right order of magnitude.

- a) The average costs were calculated for the institutions sampled by institution type (University, University College and College). Then the average cost was multiplied by the number of institutions of each type. The sample institutions were selected to include both small and large institutions so that the average costs could reasonably be applied to the population. Any impact due to the size of the institution was factored into the cost extrapolation based on the number of courses (see (b) below).

- b) For each institution surveyed, the total number of either receiving or sending courses generated for that institution was obtained from the Online Transfer Guide database maintained by BCCAT. The average cost per course for each institution was then calculated. The system wide costs were extrapolated based on the total number of sending and receiving courses in the Online Guide.

The costs under the two methods were then compared, and an overall estimate proposed.

2.2.2 Faculty Administration

Faculty administration costs were estimated in a similar way.

- a) The costs per faculty were calculated for several faculties at both Sending and Receiving institutions. The total institution cost was then derived by multiplying the faculty figure by the number of administrative level faculties (or deaneries) at the particular institution. An average of the institutional cost for receiving and sending institutions was estimated. These figures were then used to multiply by the number of each type of institution in the system to obtain a figure for the total cost.
- b) For each faculty chosen at each institution, the time cost was matched with the total number of courses articulated (receiving or sending) by that particular faculty. The average cost of each articulated course was thus estimated. This cost was then averaged and multiplied by the total number of courses in the system to give a total cost.

The costs under the two methods were then compared, and an overall estimate proposed.

2.2.3 Articulation meetings

The interviews provided time and cost information from a variety of disciplines. The average cost of the different elements of articulation meetings was established.

- Meeting attendance
- Chairing a meeting
- Sub-committee work
- Hosting an articulation meeting

When discussing articulation meeting attendance, interviewees were asked how many representatives from their discipline attended; the estimates used were based on the total estimated cost per discipline. In that way, the projections could be made by discipline.

When it came to sub-committee work, interviewees were asked how many members were active on the committee, and how often such committees were struck. The cost figures used were estimates based on the average annual time commitment per discipline.

Extrapolation in this area is based on the representative nature of the sample. Because the sample of disciplines selected for this study included disciplines that were very active in articulation, any extrapolation needed to take that into account. The total number of courses articulated in each of the selected disciplines was calculated from the BCCAT Online Guide and compared to the total number of articulated courses in the Guide. The inverse of the percentage was then used to multiply by the average costs per discipline to arrive at an estimate of the system wide costs.

2.2.4 Faculty Articulation

The average amount of time spent by individual faculty members was multiplied by a factor of one and a half to account for the number of active faculty involved in each institution in each of the disciplines reviewed. This figure was based on the fact that for the most part estimates of total faculty involvement were provided. However in some institutions interviewees were not sure of the time commitment of other members or of the number of other faculty involved in articulation.

2.2.5 New courses and course changes

Significant changes resulting from additions of new courses or changes in program requirements by receiving institutions seem to have a predictable pattern. The estimated costs for these events were adjusted for their frequency and multiplied out using the same factor derived in point 2.2.3 above.

The total of all of these costs was added to show an aggregated average and aggregated quartile costs. Because it is unlikely that the highs (or lows) would all occur together, the range thus calculated is very generous.

2.3 Case Study

In 2001, program changes in the curriculum of a course at a receiving institution resulted in problems for sending institutions that were unable to change their course content in time to meet the new articulation requirements of the receiving institution. The impact of the change was felt by institutions across the system.

Articulation Committee members and faculty were interviewed and the particular facts of this situation were reviewed. The case was analysed to determine whether lessons could be learned that could be applied to prevent similar problems occurring in the future.

2.4 Identifying Issues

Throughout this process, any issues that arose as a result of the interviewees or from statistical analysis were identified and recorded. A summary of such issues including a commentary and possible future work is included in this report.

2.5 Summary and Recommendations

The extrapolated costs were summarised with an assessment of the system wide impact of the articulation process. Recommendations regarding possible system improvements are included here.

3.0 Costs of Articulation

The results of this study include the results of the pilot to obtain a larger sample for extrapolation. Tables showing the breakdown of the costs are included in Appendix I.

