BCIT ECONOMIC IMPACT REPORT

EDUCATION FOR A COMPLEX WORLD.

BCIT™

BRITISH COLUMBIA
INSTITUTE OF TECHNOLOGY

FOREWORD

This report is the fifth edition of the BCIT® Economic Impact Study. The first report was produced in 2004 with updated editions in 2007, 2010, 2014, and 2017. All five editions were produced through the collaborative efforts of the BCIT Institutional Research Office and faculty from the BCIT School of Business SITE Centre.

New to the fifth edition:

- An updated section detailing the impact of international BCIT students on the British Columbia economy.
- A new section of the contribution of Indigenous BCIT students on the British Columbia economy. Prior reports did not isolate the contribution of Indigenous students.
- An updated section that highlights the economic impact of new applied research activities at BCIT.
- An infographic that details a summary of highlights from the report.

Cover photo:

BCIT School of Health Sciences nursing students learn by using innovative tools in the simulation lab at the BCIT Burnaby Campus.

Report prepared by the BCIT School of Business SITE Centre

EXECUTIVE SUMMARY

The British Columbia Institute of Technology® (BCIT) is a significant contributor to the British Columbia economy. The impact that BCIT has on both the gross domestic product (GDP) and government tax revenues comes from a variety of sources, all of which have a multiplier—or spillover—effect that far exceeds its annual operating budget. The purpose of this report is to summarize and quantify the economic value of BCIT to the provincial economy.

In any economic impact study, the results are sensitive to the choice of multiplier. An impact multiplier can reasonably range from one to four. A relatively conservative multiplier of 1.49 was selected for this study. A value in this range is supported by the independent studies of provincial and regional multipliers. The multiplier value also allows for comparisons to the University of British Columbia, Simon Fraser University, and the University of Victoria, as the multipliers used for their economic impact studies are within this range.

Sources of Economic Value

BCIT's economic value added to the GDP is derived from three sources:

- Direct purchases by BCIT within the local economy and the income of its employees.
- The economic value added by its graduates.
- The economic contribution of its applied research programs.

BCIT Operations

In 2016, $195 million was spent on salaries and compensation. Direct spending on goods and services by BCIT was $93 million, which resulted in $47 million being considered as local value added. In addition, approximately $151 million was spent by full-time students and by visitors to BCIT.

The direct spending by BCIT, its staff, students, and visitors generated a short-term impact of $467 million. As a result, 10,151 jobs were supported, directly or indirectly, by BCIT.

BCIT Education

Apprenticeship Completers

The 1,099 students who completed the last level of an apprenticeship at BCIT in 2016 can be expected to earn $60 million annually. When compared to the income of high school graduates, this added an additional $30 million in income and $10 million in tax revenues for the province. A BCIT apprenticeship completer will earn $7,392 more annually than individuals who complete an apprenticeship elsewhere. The 1,099 individuals who have completed an apprenticeship at BCIT in 2016 will earn close to an additional $8 million, which is 15 percent more than the apprenticeship system average income.

Diploma and Certificate Graduates

In 2016, diploma and certificate graduates of BCIT earned $210 million annually. When compared to the income of high school graduates, this added an additional $68 million in income and $22 million in tax revenues for the province. A BCIT diploma or certificate graduate will earn $5,760 more annually than graduates from other post-secondary institutes in British Columbia. In comparison, the 5,933 diploma and certificate graduates of BCIT will earn a premium of $34 million or 18 percent more than the system average income.

Degree Graduates

In 2016, degree graduates of BCIT earned $55 million annually. When compared to the income of high school graduates, this added an additional $31 million in income and $10 million in tax revenues for the province. A BCIT degree graduate will earn $18,161 more annually than system graduates (excluding research universities); in comparison, the 865 graduates of BCIT will earn an additional $16 million or 33 percent more than the system average income.

Indigenous Students

BCIT's Indigenous student population has grown by 17 percent in the past five years. The 1,553 Indigenous students who were enrolled in 2016 will make an annual contribution of $32 million to the BC economy.

International Students

In 2016, BCIT attracted 3,125 students from other countries to study at the Institute. The majority of students were from Asia, representing over 64 percent of all international students at BCIT, with China (41 percent) leading all other countries. The overall economic impact of international students in 2016 was $189 million.

BCIT Alumni

BCIT has over 100,000 alumni. It is estimated that 70 percent of alumni reside in the province of British Columbia. In 2016, the direct spending of BCIT alumni had an economic impact of $1.84 billion.

Return on Investment to the Province of BC

In terms of a return on government investment, there was $3.54 million in regional economic activity per $1 million tax dollars invested at BCIT. In addition, there were 76 jobs created per $1 million tax dollars invested.

An important measure in public sector expenditures is the return on investment or ROI. This study applied internal rate of return calculations on block funding converted to cost-per-graduate in the three categories of apprenticeship, diploma, and degree. The ROI for apprenticeships is 35 percent, the ROI for diploma programs is 21 percent, and the ROI for degree programs is 38 percent.

The additional taxes paid by BCIT apprenticeship completers translate into a 56 percent return on the government's education funding to BCIT. When compared to the post-secondary system equivalent return for apprenticeship completers of 43 percent, the "BCIT premium" is 13 percent.

The additional taxes paid by diploma and certificate graduates translate into a 22 percent return on the government's education funding to BCIT. When compared to the post-secondary system equivalent return of 13 percent, the "BCIT premium" is 9 percent.

The additional taxes paid by degree graduates translate into a 70 percent return on the government's education funding to BCIT. When compared to the post-secondary system, excluding the research universities' equivalent return of 38 percent for degree graduates, the "BCIT premium" is 32 percent.

BCIT's Contribution to the BC Economy by Sector

BCIT is a major contributor of skilled workers to key sectors of the British Columbia economy. In the construction, manufacturing, and finance, insurance, and real estate sectors, BCIT produces more than one-third of all post-secondary credentials.[1] Overall, BCIT supplies 18 percent of all sector-related credentials. The value of new hires with a BCIT credential in terms of increased income and tax revenue was forecasted at $377 million for 2016 and estimated to have a total value for the next five years of $2 billion.

The Overall Economic Impact of BCIT

The overall impact of BCIT on the economy is $2.6 billion ($2.45 billion net impact). The totals are summarized as follows:

SUMMARY OF BCIT'S VALUE ADDED TO ECONOMY

	GROSS INCOME (MILLIONS)	NET INCOME (MILLIONS)	TAX REVENUE (MILLIONS)
Value Generated from BCIT Operations	$467	$467	$79
Value Added by BCIT Graduates	$324	$129	$42
Value Added by Applied Research Initiatives	$16	$16	$3
Value Added by Alumni	$1,837	$1,837	$239

[1] These finding exclude the research-intensive universities in BC.

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INTRODUCTION

What Is an Economic Impact Study?

The purpose of an economic impact study is to attempt to measure the magnitude of the contribution an organization, initiative, or policy has on society and the economy. While similar in design to a cost-benefit analysis, an economic impact study is usually broader in scope. At the most basic level, this study answers a simple question: How would the economy be impacted if an institute like BCIT did not exist? It is a simple question, but finding the answer can be rather complex. It requires looking at all direct and indirect effects and incorporating all private and social costs and benefits. It is not meant to be a tool for evaluation of individual programs, departments, or schools.