Sample Size

The institutions surveyed represent five of the ten receiving institutions (accounting for 53% of all received articulation courses) and five out of twenty sending institutions (accounting for 28% of all received articulation courses).

The ten disciplines selected represent 37% of all articulated courses.

3.1 Cost Components

The component tasks identified for analysis are shown below. Definitions of the tasks are included in Appendix II.

The resource use has been based on the number of hours spent by individuals. The conversion into dollars has used the following loaded salary estimates for institutional staff³:

Administrative Staff:	\$54,000
Faculty:	\$78,000
Senior administration:	\$98,000

3.1.1 BCCAT

The time and overhead allocation of BCCAT costs has been estimated at \$243,080 per annum (Table 1 on page 22). Cost allocations used current pay scales and contract rates. A figure of \$250,000 has been used as a reasonable estimate of the total costs.

3.1.2 Central Administration – Registrar/Admissions

The costs of administration were calculated using two different methodologies (see Section 2.2.1 above). The end results were very close suggesting that these costs can reasonably be allocated on the basis of cost per articulated course.

It is worth noting that the time allocations were based on the current BCCAT transfer credit evaluation system that is in the process of changing to a more efficient web-based system. This was commented on by a number of respondents, with the general conclusion that the new system would save time, but that they were so over-burdened already, that it would enable them to catch up and keep pace with the requests.

The results suggest that the system wide costs lie somewhere between \$500,000 and \$800,000. However, as noted earlier the extremes assume a system wide extrapolation of the highest and lowest values. The final figure of \$650,000 calculated by extrapolating based on the type of institutions seems a reasonable estimate and is close to the average using a per course allocation.

³ Based on an average work year of 1,920 Hours. Salary estimates 20% loading for benefits

Refer to the Tables in Appendix I (page 22) for a more detailed analysis of the figures behind the summary data shown below.

Estimate and extrapolation based on cost allocation per course.

Cost per Course	1st Quartile	3rd Quartile	Average
- Cost to receive course (Table 2)	\$ 7	\$ 12	\$ 9
- Cost to send course (Table 3)	\$ 6	\$ 9	\$ 7
Combined cost	<u>\$ 13</u>	<u>\$ 21</u>	<u>\$ 16</u>

<i>Imputed System Cost</i>	\$ 501,736	\$ 815,320	\$ 640,571
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Estimate based on average cost per type of institution

	Av. Cost (Table 4)	# Inst.	Total Cost
Universities	\$ 46,800	5	234,000
Univ. College	\$ 42,863	5	214,313
College ⁴	\$ 15,863	15	237,938
			<u>\$ 686,250</u>

3.1.3 Administration - Faculty / Dean's / Chair's Office

The cost of administration at the faculty or deanery level was based on time allocation (Table 5 on page 26). The variation between the two methods of calculation may be due to the relatively small sample size (three institutions and two disciplines).

A final figure of \$850,000 (the average of the two methods is \$859,000) has been used for this component, and is considered a reasonable estimate.

Cost per Course (Table 5)	1st Quartile	3rd Quartile	Average
- Cost to receive course	\$ 4	\$ 11	\$ 7
- Cost to send course	\$ 11	\$ 12	\$ 12
Combined	<u>\$ 15</u>	<u>\$ 23</u>	<u>\$ 19</u>

<i>Imputed System Cost</i>	\$ 601,342	\$ 876,886	\$ 732,122
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	Av. Cost	# Inst.	Total Cost
Receiving	\$ 28,700	10	\$ 287,000
Sending	\$ 34,950	20	\$ 699,000
			<u>\$ 986,000</u>

⁴ The following institutions have included for convenience under the heading "college": British Columbia Institute of Technology, British Columbia Open University, Camosun College, Capilano College, College of New Caledonia, College of the Rockies, Douglas College, Institute of Indigenous Government, Langara College, Nicola Valley Institute of Technology, North Island College, Northern Lights College, Northwest Community College, Selkirk College, Vancouver Community College

3.1.4 Articulation Meetings

Articulation meetings show a predictably large range in costs. Every discipline has a different approach. Whereas some may have short meetings and extensive committee work, others may eschew committee altogether. Aggregating the different components therefore overstates the variation. The average figure in this instance is most likely to be reasonable.

The detailed time allocation can be seen in Table 7 on page 28.

Travel costs are estimated at \$500,000 based on the assumptions and calculations shown in Table 6.

A final estimate of \$2 million for the costs of attending articulation meetings seems reasonable.

	<i>Cost of hours spent per annum</i>		
	<i>1st Quartile</i>	<i>3rd Quartile</i>	<i>Average</i>
Meeting attendance	22,500	50,250	38,868
Chair meeting	1,500	2,850	2,243
Sub-Committees	4,000	4,475	4,267
Hosting Meeting	6,000	6,000	6,000
	<u>34,000</u>	<u>63,575</u>	<u>49,378</u>
<i>Imputed System Cost</i>	\$ 1,020,000	\$ 1,907,250	\$ 1,481,966
<i>Estimated travel budget</i>	\$ 500,000	\$ 500,000	\$ 500,000
<i>Total Cost</i>	\$ 1,520,000	\$ 2,407,250	\$ 1,981,966

3.1.5 Faculty articulation of courses

This area is one of the most significant and because of the numbers and variation of faculty, one of the most difficult to extrapolate. As noted above (Section 2.2.4), a factor of 1.5 has been built in to allow for unrecorded faculty involvement.

Sensitivity analysis of this figure suggests that if this factor was changed by a half (to either 1 or 2), the impact on the overall costs would be \$500,000 on the average cost. Although this seems to be a large number, the figures presented have provided a range to allow for such variation. The overall range is such that the factor would need to be increased by a factor of 4 before the impact would drive the numbers outside the range.

	<i>1st Quartile</i>	<i>3rd Quartile</i>	<i>Average</i>
Course Articulation	\$ 700	\$ 1,600	\$ 1,197
<i>Imputed System Cost</i>	\$ 945,000	\$ 2,160,000	\$ 1,616,029

A final estimate of \$1.6 million seems reasonable and has been used to attribute the cost of faculty involvement.

3.1.6 Course changes

One off changes in curriculum and the introduction of new courses do have an impact. The additional work involved around these additions averages out to be approximately \$750,000 on an annualised basis.

	<i>1st Quartile</i>	<i>3rd Quartile</i>	<i>Average</i>
New Courses	\$ 9,750	\$ 27,000	\$ 18,750
Program Changes	\$ 3,000	\$ 7,500	\$ 6,500
	<u>\$ 12,750</u>	<u>\$ 161,000</u>	<u>\$ 25,250</u>
<i>Imputed System Cost</i>	<u><u>\$ 382,000</u></u>	<u><u>\$ 1,035 000</u></u>	<u><u>\$ 757,500</u></u>

3.2 System-wide Cost Breakdown

The total costs of articulation can be estimated at \$6 million per annum. The range of costs lies between \$ 4 million and \$ 7½ million.

Combined	1 st Quartile	3 rd Quartile	Average	Alternative Calculation	Final Estimate
BCCAT	\$ 243,080	\$ 243,080	\$ 243,080		\$ 250,000
Central Admin	\$ 501,736	\$ 815,320	\$ 640,571	\$ 686,250	\$ 650,000
Faculty Administration	\$ 601,342	\$ 876,886	\$ 732,122	\$ 986,000	\$ 850,000
Articulation Meetings	\$ 1,520,000	\$ 2,407,250	\$ 1,481,338		\$ 2,000,000
Faculty Articulation	\$ 945,000	\$ 2,160,000	\$ 1,616,029		\$ 1,600,000
Changes	\$ 382,500	\$ 1,035,000	\$ 757,500		\$ 750,000
	<u>\$ 4,193,659</u>	<u>\$ 7,537,535</u>	<u>\$ 5,928,141</u>		<u>\$ 6,100,000</u>

Average Cost per Articulation Agreement ⁵	\$ 84	\$ 150	\$ 119	\$ 122
Average Cost per Course ⁶	\$ 547	\$ 983	\$ 779	\$ 795

The interviews used to derive the costs in this study were conducted before the full implementation of the web-based transfer credit evaluation form in use since 2002. This form has almost certainly improved the efficiency of the Central Administration and Faculty Administration functions. However, the responses in both of these areas implied that they were under-resourced; so it is probable that any increased efficiencies have resulted in higher productivity rather than any reduction in the overall time spent.