The British Columbia Institute of Technology (BCIT) is an engine of economic growth in the province of British Columbia. The magnitude of BCIT's operations, combined with the contribution to industry from its applied programs and applied research, is a major contributor to the provincial economy. The impact can be measured through additions to the gross domestic product, government tax revenue, and increases in both human and physical capital stock.

BCIT's Contribution Can Be Measured in Three Broad Categories:

- The addition to GDP arising from the purchases of goods and services, employment income of faculty and staff, and the local spending contributions of students and visitors.
- The value of a BCIT education as measured by the increased income and taxes of graduates.
- The economic value to government and industry of BCIT's applied research initiatives.

The purpose of this report is to calculate the net impact of each category for 2016. This includes any multiplier effects that arise from indirect job creation and secondary rounds of spending in the local economy. Determination of the spending impact of BCIT on the economy is based on the guidelines established by the American Council on Education (ACE) in 1971.[2] The methodology used is identical to that employed by Simon Fraser University, University of British Columbia, University of Victoria, and other post-secondary institutions to determine the economic impact of their operations.

In any economic impact study, the results are inherently sensitive to the choice of multiplier. An impact multiplier can reasonably range from one to four, depending upon the structural characteristics of the regional and local economy at the time of the study.[3] A relatively conservative multiplier of 1.49 was selected for this report. A multiplier in this range has strong empirical support by independent studies of regional multipliers for the province of BC, thus giving greater validity to the final results. Further, the multiplier value employed allows for meaningful comparisons to institutes such as the University of British Columbia, Simon Fraser University, and the University of Victoria in any discussion of relative impact.

All of the data used in this report is publicly available. The primary sources were the BCIT Fact and Figures reports, the Ministry of Advanced Education website, Ministry of Labour and Citizens' Services (BC Stats) reports, and Statistics Canada census reports.

Considerations Beyond the Scope of the Report

This type of study is limited by both the availability of the data and the complexity of the linkages with the data. As such, certain aspects of BCIT's operations are not included in the actual calculation of BCIT's economic impact, but are worthy of mention since their omission places a downward bias on the overall results.

The Qualitative Aspects of Part-Time Studies

BCIT supplies a significant amount of part-time studies courses and industry training to people currently in the workforce. Many part-time studies students will integrate the additional skills they acquire into their current professions. This implies an ongoing increase in labour productivity, which further enhances the gross domestic product. Gains in labour productivity are typically measured by differentials in wages. The current available data only captures wage differentials by educational credential. Therefore, the ongoing nature of productivity gain due to part-time studies—or lifelong learning—is not measured in the calculations done for this report.

2 See Caffrey, J., Isaacs, H.H. *Estimating the Impact of a College or University on the Local Economy*. American Council on Education, Washington, 1971.

3 Impact multipliers are highly sensitive to such variables as current unemployment rates, capacity utilization ratios, and the adaptability of industries to sudden economic change. All such variables tend to fluctuate over the normal business cycle, thereby changing the magnitude of the impact multiplier.

BRITISH COLUMBIA ECONOMIC IMPACT ASSESSMENT

This section employs a standard economic expenditure model that determines the economic impact of BCIT on the entire British Columbia economy resulting from cash flows, which are directly and indirectly attributable to the operations of BCIT. Cash flows originate through faculty and staff income, Institute direct purchasing, and expenditures by students and visitors to campus. A regional "multiplier factor" is used to account for spin-off effects on business volume in other sectors of the economy as a direct result of Institute-related expenditures.

In summary, the following economic impacts may be attributed to the British Columbia Institute of Technology:

Table 1: Summary of BCIT Expenditures and Economic Impact

	CASH INJECTION ($000'S)	FIRST ROUND INCOME GENERATED ($000'S)	REGIONAL ECONOMIC IMPACT ($000'S)
Salaries and Wages	$160,853	$160,853	$239,671
Benefits	$34,055	$27,244	$40,594
Direct Local Spending	$93,214	$46,607	$69,444
Subtotal	$288,122	$234,704	$349,709
INDUCED EXPENDITURES			
Total Student Spending	$149,463	$77,668	$115,726
Total Visitor Spending	$2,000	$1,000	$1,490
Subtotal	$151,463	$78,668	$117,216
TOTAL	**$439,585**	**$313,372**	**$466,925**

Compensation of BCIT Personnel

The BCIT payroll reflects the total compensation associated with full-time and part-time faculty and staff who were actively employed. According to BCIT Consolidated Financial Statements, the Institute's financial statements reflect a total salaries, wages, and benefits outlay of approximately $194 million for the fiscal period that ended on March 31, 2016.[4]

Direct Local Spending by BCIT

BCIT's financial statements indicate that approximately $93 million was dispersed for the purchase of capital and operating goods and services.[5] Of this amount, one-half, or $46 million, is considered to fall into the category of "local value added."

Student Expenditures

The expenditures of students, excluding tuition, books and residence fees, were estimated on the basis of government-recognized costs and information provided by BCIT's Office of Student Financial Aid Services. In order to present a conservative estimate, non-BCIT expenditures of students are calculated on the assumption that only full-time students have an impact on the local economy. Based on available data, BCIT's 18,778 full-time students spent approximately $149 million annually.[6]

[4] The information is based on *BCIT's Consolidated Statement of Operations* from the Consolidated Financial Statements prepared by Grant Thornton for BCIT's Financial Services, March 31, 2016. The number has been rounded to the nearest million.

[5] The information is based on *BCIT's Consolidated Statement of Operations* from the Consolidated Financial Statements prepared by Grant Thornton for BCIT's Financial Services, March 31, 2016. The number has been rounded to the nearest million.

[6] The information is based on *Enrolments by Student Groupings Report*, BCIT Facts and Figures, the BC government's 2004 Student Living Allowance, and information provided by BCIT's Financial Aid and Awards Office.

Visitors-to-BCIT Expenditures

The Institute attracts an estimated 50,000 visitors annually to the campuses.[7] Based on Tourism Vancouver's estimate that each visitor spends an average daily total of $40 off campus, BCIT is credited with generating an additional $2 million in local spending.

Total Direct Local Spending by BCIT

Local value-added ratios were applied to account for the value of imported inputs. It is estimated that 71 percent of the initial cash injections, or equivalently approximately $313 million, was realized as a result of direct local spending by BCIT.[8]

Provincial Multiplier Effect

The economic ripple-effect associated with direct spending by BCIT, its students, and visitors is captured by a multiplier. Several independent economic studies have provided a multiplier ranging from 1.39 to 2.0 for the BC economy. For purposes of this study, a conservative multiplier value of 1.49[9] was used to estimate the re-spending of dollars injected into the BC economy by BCIT, its students, and visitors.

IMPACT OF BCIT ON THE BRITISH COLUMBIA ECONOMY

BCIT is a major contributor to the BC economy, specifically the local economies within the Metro Vancouver Region, both in terms of dollars injected and circulated within the economy, and job creation.

Total BC Economic Impact

The short-term economic impact resulting from BCIT operations is approximately $467 million.