3.3 Case Study

Transfer of First Year Course

This case study documents the concerns and impact of a significant program change by a receiving institution. This is discussed in order to identify some of the issues that can arise when the articulation process does not go smoothly.

3.3.1 Background

The receiving institution served notice at the articulation committee meeting that they had altered their first year course sequence. They required all sending institutions to re-articulate this course, and required them to match the new curriculum in order to maintain assigned transfer credit for the new course.

3.3.2 Concerns

This action raised several concerns about the process:

- The short notice and short time frame for change – the decision was made in the period between annual articulation committee meetings.
- The lack of detail available about the new courses.
- Sending institutions were concerned that changing their curriculum might jeopardise their transfer to other universities.
- The implication of these changes for other programs which require the course as a pre-requisite.

⁵ Based on 50,172 Transfer agreements as of March 31, 2003

⁶ Based on 7,669 sending institution courses as of March 31, 2003

3.3.3 Commentary

The situation caused considerable anxiety among the colleges. There are a number of lessons to be learned from this experience.

Interdependency of the institutions

Many colleges develop transfer courses specifically to allow students to transfer to a particular institution. They therefore become dependent on the receiving institution's requirements. To a lesser extent, the receiving institutions depend on the sending institutions to supply them with students who have the requisite academic skills. This interrelationship needs to be recognised by both institutions, because unplanned changes in course requirements by the receiving institutions or changes in the course content by sending institutions result in costs to all.

This emphasises the need for ongoing communication and awareness on all sides; which is the purpose of the Articulation Committees. In this case, events obviously occurred in the time between annual articulation meetings that should have been discussed without waiting for the next meeting. The receiving institutions need to be aware of the importance of involving sending institutions in changes that are going to affect them.

Systemic Cost of Change

A change instituted by one institution has the potential of causing a wide ranging impact and cost on the entire system.

The change affects all sending institutions that provide transferable courses in that discipline. Courses will need to be redesigned and new textbooks selected and purchased, with the resulting costs in time and materials.

Other receiving institutions will possibly be affected if the new course no longer fits their requirements. This will impact students who may have their choice of institution limited by the change. It also has a potential impact on students within the sending institution who take the course as a part of another program. Their program requirements may not be met.

Changing environment

As universities compete for students, and new degree granting institutions are created, degree programs are becoming increasingly specialised. As a result, it may become more common that each receiving institution has differing requirements.

This will cause problems for the smaller colleges that do not have the capacity to offer variety in their courses. If they wish to maintain articulation with a receiving institution, they may have to select a particular institution. This in turn will reduce the choice available to students. Even where a sending institution is able to offer alternative courses with articulation to different receiving institutions, it will reduce the flexibility for students, as they will be limited in the number of institutions for which the course they have taken will meet program requirements.

Conclusions

Although for the most part, the articulation process works well, when communication breaks down, or needs change, the costs to the system can be significant.

4.0 Issues Arising

4.1 Benefit/Cost of Developing an Articulation Agreement

There is clearly a need for a system that allows students to transfer between institutions. The articulation system creates an environment in which students know in advance exactly what credit they will receive for particular courses. In addition, it eases the administrative burden on the institutions by removing the need to assess each student's course on an individual basis.

When there are no formal articulation agreements in place, institutions will assess transfer courses individually. This can be time consuming. One receiving institution estimates that on average it takes three and half times as long to assess courses where there is no transfer agreement in place. Some institutions maintain a database of previous transfers, so that they can be consistent in their approach. Although this helps the institution it does not help the students, who have no guarantee that their course will be granted credit.

However, this does not tell the whole story. As this study has demonstrated, developing and maintaining articulation agreements has a cost. If an articulation agreement is not used (i.e. there are no students transferring that particular course between certain institutions), then it would be more cost effective to evaluate course transfers on an individual basis.

There will be a volume of transfers at which point it would be cost effective to institute an articulation agreement.

Ideally, institutions should track the number of transfers by course and institution, so that they can judge when it makes economic sense to develop (or abandon) an articulation agreement.

4.2 Partial Articulation

One receiving institution unilaterally submitted certain courses from sending institutions to the BCCAT Transfer Guide Coordinator once the institution had validated the course for individual transfer. This effectively signalled that the courses were fully articulated, but without the explicit knowledge of the sending institution.

Although this clearly benefits prospective transfer students and the institution by capturing work already done for the credit transfer, this loses the two-way transparency between sending and receiving institutions in the normal articulation committee process. Without an articulation agreement, if the sending institution changes its course, it will likely be unaware of the need to inform the receiving institution. This may render the transfer arrangement inappropriate, creating problems for the student and the receiving institution.

4.3 Hidden Costs of Articulation

When the system runs smoothly, the costs of articulation, though significant, are worth the benefits. The case study (see Section 3.3) shows how costs can escalate. The lesson to be learned is that when the articulation change is driven by the receiving institution, the impact on the sending institution can be minimised by clear communication before and during the process.

4.4 Inclusion of private institutions

A number of private post-secondary institutions are planned or already established in B.C. Students might legitimately expect to be able to transfer credit between private and public institutions. Indeed, several public institutions already offer transfer credit for courses provided by private institutions (including training programs developed for employees at financial institutions). Private institutions such as Columbia College, Coquitlam College and Corpus Christi College are already included in the BCCAT articulation system, making the transfer process transparent and equitable to their prospective students.

Such arrangements are beneficial to students. As well, formalized articulation could also benefit the public institutions by reducing the costs of ad hoc transfers. However, the articulation process incurs costs; the “future work” section proposes work on quantifying the benefits and costs of expanding the articulation process to include more private institutions.

5.0 Future Work

Study of benefits of articulation

While this study has shed some light on the costs associated with articulation, any judgement about the appropriate level of expenditure should be deferred until the associated benefits have been quantified more rigorously than has been attempted in this report. For this reason, it is recommended that BCCAT commission an economic study of the benefits of a provincial system of articulation.

Better data about transfer courses

The report by Joanne Heslop titled “Profile of BC College Transfer Students Admitted to BC Universities 1994/95 to 1998/99” (BCCAT October 2001), hereafter referred to as the Heslop Report, is a good overview of the credit transfer system. However, direct data about the numbers and types of articulated and non-articulated courses and how they relate to credit transfer could better quantify the benefits of better articulation.

Better data by faculty and program

There are data on the destination faculties into which students transfer (Table 5a of the Heslop Report). The majority of students transfer into the Faculty of Arts. It would be useful to study the number of transfer credits utilized by students into each destination faculty, i.e. to produce a table similar to Table 6a of the Heslop Report, but disaggregated by destination faculty. This might help to answer the question of whether articulation helps or hinders entry into particular destination faculties. It might also point to particular faculties or programs that require better articulation.

Better data about articulation costs

Costs of articulation in the receiving institutions begin as soon as a request is made. Counting articulation agreements only captures the output of the articulation process. Counting the number of articulation requests measures the input to the process and would provide a more accurate predictor of costs.

Inter-college transfers

Probably because the Online Transfer Guide is not currently structured to include arrangements between institutions which have historically been considered sending institutions, we could find no quantitative information on inter-college transfers and how articulation affects those students. This information would be useful, as articulation could be an important factor in influencing student mobility between colleges, degree completion, etc.

Costs of non-articulated transfers

One institution estimated the cost of non articulated transfer to be three and half times that of transferring an articulated course. Further work is required to quantify and track the costs to determine the appropriate timing for the creation of articulation agreements.

Timing of articulation agreements

Inter-college and case-by-case transfers can be cost-effective mechanisms. For example, courses that are seldom transferred may not justify the cost of a full articulation process, and be a way to contain costs. Similarly, two colleges that do not have many transfers between them are unlikely to need formal articulation. Further work is required to determine the most cost-effective timing and circumstances for the creation (or dissolution) of articulation agreements.