Jobs Created (Directly or Indirectly)

The Institute supported, directly or indirectly, 10,151 jobs during the year. This figure is calculated by dividing the Institute's total direct and spin-off expenditures by $46,000, the average annual income of British Columbians.[10]

Taxes Returned to Government

Assuming an average annual income of $46,000 and the federal and provincial tax rates applicable to this income, the 10,151 jobs created directly or indirectly by BCIT result in $154 million being paid to the federal and provincial governments in the form of personal income taxes. Of this total, the British Columbia government realized $51 million in tax revenues.

Income Generated (per $1M tax dollars invested)

In fiscal year 2016, BCIT received $131,996,000 in provincial government grants.[11] Based on this figure, for every $1 million taxpayer dollars spent at BCIT, the Province benefits through $3.54 million in regional economic activity.[12]

7 It is not possible to accurately estimate the number of visitors to the campuses as BCIT does not track this information. The estimated number is similar to that reported in other economic impact studies.

8 The percentage of initial expenditures attributed to the local economy is referred to as the "Export Factor." If BCIT ceased to exist, the export factor counts for the portion of the economic activity attributed to BCIT that would be replaced by another institute and the portion of BCIT expenditure that would disappear from the province.

9 This value is based on the income multiplier derived by Davis, C.H. "Income and Employment Multipliers for Seven British Columbia Regions," *Canadian Journal of Regional Science*, vol. 9:1, 1986, p. 103–115.

10 The income figures are based on the data from the Provincial Comparison – Average Weekly Wage Rate, http://www.bcstats.gov.bc.ca/Publications/PeriodicalsReleases.aspx

11 The information is based on *BCIT's Consolidated Statement of Operations* from the Consolidated Financial Statements prepared by Grant Thornton for BCIT's Financial Services, March 31, 2016. The number has been rounded to the nearest million.

12 Income Generated per $1 million tax dollars invested is derived from the BCIT Regional Economic Impact of $467 million divided by the 2015/16 Provincial Government Grants in the amount of $132 million.

Jobs Created (per $1M tax dollars invested)

For every one million dollars invested by the Province in BCIT, the British Columbia economy benefits from the creation of 77 jobs.[13]

Contribution of International Students

In 2016, BCIT attracted 3,125 students from other countries to study at the Institute. The majority of international students were from Asia (64 percent), with China (41 percent) leading all other countries. The median age group for international students was 25 to 29 years, with 82 percent of the students in the range of 18 to 29 years.

International student enrollment was distributed with 50 percent of students in part-time studies, 20 percent in the International Student Entry Program (ISEP), 26 percent in full-time programs, and 4 percent in international programs. In this study, international students may be double counted, as full-time students have the option to enroll in additional part-time studies courses.

Table 2: BCIT International Student Impact 2015-2016

Full-time Program	1,865
Part-time Studies	1,828
Total Students	3,125

(Note: Students can be enrolled in more than one program type within a reporting year)

Total Tuition Expense	$38,393,500
Other Education Expenses (books, etc.)	$7,386,000
Total Living Expenses	$81,246,000
Total Spending by International Students	$127,025,500
Economic Impact of International	$189,267,995

The calculation of the economic impact for international students is summarized in Table 2. It is assumed an international student spends 2.5 times more on tuition compared to a domestic student. The total tuition expense for international students is approximately $38 million.[14] In addition, international students' living expenses are considered to be a 100 percent net injection into the BC economy, whereas domestic students would buy food and pay rent regardless of attending BCIT. This equates to the living expenses for all international students being approximately $81 million annually.

The total expenditure for international students is approximately $127 million. As a result, the total BC economic impact generated by BCIT international students is $189 million annually.

Contribution of Indigenous Students

In 2016, BCIT Indigenous student enrollments grew to 1,553 students across all programs, increasing 17 percent in the last five years. The Indigenous student enrollments represent a higher proportion in both apprenticeship (18%) and diploma and certificate programs (79%), but Indigenous students are underrepresented in degree programs (3%).

The summary values of the impact of a BCIT education already take into account Indigenous students; however, the additional annual contribution for Indigenous students can be recognized by bridging the gap in the average employment rate between non-Indigenous and Indigenous populations. This gap can be attributed to the Indigenous employment rate historically being 10 percent to 20 percent lower than the average population rate throughout the last decade.[15]

[13] Jobs Created per $1 million tax dollars invested is calculated from the Income Generated per $1 million tax dollars invested and divided by the average annual income of British Columbians.

[14] Based on the average annual domestic tuition cost of $5,000 for full-time and part-time students taking three courses at $550 each for two semesters.

[15] Data derived from Statistics Canada. Table 282-0226 – Labour force survey estimates (LFS), by Aboriginal group, sex and age group, Canada, selected provinces and regions, annual, CANSIM (database).

The average employment rate in 2016 for the Indigenous population in Canada is 62%, versus the non-Indigenous population, which has an employment rate of 73% overall. For the purpose of this report, it is expected that all BCIT graduates including Indigenous students will have the same employment rates as the BCIT population.

In addition to the gap in the employment rates, only 50% of Indigenous students go further than high school; however, more than 70% of non-Indigenous Canadians go on to post-secondary, creating a post-secondary education and wage gap. This post-secondary education gap is not accounted for in this report as it is difficult to estimate if BCIT attracts additional Indigenous students to post-secondary education than would attend if BCIT did not exist.

The summary in Table 3 compares the annual earnings of the Indigenous students who go to BCIT verses the equivalent income of the same population who have not completed any post-secondary education.

Table 3: Additional Contribution by Indigenous Students

	ANNUAL EARNINGS OF INDIGENOUS BCIT STUDENTS	EQUIVALENT INCOME OF THE SAME INDIGENOUS POPULATION	CONTRIBUTION TO THE BC ECONOMY
Apprenticeship	$15,140,781	$5,132,225.71	$10,008,555.22
Diploma	$43,342,863	$22,524,768.39	$20,818,094.97
Degree	$2,956,621	$855,370.95	$2,101,249.55
Total	$61,440,265	$28,512,365	$32,927,900

The additional value of Indigenous students getting an education at BCIT is $32 million; with the 1.49 multiplier effect, this would raise the total on the economy to $49 million. While the multiplier of 1.49 was applied to the Indigenous population, it should be noted that the multiplier for the Indigenous population is greater than 1.49; however, when using the data available today, it is difficult to extract an exact multiplier.

This report also does not account for social and non-monetary benefits, such as medical benefits, improvement to skills, and influence on decision making. It is estimated that these non-monetary benefits and the external social benefits of education can be three times the size of the monetary benefit itself.[16]

BCIT Alumni

Since 1965, BCIT has produced over 100,000 graduates. It is estimated that 70 percent of alumni reside in the province. Using demographic data statistics Canada grouped by age, education and salary, the direct impact from spending by this group in 2016 can be estimated. The numbers are further adjusted to capture the share of spending that comes from the additional income attributed to having earned a BCIT credential. This results in an economic impact of $1.84 billion.

The Export Factor[17]

This model provides a conservative method for estimating BCIT's impact on the regional/local economy, and as such offers a means of substantiating the findings in the British Columbia Economic Impact Analysis model.

The approach involves measuring the increment (addition) to the total value resulting from Institute operations. BCIT revenues and related spending that would occur, irrespective of whether or not the Institute existed in the local economy, are identified and deducted from cash flows attributed either directly or indirectly to BC economy model.

For example, local tax revenue spent in support of the Institute is not included in the calculations, as similar economic impacts may arise from reallocating these funds to other sectors within the local economy or by simply reducing taxes. In other words, from the community's perspective, provincial financing using regional tax dollars is viewed as a transfer of wealth rather than wealth creation, and therefore does not represent a true economic gain.

[16] This value is based on the multiplier derived by Howe, E. (2011). Mishchet Aen Kishkayhtamihk Nawut Ki Wiichiihtonaan : Bridging the Aborginal Education Gap in Saskatchewan. Saskatoon, SK: Gabriel Dumont Institute. Retrieved from http://www.northernimpaq.ca/wp-content/themes/nic/pdfs/Bridging_EduGap_Nov5_2011.pdf

[17] For a more detailed explanation and breakdown of the "Export Factor" please see the 2005 edition of the Economic Impact of BCIT. Found at: https://www.bcit.ca/files/ir/pdf/economic_impact_report_2015.pdf

The "Export Factor" in the table below reflects the proportions of revenue and spending, by category, which are attributable to BCIT operations and that would/could not be reallocated in the event the Institute did not exist.

SOURCES OF REVENUE	EXPORT FACTOR
Provincial Government Grants and Contracts	90%
Student Fees	
"Non-Local/Regional"	100%
"Local/Regional"	43%
Sales of Services and Products	80%
Federal Government	
Sponsored Research Grants and Contracts	100%
Non-Government Sponsored Research Grants	100%
Gifts, Grants and Bequests	52%
Visitor Spending On Campus	60%
Accommodation at a BCIT residence	100%
Conference Facilities	50%
Non-Institute Student Spending	
"Non-Local/Regional"	100%
"Local/Regional"	43%

VALUING A BCIT EDUCATION

This section of the report calculates the additional income and tax revenues resulting from a BCIT education relative to a high school diploma (or equivalent). Further, the increase in value associated with a BCIT education is directly compared to the additional income and tax revenues resulting from an education received from other such BC certification-granting institutions, excluding the research universities. The difference between a BCIT education and the system equivalent is referred to as the "BCIT Premium." This section also calculates the return on investment, specifically the payback period, associated with the provincial grants currently received by the Institute.

BC Student Outcomes Survey

Each year, BC Stats, on behalf of the Ministry of Advanced Education and the Post-Secondary Institutions, contacts former students about their educational and labour market experiences. Three different annual surveys make up BC Student Outcomes: Apprentice Student Outcomes Survey (APPSO); Diploma, Associate Degree, and Certificate Student Outcomes (DACO); and the Baccalaureate Graduate Survey (BGS). The information collected in the BC Student Outcomes surveys is used for evaluation, program improvement, and accountability and empowers students to make knowledgeable choices.

The following tables (Tables 4A, 4B, and 4C) were taken from the BC Student Outcomes Surveys for Diploma, Associate Degree, and Certificate Student Outcomes, Apprenticeship Student Outcomes, and Baccalaureate Graduate Student Outcomes. When this report references "All BC Institutes," this includes all colleges, teaching-intensive universities, institutions, and agencies (excluding BCIT and the research-intensive universities) within BC; this is referred to as "system-wide" below. Unfortunately, comparisons to the research universities are unavailable due to limitations in data access for those institutions.

Table 4A: Apprenticeship Employment Outcomes Indicators

SURVEY YEAR	2013	2014	2015
BCIT Eligible Cohort	1,435	1,388	1,251
Response Rate	58%	56%	50%
Currently Employed	**93%**	**91%**	**89%**
System-wide	86%	88%	87%
Graduate Employment Rate	**95%**	**93%**	**92%**
System-wide	90%	92%	92%
Average Hourly Wage (Main Job)	**$30**	**$32**	**$32**
System-wide	$28	$27	$29
Employed in Training-Related Job	**93%**	**93%**	**93%**
System-wide	90%	89%	89%

See footnote below for an explanation of the Apprentice category.[18]

Table 4B: Diploma and Certificate Employment Outcomes Indicators

SURVEY YEAR	2013	2014	2015
BCIT Eligible Cohort	5,496	5,605	5,708
Response Rate	63%	57%	61%
Currently Employed	**79%**	**81%**	**81%**
System-wide	76%	78%	76%
Graduate Employment Rate	**88%**	**90%**	**90%**
System-wide	90%	91%	91%
Average Hourly Wage (Main Job)	**$23**	**$23**	**$24**
System-wide	$20	$20	$20
Employed in Training-Related Job	**81%**	**81%**	**81%**
System-wide	67%	66%	67%

See footnote below for an explanation of the Diploma and Certificate category.[19]

[18] The *Apprenticeship Student Outcomes (APPSO) Survey* is conducted by BC Stats on behalf of the public and private post-secondary institutions to collect feedback from those apprentices who completed their last level of training at a BC institution. The feedback asked of the former students includes aspects of their in-school experience and workplace training, usefulness of the knowledge and skills gained, satisfaction with their training, and labour market information. The survey takes place one to two years after completion of their final course.

[19] The *Diploma, Associate Degree, and Certificate Student Outcomes (DACSO) Survey* is conducted by BC Stats on behalf of the public post-secondary institutions to collect feedback from those graduates who received a diploma, associate degree or certificate credential from one of those institutions. The feedback asked of the former students includes aspects of their in school experience, usefulness of the knowledge and skills gained, satisfaction with their education, and labour market information. The survey takes place one to two years after graduation from their program.

Table 4C: Degree Employment Outcomes Indicators

SURVEY YEAR	2013	2014	2015
BCIT Eligible Cohort	682	750	785
Response Rate	54%	52%	52%
Currently Employed	**94%**	**90%**	**95%**
System-wide	86%	87%	87%
Graduate Employment Rate	**98%**	**96%**	**97%**
System-wide	95%	95%	94%
Median Gross Salary (Main Job)	**$67,010**	**$68,368**	**$69,454**
System-wide	$50,927	$52,899	$52,273
Employed in Training-Related Job	**93%**	**91%**	**90%**
System-wide	81%	79%	80%

See footnote below for an explanation of the Degree category.[20]

From these survey results, a three-year average was calculated. For the purposes of the calculations in this section, the variables extracted for use in the estimation of the economic value added from education are summarized in Table 5A, 5B, and 5C.

Table 5A: Apprenticeship Three Year Average Employment Outcomes

	ELIGIBLE COHORT	RESPONDENTS	CURRENTLY EMPLOYED	AVERAGE HOURLY WAGE (MAIN JOB)
BCIT	4,074	2,235	91%	$31
System-wide	13,440	7,186	87%	$28

Table 5B: Diploma and Certificate Three-Year Average Employment Outcomes

	ELIGIBLE COHORT	RESPONDENTS	CURRENTLY EMPLOYED	AVERAGE HOURLY WAGE (MAIN JOB)
BCIT	16,881	10,206	80%	$23
System-wide	67,757	34,853	77%	$20

Table 5C: Degree Three-Year Average Employment Outcome

	ELIGIBLE COHORT	RESPONDENTS	CURRENTLY EMPLOYED	AVERAGE HOURLY WAGE (MAIN JOB)
BCIT	2,217	1,169	93%	$68,237
System-wide	13,789	6,811	87%	$52,068

See footnote below for data source.[21]

[20] The Baccalaureate Graduate Survey (BGS) is conducted by BC Stats on behalf of the public post-secondary institutions to collect feedback from those graduates who received a degree credential from those institutions. The feedback asked of the former students includes aspects of their in-school experience, usefulness of the knowledge and skills gained, satisfaction with their education, and labour market information. The survey takes place two years after graduation from their program. It is important to note that the degree system-wide results do not include the research universities (UBC, UBC-O, SFU, UVIC, UNBC).