Costs and benefits of articulation with private institutions

Expansion of articulation to include more private institutions will create costs for public institutions as well as for the system as a whole. On the other hand, the benefits of having a strong private system that can articulate courses with the public system also need to be identified, and if possible quantified. Further work is required to identify both the costs and benefits of expanding articulation.

Appendix I Tables

Table 1

*BCCAT costs associated with articulation*⁷

Function	Cost estimate
Administrative	\$ 62,000
Support	\$ 36,880
Co-ordination ⁸	\$ 111,800
Overhead allocation	\$ 32,400
	<hr/>
	\$ 243,080
	<hr/> <hr/>

⁷ These figures have been supplied by BCCAT based on 2002-2003 operating costs.

⁸ After the initial interview process, BCCAT had to change its arrangement for maintaining the online transfer guide; this figure reflects the anticipated costs of the new arrangement.

Table 2*Receiving institutions – Course articulations by discipline*

	SFU	UBC	UNBC	UVic	KUC	UCFV	OUC	UCC	MUC	TWU	TOTAL	% of total agreements
Accounting					115			33	43	155		
Business	339	258	458	284	65	339	225	40	4	155	2,513 ⁹	6%
Chemistry	147	140	142	135	65	114	111	108	99	142	1,203	3%
Computer Science	213	176	127	216	78	111	-	-	111	139	1,171	3%
Early Childhood Education	-	2	-	70	34	7	-	-	-	-	113	0.3%
English	374	323	346	357	163	334	208	338	247	314	3,004	8%
Mathematics	258	234	230	286	187	284	170	217	218	282	2,592	7%
Statistics	62	50	-	76	-	-	36	2	-	-		
Nursing	10	37	6	110	2	-	-	16	2	7	416 ¹⁰	1%
Philosophy	160	175	103	177	3	137	78	118	124	150	1,225	3%
Psychology	269	253	231	270	87	226	133	212	206	253	2,140	5%
	1,832	1,648	1,643	1,981	799	1,552	961	1,084	1,054	1,597	14,377	37%
Number of disciplines	97	97	31	65	59	50	45	66	70	42		
Total agreements	5,722	5,092	3,622	5,413	2,312	4,243	2,386	3,401	2,942	3,965	39,098	
Admin costs in each institution (Table 4)		\$ 28,125	\$ 43,875	\$ 68,400	\$ 21,600	\$ 28,000						
Cost per agreement*		\$ 6	\$ 12	\$ 13	\$ 9	\$ 7						

***Summarising Costs per Agreement by Quartile**

1 st Quartile	\$ 7
3 rd Quartile	\$ 12
Average	\$ 9

⁹ This total includes accounting and business¹⁰ This total includes mathematics and statistics

Table 3*Sending institutions – Courses articulated by discipline*

	KUC	UCFV	OUC	North Lights	Langara	TOTAL
Accounting						
Business	59	54	54	43	49	259
Chemistry	68	100	98	21	96	383
Computer Science	46	41	154	48	149	438
Early Childhood Education	20			12	10	42
English	152	184	286	140	237	999
Math	145	132	198	133	206	926
Statistics			32		80	
Nursing	5		5		5	15
Philosophy	109	73	84	44	101	411
Psychology	182	53	85	215	160	695
	786	637	996	656	1,093	4,168
Total number of disciplines	57	49	41	29	51	
Total Agreements	2,847	2,065	2,872	1,388	4,517	10,817
Admin costs in each institution (Table 4)	\$ 19,125	\$ 27,000		\$ 10,125	\$ 21,094	\$ 77,850
Cost per agreement*	\$ 7	\$ 13		\$ 7	\$ 5	\$ 7.20