[21] The information was taken from BC Stats Student Outcomes Reporting (SORS) database.

Economic Value of a BCIT Education

To determine the economic value of education at BCIT, the following calculations were carried out, using both the BCIT and system-wide median salary and the percentage of graduates who were currently employed at the time of the survey (Column 1, Tables 6A, 6B, 6C), which is conducted one to two years after graduation.

The additional income added as a result of high school graduates obtaining an applied program credential (Column 2, Tables 6A, 6B, 6C) was calculated by taking the difference between the average income of a high school graduate (or equivalent) from the Statistics Canada 2000 Census (adjusted) and the BCIT and system-wide rates (Tables 5A, 5B, 5C) and applying this differential to the BCIT graduate population.

Table 6A : Apprenticeship Value Added Income and Tax Revenue from 2016 BCIT Graduates[22]

	TOTAL INCOME	ADDITIONAL INCOME ADDED	ADDITIONAL TAXES
BCIT	$59,525,357	$29,676,942	$9,793,391
System-wide	$51,401,549	$22,865,152	$7,545,500
Difference	$8,123,808	$6,811,790	$2,247,891
BCIT Premium (%)	15%	26%	26%
Per BCIT Graduate	$ 7,392	$6,198	$2,045

In 2016, 1,099 apprenticeship students completed the last level of their program at BCIT.[23] These last-level apprenticeship completers will earn $60 million annually. This amount is $8.1 million, or 15 percent, more than that earned by apprenticeship students elsewhere in the system. On a per-completer basis, a BCIT apprenticeship completer will earn $7,392 more annually than an apprenticeship completer from elsewhere.

When compared to the earnings of 1,099 high school graduates with some post-secondary education (excluding apprenticeships), BCIT apprenticeship completers will earn close to $30 million more annually as a result of having completed their training at BCIT. If BCIT apprenticeship completers had received their post-secondary apprenticeship training elsewhere, the additional income would have been $23 million. The employment income advantage is $6.8 million. This equates to $6,198 per BCIT apprenticeship student annually, relative to earnings of apprentices from other institutions offering similar program offerings.

Table 6B: Diploma and Certificate Value Added Income and Tax Revenue from 2016 BCIT Graduates[24]

	TOTAL INCOME	ADDITIONAL INCOME ADDED	ADDITIONAL TAXES
BCIT	$209,601,024	$67,941,259	$22,420,615
System-wide	$ 175,426,944	$39,079,420	$12,896,209
Difference	$34,174,080	$28,861,839	$9,524,407
BCIT Premium (%)	18%	54%	54%
Per BCIT Graduate	$5,760	$4,865	$1,605

[22] **Apprenticeship Programs:** Values in each case for BCIT and system-wide were calculated by using the survey response data from 1,099 apprentice last-level completers multiplied by the appropriate average wage and weighted by the percentage of apprentices that were "currently employed" at the time of the survey.
Additional Income Added: Earnings per credential were compared to the average income of British Columbians with a high school diploma and some post-secondary education, as reported by the 2000 census conducted by Statistics Canada (and adjusted to current dollars). The information is based on Overall Credentials Awarded Report, BCIT Facts and Figures.

[23] The information is based on *Overall Credentials Awarded Report*, BCIT Facts and Figures.

[24] **Diploma and Certificate Programs:** Values in each case for BCIT and system-wide were calculated by using 5,933 diploma and certificate graduates multiplied by the appropriate average wage and weighted by the percentage of graduates that were "currently employed" at the time of the survey.
Additional Income Added: Earnings per credential were compared to the average income of British Columbians with a high school diploma and some post-secondary education, as reported by Statistics Canada 2000 (and adjusted to current dollars).

In 2016, BCIT graduated 5,933 students from its diploma and certificate programs.[25] These graduates will earn $210 million annually. This amount is $34 million, or 18 percent, more than that earned by students elsewhere in the system. On a per-graduate basis, a BCIT diploma or certificate holder will earn $5,760 more annually than a graduate from other public post-secondary teaching universities, colleges, or institutions.

When compared to the earnings of 5,933 high school graduates with some post-secondary education, BCIT diploma and certificate graduates will earn $68 million more annually as a result of having earned this type of credential from BCIT. If these high school graduates had received their post-secondary education elsewhere, the additional income would have been $39 million. The employment income advantage is $29 million. This equates to $4,865 per BCIT student annually, relative to earnings of graduates from other public post-secondary institutions offering credentials.

Table 6C: Degree Value Added Income and Tax Revenue from 2016 BCIT Graduates[26] [27]

	TOTAL INCOME	ADDITIONAL INCOME ADDED	ADDITIONAL TAXES
BCIT	$54,893,255	$ 30,883,858	$ 10,191,673
System-wide	$39,183,773	$16,723,370	$5,518,712
Difference	$15,709,481	$14,160,488	$4,672,961
BCIT Premium (%)	33%	59%	59%
Per BCIT Graduate	$18,161	$16,371	$5,402

In 2016, BCIT graduated 865 students from its degree programs.[28] These graduates will earn $55 million annually. This amount is close to $16 million, or 33 percent, more than that earned by students elsewhere in the system, excluding the research universities, as that data is unavailable for comparison. On a per-graduate basis, a BCIT degree holder will earn $18,161 more annually than a graduate from a different public BC post-secondary institution.

When compared to the earnings of 865 high school graduates with some post-secondary education, BCIT degree graduates will earn $31 million more annually as a result of having earned a degree from BCIT. If these high school graduates had received their post-secondary education elsewhere, the additional income would have been close to $17 million. The employment income advantage of attending BCIT is $14 million. This equates to $16,371 per BCIT graduate annually, relative to earnings of graduates from other public institutions offering degree program credentials.

The Tax Revenue Advantage Associated with a BCIT Education

Using both the 2015 federal and provincial income tax rates, the increase in tax revenues due to the education received by BCIT and system graduates is calculated on the additional income earned by graduates (Tables 6A, 6B, 6C).

The 1,099 BCIT apprenticeship completers paid an additional $2.2 million, or 26 percent, more in personal income taxes than an equivalent number of apprenticeship completers from other educational institutions. On a per-completer basis, the differential is $2,065 annually.

The 5,933 BCIT diploma and certificate graduates paid an additional $9.5 million, or 54 percent, more in personal income taxes than an equivalent number of diploma and certificate graduates from other public post-secondary institutions. On a per-graduate basis, the differential is $1,605 annually.

The 865 BCIT degree graduates paid an additional $4.7 million, or 59 percent, more in personal income taxes than an equivalent number of degree graduates from other post-secondary institutions, excluding the research universities. On a per-graduate basis, the differential is $5,402 annually.

[25] The information is based on *Overall Credentials Awarded Report*, BCIT Facts and Figures.

[26] **Degree Programs:** Values in each case BCIT and system-wide were calculated by using 865 degree graduates multiplied by the appropriate average wage and weighted by the percentage of graduates that were "currently employed" at the time of the survey.
Additional Income Added: Earnings per credential were compared to the average income of British Columbians with a high school diploma and some post-secondary education, as reported by Statistics Canada 2000 (and adjusted to current dollars).

[27] The 865 BCIT degree graduates includes nine master degree graduates.

[28] The information is based on *Overall Credentials Awarded Report*, BCIT Facts and Figures.

Returns Associated with a BCIT Education

The tables below calculate the additional tax revenue that the two levels of government realize on BCIT graduates from apprenticeship, diploma, certificate, and degree programs. For comparison purposes, equivalent tax revenues have been provided for other credential granting institutions (with the exception of the research universities).

Table 7A: Apprenticeship Annual Tax Revenue from BCIT and System Equivalent Education (2015–2016 Completers)[29]

	BCIT ADDITIONAL TAX REVENUE/YEAR	SYSTEM-WIDE ADDITIONAL TAX REVENUE/YEAR	BCIT PREMIUM
Provincial Tax	$3,264,464	$2,515,167	$749,297
Federal Tax	$6,528,927	$5,030,333	$1,498,594
Total Government Return	$9,793,391	$7,545,500	$2,247,891

Table 7B: Diploma and Certificate Annual Tax Revenue from BCIT and System Equivalent Education (2015–2016 Graduates)[30]

	BCIT ADDITIONAL TAX REVENUE/YEAR	SYSTEM-WIDE ADDITIONAL TAX REVENUE/YEAR	BCIT PREMIUM
Provincial Tax	$7,473,538	$4,298,736	$3,174,802
Federal Tax	$14,947,077	$8,597,472	$6,349,605
Total Government Return	$22,420,615	$12,896,209	$9,524,407

Table 7C: Degree Annual Tax Revenue from BCIT and System Equivalent Education (2015–2016 Graduates)[31]

	BCIT ADDITIONAL TAX REVENUE/YEAR	SYSTEM-WIDE ADDITIONAL TAX REVENUE/YEAR	BCIT PREMIUM
Provincial Tax	$3,397,224	$1,839,570	$1,557,654
Federal Tax	$6,794,449	$3,679,142	$3,115,307
Total Government Return	$10,191,673	$5,518,712	$4,672,961

Tables 7A, 7B, and 7C indicate that BCIT provides the provincial and federal government with a tax premium of $16.4 million annually, relative to other credential granting institutions, with the provincial share of this total being $5.5 million.

Table 8A: Apprenticeship Programs returns as a percentage of Block Funding (Tax Revenues)[32]

	BCIT ADDITIONAL TAX REVENUE/YEAR	SYSTEM-WIDE ADDITIONAL TAX REVENUE/YEAR	BCIT PREMIUM
Provincial Tax	19%	14%	5%
Federal Tax	37%	29%	8%
Total Government Return	56%	43%	13%

[29] **Apprenticeship Additional Tax Revenue per Year:** Values for BCIT and system-wide were calculated using the 1,099 apprentice completers Additional Income Generated multiplied by the appropriate tax rates.

[30] **Diploma and Certificate Additional Tax Revenue per Year:** Values for BCIT and system-wide were calculated using the 5,933 diploma and certificate graduates' Additional Income Generated, multiplied by the appropriate tax rates.

[31] **Degree Additional Tax Revenue per Year:** Values for BCIT and system-wide were calculated using the 865 degree graduates' Additional Income Generated, multiplied by the appropriate tax rates.
BCIT Premium: The difference between BCIT and system-wide in Additional Tax Revenues provided to the governments.

[32] **Apprentice Programs Rates of Return on Block Funding (Tax Revenues):** Values for BCIT and system-wide were calculated using 1,099 apprentice completers Additional Tax Revenue for Federal and Provincial amounts, divided by the Institute's Industry Training Authority (ITA) Block Funding.

Table 8B: Diploma and Certificate Programs returns as a percentage of Block Funding (Tax Revenues)[33]

	BCIT ADDITIONAL TAX REVENUE/YEAR	SYSTEM-WIDE ADDITIONAL TAX REVENUE/YEAR	BCIT PREMIUM
Provincial Tax	7%	4%	3%
Federal Tax	15%	9%	6%
Total Government Return	22%	13%	9%

Table 8C: Degree Programs returns as a percentage of Block Funding (Tax Revenues)[34]

	BCIT ADDITIONAL TAX REVENUE/YEAR	SYSTEM-WIDE ADDITIONAL TAX REVENUE/YEAR	BCIT PREMIUM
Provincial Tax	23%	13%	10%
Federal Tax	47%	25%	22%
Total Government Return	70%	38%	32%

See footnote below for explanation of return on investment.[35]

The return on investment by government, in terms of tax revenues from BCIT graduates from apprenticeship, diploma, certificate, and degree programs, is 56 percent, 22 percent, and 70 percent, respectively. Other post-secondary institutions (excluding the research universities) provide a rate of return of 43 percent, 13 percent, and 38 percent, respectively. The BCIT premium earned by the British Columbia taxpayers by investing public dollars in BCIT is as high as 61 percent greater than that realized from an investment in alternate public post-secondary institutions.

Present Value Calculation of Educational Benefits of BCIT

Present value calculations were undertaken to determine the additional income earned attributed to a BCIT program five, ten, and twenty years following graduation. From this earnings profile, the additional provincial and federal tax revenues generated by BCIT graduates were determined.

For comparative purposes, the additional income and tax revenues attributed to graduates from post-secondary institutes other than BCIT (and excluding the research universities) were determined, and the BCIT Premium calculated.

This analysis yielded the following results.

Table 9A: BCIT Apprenticeship Present Value Calculations[36]

YEARS IN WORK FORCE	YEARS SINCE ADMISSION	ADDITIONAL INCOME	FEDERAL TAX	PROVINCIAL TAX	TOTAL TAX
5	9	$140,117,754	$30,825,906	$15,412,953	$46,238,859
10	14	$273,689,120	$60,211,606	$30,105,803	$90,317,410
20	24	$522,401,805	$114,928,397	$57,464,199	$172,392,596

[33] **Diploma and Certificate Programs Rates of Return on Block Funding (Tax Revenues):** Values for BCIT and system-wide were calculated using 5,933 diploma and certificate graduates' Additional Tax Revenue for federal and provincial amounts divided by the Institute's Ministry of Advanced Education (AVED) Block Funding that was proportionally related to these programs.

[34] **Degree Programs Rates of Return on Block Funding (Tax Revenues):** Values for BCIT and system-wide were calculated using 865 degree graduates' Additional Tax Revenue for Federal and Provincial amounts divided by the Institute's Ministry of Advanced Education (AVED) Block Funding that was proportionally related to these programs.

[35] Calculations are based on 2 years' FTE (full-time equivalent) funding being provided for 5,933 students.

[36] **BCIT Apprentice Present Value Calculations:** Values for BCIT were calculated using 1,099 apprentice completers Additional Income Generated and Tax Revenue for Federal and Provincial amounts over the specified number of years. The cumulative Additional Income Generated includes Growth Rate for Wages and Discount Factor in its calculation.