***Summarising Costs per Agreement by Quartile**

1 st Quartile	\$ 6
3 rd Quartile	\$ 9
Average	\$ 7

Table 4*Administrative Costs for Articulation*

Faculty	Institution	Hours per annum		Estimated costs per institution ¹¹		Total per type of institution
		Receiving	Sending	Receiving	Sending	
Central Admin	UBC	1,000		\$ 28,125		
	UVic	2,208		\$ 68,400		
	UNBC	1,600		\$ 45,000		
		1,603		\$ 46,800		\$ 46,800
	OUC	384		\$ 10,800		
	Kwantlen	768	680	\$ 21,600	\$ 19,125	
	UCFV	960	960	\$ 27,000	\$ 27,000	
	Average	704	820	\$ 19,800	\$ 23,063	\$ 42,863
	Langara Northern Lights		768	\$ -	\$ 21,600	
	Average		360	\$ -	\$ 10,125	
		564		\$ 15,863	\$ 15,863	
Business	UBC	45		\$ 2,250		
	Kwantlen	125	125	\$ 6,250	\$ 6,250	
	Langara		108		\$ 5,400	
Science	UBC	36		\$ 1,800		

¹¹ Based on loaded salary estimates (see Section 3.1) for type of personnel involved

Table 5*Faculty Administration Costs by discipline and institution***Receiving Institutions**

	# Courses	\$ cost¹²	Cost/Course
UBC – Business	447	\$ 2,250	\$ 5
UBC – Science	618	\$ 1,800	\$ 3
KUC – Business	386	\$ 6,250	\$ 16
Average	1,451	10,300	\$ 7

Allocation by Quartile

1 st Quartile	\$ 4
3 rd Quartile	\$ 11

	Cost / Chair	# of Chairs	Inst. Cost
UBC – Business	\$ 2,250	12	\$ 27,000
UBC – Science	\$ 1,800	12	\$ 21,600
KUC – Business	\$ 6,250	6	\$ 37,500
			<u>\$ 28,700</u>

Sending Institutions

	# Courses	\$ cost	Cost/Course
Langara – Business	482	\$ 5,400	\$ 11
KUC – Business	520	\$ 6,250	\$ 12
Average	1,002	11,650	\$ 12

Allocation by Quartile

1 st Quartile	\$ 11
3 rd Quartile	\$ 11

	Cost / Chair	# of Chairs	Inst. Cost
Langara – Business	\$ 5,400	6	\$ 32,400
KUC – Business	\$ 6,250	6	\$ 37,500
			<u>\$ 34,950</u>

¹² See Table 4

Table 6

Estimate of Travel Costs for attending Articulation Committees

The estimates are calculated using two different methods:

- Method A Based on an estimate of the number of faculty members attending meetings, the amount of travel involved, and the cost of travel
- Method B Based on an estimate of the articulation travel budget per institution

Method A

Estimates are based on the following assumptions:

- There are 70 Articulation Committees; since some meet twice per year, it is a conservative estimate that there are 90 meetings per year.
- On average 10 faculty members attend each meeting
- Each meeting is held twice in an institution's local area for each meeting held outside the local area. This again is conservative, and based on the fact that 15 of 28 institutions are based in the lower mainland
- The travel cost in the local area is \$100 per person, and for outside the local area is \$1,500 per person. This is based upon the budget figures used by the faculties at Kwantlen University College

Total number of faculty travelling to articulation meetings	90 * 10	900
Number travelling outside local area	300	
Number travelling in local area	600	
Estimated cost of travel outside local area	300 * \$1,500	\$ 450,000
Estimated cost of travel in local area	600 * \$ 100	\$ 60,000
		\$ 510,000

Method B

Assumptions:

- Articulation budget for Lower Mainland Institutions - \$10,000
- Articulation budget for Vancouver Island Institutions - \$20,000
- Articulation budget for remote Institutions - \$40,000

<i>Location</i>	<i>Number of Institutions</i>	<i>Estimated Budget</i>	<i>Estimated total travel costs</i>
Lower Mainland	15	\$ 10,000	\$ 150,000
Vancouver Island	5	\$ 20,000	\$ 100,000
Remote	8	\$ 40,000	\$ 320,000
Total	23		\$ 570,000

Summary

Based on the two methods, **\$500,000** seems a reasonable estimate.

Table 7*Faculty time involved in articulation (Hrs) per year per department*

Department	Institution	Meetings				Course Articulation		
		Artic Comm	Chair	Hosting	Sub- Comm	Faculty Artic.	Program change	New Course
Math	Camosun	20	92		90	14	6	
	Langara	32			80	10		16
	Langara	40	54		88			24
	UBC	16				32		
	SFU					45		
ECE	Douglas				70			
	Langara		40					
Nursing	Cariboo		30					
	Cariboo	24				48		
Chemistry	UCFV	10	8					
	Selkirk					48		
Business	Kwantlen	30				15		
	Langara	40				25		
		68				50		
English	UBC	15				5	30	
		15				3		
	Kwantlen	25	30		80	30		2
	Langara	8			104			
Psychology	UBC	15				20	10	8
	Kwantlen	35		120		20		
Computer Science								
	Kwantlen	36						
Science	UBC	15				18	6	
Philosophy	UBC	15	60			24		
	Langara	8						
Hours								
	<i>Average</i>	25	45	120	85	24	13	13
	<i>3rd Quartile</i>	34	57	120	90	32	15	18
	<i>1st Quartile</i>	15	30	120	80	14	6	7
Dollars¹³								
	<i>Average</i>	\$ 36,868	\$ 2,243	\$ 6,000	\$ 4,267	\$ 1,197	\$ 650	\$ 625
	<i>3rd Quartile</i>	\$ 50,250	\$ 2,850	\$ 6,000	\$ 4,475	\$ 1,600	\$ 750	\$ 900
	<i>1st Quartile</i>	\$ 22,500	\$ 1,500	\$ 6,000	\$ 4,000	\$ 700	\$ 300	\$ 325

¹³ Dollar costs are calculated by multiplying the hours by the loaded faculty rate (see Section 3.1)

Table 8

*Transfer credit requests received by Kwantlen University College
Jan 2002 to March 2003¹⁴*

Sending institution	15 months	Annualise
BCIT	206	165
Camosun	37	30
Capilano	46	37
CNC	18	14
College of the Rockies	7	6
Coquitlam College	86	69
Columbia College	12	10
Douglas	280	224
ECIAD	5	4
Langara	255	204
Malaspina University College	21	17
North Island College	10	8
Northern Lights	1	1
Northwest Community College	11	9
OLA	122	98
OUC	28	22
Selkirk College	12	10
SFU	198	158
TWU	16	13
UBC	177	142
UCC	41	33
UCFV	66	53
UNBC	13	10
UVIC	49	39
VCC	69	55
unknown institution	29	23
	<hr/> <hr/> 1,815	<hr/> <hr/> 1,452

¹⁴ KUC Registrar's Office

Appendix II Definitions

Central Administration – Registrar/Admissions

This is largely an administrative function with the admissions office in the sending institutions acting in a controlling function to ensure that all course changes for articulated courses are dealt with appropriately and information is sent to BCCAT.

For receiving institutions, the admissions department currently only receives information from the Faculty. However, with the new electronic system, Central Administration will become the first point of contact.

Faculty / Dean's Office

Information on articulation is usually routed through the Dean or Faculty Chair. The detailed work is performed at the department level; however approval and appeals are processed at the Dean's office. There is also an administrative component to ensure that all requests and articulation changes are properly processed.

Department

Most of the detailed articulation work is performed at the department level. The process is very similar throughout the institutions, and for analysis purposes has been broken down into the following component parts:

Articulation Committee

All disciplines have an articulation committee that meets at least once per year and is hosted by a sending institution. Each institution sends a number of representatives to these meetings where articulation changes are discussed. The time allocation includes attendance at the meeting as well as any preparation time.

Chairing Articulation Committees

Chairing the articulation committee takes additional time for one individual from each discipline. Obviously this rotates, but the administrative burden still has to be borne within the system.

Hosting Articulation

A different sending institution hosts the articulation meeting each year. This component captures the costs of preparing and for hosting these meetings.

Articulation Sub-Committees

Some articulation committees delegate the preparation of reports to sub-committees. This work can be significant.

Ongoing Course Articulation

Throughout the year there are individual requests for articulation of new or changed courses that need to be dealt with by department members.

Program changes – Receiving institution

When a receiving institution makes major changes to its courses, there is an impact and time spent on the articulation of that course with the sending institutions.