Table 9B: System-wide Apprenticeship Present Value Calculations[37]

YEARS IN WORK FORCE	YEARS SINCE ADMISSION	ADDITIONAL INCOME	FEDERAL TAX	PROVINCIAL TAX	TOTAL TAX
5	9	$107,956,331	$23,750,393	$11,875,196	$35,625,589
10	14	$210,868,876	$46,391,153	$23,195,576	$69,586,729
20	24	$402,494,193	$88,548,722	$44,274,361	$132,823,084

The present value differential for apprentice completers—BCIT versus the "System"—is as follows:

Table 9C: BCIT Premium—Present Value Differential for BCIT vs System[38]

YEARS IN WORK FORCE	YEARS SINCE ADMISSION	ADDITIONAL INCOME	FEDERAL TAX	PROVINCIAL TAX	TOTAL TAX
5	9	$32,161,423	$7,075,513	$3,537,756	$10,613,269
10	14	$62,820,244	$13,820,454	$6,910,227	$20,730,680
20	24	$119,907,612	$26,379,675	$13,189,837	$39,569,512

Over a five-year period, BCIT apprenticeship last-level completers will earn an additional $140 million over that earned by individuals with only grade 12 and some post-secondary education. This will result in an additional $31 million in federal tax and $15 million in provincial tax revenues.

In comparison, the equivalent number of system-wide apprenticeship completers will earn an additional $108 million over the five-year period and contribute an additional $24 million in federal and $12 million in provincial tax revenues.

In comparing the BCIT and system-wide apprentice completers, the BCIT students will earn, over the first five-year period, an additional $32 million in additional income and contribute $7 million more in federal and $3.5 million more in provincial taxes.

Table 9D: BCIT Diploma and Certificate Present Value Calculations[39]

YEARS IN WORK FORCE	YEARS SINCE ADMISSION	ADDITIONAL INCOME	FEDERAL TAX	PROVINCIAL TAX	TOTAL TAX
5	7	$326,978,745	$71,935,324	$35,967,662	$107,902,986
10	12	$638,680,842	$140,509,785	$70,254,893	$210,764,678
20	22	$1,219,076,682	$268,196,870	$134,098,435	$402,295,305

[37] **System-wide Apprentice Present Value Calculations:** Values system-wide were calculated using 1,099 apprentice completers Additional Income Generated and Tax Revenue for Federal and Provincial amounts over the specified number of years. The cumulative Additional Income Generated includes Growth Rate for Wages and Discount Factor in its calculation.

[38] **BCIT Premium:** The difference between BCIT and system-wide in Additional Income Generated and Federal and Provincial Tax Revenues over the specified number of years.

[39] **BCIT Diploma and Certificate Present Value Calculations:** Values for BCIT were calculated using 5,933 diploma and certificate graduates' Additional Income Generated and Tax Revenue for Federal and Provincial amounts over the specified number of years. The cumulative Additional Income Generated includes Growth Rate for Wages and Discount Factor in its calculation.

Table 9E: System-wide Diploma and Certificate Present Value Calculations[40]

YEARS IN WORK FORCE	YEARS SINCE ADMISSION	ADDITIONAL INCOME	FEDERAL TAX	PROVINCIAL TAX	TOTAL TAX
5	7	$188,076,287	$41,376,783	$20,688,392	$62,065,175
10	12	$367,365,534	$80,820,417	$40,410,209	$121,230,626
20	22	$701,205,872	$154,265,292	$77,132,646	$231,397,938

The present value differential for diploma and certificate graduates—BCIT versus the "System"—is as follows:

Table 9F: BCIT Premium — Present Value Differential for BCIT vs System[41]

YEARS IN WORK FORCE	YEARS SINCE ADMISSION	ADDITIONAL INCOME	FEDERAL TAX	PROVINCIAL TAX	TOTAL TAX
5	7	$138,902,458	$30,558,541	$15,279,270	$45,837,811
10	12	$271,315,308	$59,689,368	$29,844,684	$89,534,052
20	22	$517,870,811	$113,931,578	$56,965,789	$170,897,368

Over a five-year period, BCIT diploma and certificate credential graduates will earn an additional $327 million over that earned by individuals with only grade 12 and some post-secondary education. This will result in an additional $72 million in federal tax and $36 million in provincial tax revenues.

In comparison, the equivalent number of system-wide diploma and certificate graduates will earn an additional $188 million over the five-year period and contribute an additional $41 million in federal and $21 million in provincial tax revenues.

In comparing the BCIT and system-wide diploma and certificate credentials, the BCIT graduates will earn, over the first five-year period, an additional $138 million in additional income and contribute $30.5 million more in federal and $15 million more in provincial taxes.

Table 9G: BCIT Degree Present Value Calculations[42]

YEARS IN WORK FORCE	YEARS SINCE ADMISSION	ADDITIONAL INCOME	FEDERAL TAX	PROVINCIAL TAX	TOTAL TAX
5	7	$148,633,768	$32,699,429	$16,349,714	$49,049,143
10	12	$290,323,275	$63,871,120	$31,935,560	$95,806,681
20	22	$554,152,108	$121,913,464	$60,956,732	$182,870,196

[40] **System-wide Diploma and Certificate Present Value Calculations:** Values for system-wide were calculated using 5,933 diploma and certificate graduates' Additional Income Generated and Tax Revenue for Federal and Provincial amounts over the specified number of years. The cumulative Additional Income Generated includes Growth Rate for Wages and Discount Factor in its calculation.

[41] **BCIT Premium:** The difference between BCIT and system-wide in Additional Income Generated and Federal and Provincial Tax Revenues over the specified number of years.

[42] **BCIT Degree Present Value Calculations:** Values for BCIT were calculated using 865 degree graduates' Additional Income Generated and Tax Revenue for Federal and Provincial amounts over the specified number of years. The cumulative Additional Income Generated includes Growth Rate for Wages and Discount Factor in its calculation.

Table 9H: System-wide Degree Present Value Calculations[43]

YEARS IN WORK FORCE	YEARS SINCE ADMISSION	ADDITIONAL INCOME	FEDERAL TAX	PROVINCIAL TAX	TOTAL TAX
5	7	$80,484,036	$17,706,488	$8,853,244	$26,559,732
10	12	$157,207,808	$34,585,718	$17,292,859	$51,878,577
20	22	$300,069,080	$66,015,198	$33,007,599	$99,022,797

The present value differential for diploma and certificate graduates—BCIT versus system-wide—is as follows:

Table 9I: BCIT Premium — Present Value Differential for BCIT vs System-wide[44]

YEARS IN WORK FORCE	YEARS SINCE ADMISSION	ADDITIONAL INCOME	FEDERAL TAX	PROVINCIAL TAX	TOTAL TAX
5	7	$68,149,732	$14,992,941	$7,496,471	$22,489,412
10	12	$133,115,467	$29,285,403	$14,642,701	$43,928,104
20	22	$254,083,027	$55,898,266	$27,949,133	$83,847,399

Over a five-year period, BCIT degree graduates will earn an additional $149 million over that earned by individuals with only grade 12 and some post-secondary education. This will result in an additional $33 million in federal tax and $16 million in provincial tax revenues.

In comparison, the equivalent number of system-wide degree graduates will earn an additional $80 million over the five-year period and contribute an additional $18 million in federal and $9 million in provincial tax revenues.

In comparing the BCIT and system-wide degree credentials, the BCIT graduates will earn, over the first five-year period, an additional $68 million in additional income and contribute $15 million more in federal and $7 million more in provincial taxes.

The Return on Investment (ROI)

While the focus of this report is the overall impact of BCIT on the provincial economy both directly and indirectly, this section evaluates the direct return on investment to both society (in GDP) and to the government in terms of tax dollars. In this case, the direct benefit is the increased GDP and tax revenue that results from the higher incomes earned by BCIT graduates.

To do this, the annual grants (from the Industry Training Authority and the Ministry of Advanced Education) are converted to dollars per graduating student. This is combined with annual tuition to derive the overall annual cost per graduate. The per-student investment is then compared to both the stream of additional income and the additional tax dollars that a graduate will generate over his or her career. Using an internal rate of return approach (IRR) generates the returns on investment for society and the tax base from BCIT programs.

To calculate the benefit stream, we take the difference in annual income due to education and weight it by the employment rate for the education category to derive the expected annual value. We assume an average post-graduation career of twenty years and an annual average productivity gain of 1 percent. All values are adjusted for inflation, thereby generating all values in real (constant 2016 dollar) terms. The following table shows the ROI for apprenticeships, diploma, and certificate programs and degree programs. The overall rates of return (far-right column) are determined by the weighted average of the three categories.

[43] **System-wide Degree Present Value Calculations:** Values for system-wide were calculated using 865 degree graduates' Additional Income Generated and Tax Revenue for Federal and Provincial amounts over the specified number of years. The cumulative Additional Income Generated includes Growth Rate for Wages and Discount Factor in its calculation.

[44] **BCIT Premium:** The difference between BCIT and system-wide in Additional Income Generated and Federal and Provincial Tax Revenues over the specified number of years.

BCIT 2016 VALUES	APPRENTICESHIP	DIPLOMA/CERTIFICATES	DEGREE	
Share of BCIT Graduates	14%	75%	11%	
Annual Funding Per Graduate	$3,981	$8,421	$8,421	
Annual Tuition	$900	$5,200	$5,800	
Annual Cost Per Graduate	$4,881	$13,621	$14,221	
Program Length (Years)	4	2	4	
Wage Differential	$29,674	$14,314	$24,077.00	
Employment Rate After Grad	91%	80%	93%	
Expected Value Per Student	$27,004	$11,451.42	$22,391.61	
Federal Tax Revenue	$5,941	$2,519	$4,926	
Provincial Tax Revenue	$2,970	$1,260	$2,463	
TOTAL TAX REVENUE	**$8,911**	**$3,779**	**$7,389**	**OVERALL**
ROI IN TERMS OF GDP	**68%**	**54%**	**92%**	**60%**
ROI IN TERMS OF TAX REVENUE	**35%**	**21%**	**38%**	**25%**

For apprenticeships, diplomas, and certificates, the graduate income is compared to the baseline income of those with a high school diploma (grade 12) with an average income of $29,845. For degree programs at BCIT, the baseline for calculating the income differential is the diploma program. Even though the degree program is four years, only the additional investment above the diploma (two years) is included in the calculation.

The Industry Training Authority annual grant translates into $3,981 per year for each actual completer. The Ministry of Advanced Education grant equates to $8,421 per year for each diploma, certificate, or degree graduate. Each apprenticeship completer will contribute an average of $8,911 per year in additional tax dollars. This equates to an ROI of 35 percent on apprenticeship programs. Diploma and certificate graduates will contribute an average of $3,779 in additional tax revenue for an ROI of 21 percent. Degree graduates will contribute $7,389 in additional tax dollars for an ROI of 38 percent.

Apprenticeships account for 14 percent of graduates, diploma programs account for 75 percent of graduates, and degree programs produce 11 percent of graduates. Using a weighted average of the three categories of ROIs, the overall ROI for society is 60 percent and to government funding is 25 percent.

BCIT Education and Key Sectors of the Economy

BCIT: Integral to the economic, social, and environmental prosperity of British Columbia.[45]

BCIT is known for its applied education, and it has long held a reputation for close ties to industry. In many cases, BCIT is the only institute in the province that supplies training for specific skills and occupations. The purpose of this section is to quantify the linkages between BCIT and key sectors of the economy. It also measures BCIT's market concentration within each of these sectors.[46]

BCIT, like most post-secondary institutes, groups programs and fields of study by faculty, school, and department. The broadest and oldest groupings are typically the Faculty of Arts, Faculty of Science, and Faculty of Applied Science. Within these groupings, there will be schools such as Business, Construction, Health Science, and Computing, which, in turn, contain departments (or programs) such as Marketing, Economics, and Nursing. The academic groupings are based on the subject-matter expertise of the instructors and operational concerns of the institute (i.e., types of capital requirements like labs and equipment). However, BCIT, with its focus on applied education and job-ready skills, has strong linkages to most, if not all, sectors of the provincial economy. This section is an overview of BCIT's contribution and relative impact on key sectors of the BC economy. While BCIT makes up close to 15 percent of the post-secondary FTEs,[47] it is often the dominant, if not the only, supplier of skilled workers for a wide range of industries and professions. This section provides an overview of this contribution at the sector level in British Columbia.

[45] BCIT Strategic Plan 2014-2019 is available on the BCIT website.

[46] "Market Concentration" is a term used in industrial organization which refers to the percentage of a market which is supplied by a single provider.

[47] This percentage is derived from those institutions that submit to the Central Data Warehouse (CDW 2011). The research universities' FTE activity was excluded from this calculation.

Gross Domestic Product by Sector

In 2016, the gross domestic product (GDP) of British Columbia was $249 billion (according to Statistics Canada). For reporting purposes, Statistics Canada and BC Stats divide the economy into eight sectors.[48] Those sectors and their share of GDP are listed in Table 10.

Table 10: British Columbia Economy

MAJOR SECTORS BC ECONOMY	GDP (THOUSANDS)	SHARE OF GDP
Services (Public and Private) and Professions	$94,793	38%
Finance, Insurance, Real Estate and Leasing	$61,770	25%
Trade (Retail/Wholesale)	$25,173	10%
Construction	$21,698	9%
Manufacturing	$17,999	7%
Transportation and warehousing	$14,849	6%
Primary industries	$8,085	3%
Utilities	$5,625	2%
TOTAL	**$249,981**	**100%**

One method of calculating GDP used by Statistics Canada is the sum of payments to factors of production, or the "value added" approach. Using this approach to calculating GDP, it was determined that 64 percent of net GDP was recorded as wages, salaries, and benefits. Further, from the federal census data, we estimate that 86 percent of payments to labour is paid to skilled workers: those with certificates, diplomas, or degrees.

Post-Secondary Credentials Awarded by Sector

Table 11 presents all public post-secondary credentials awarded, excluding the credentials awarded by the research universities and pre-workforce training, in British Columbia for fiscal year 2016.[49] Credentials have been categorized by sector by aligning the program credential Classification of Instructional Program code (CIP) to the various sectors in the economy. Table 10 also shows BCIT's share of credentials awarded by sector. In the areas of construction and manufacturing, BCIT is responsible for more than 18 percent of all post-secondary credentials, which is the largest portion of any post-secondary institute (excluding the research universities).

The categories "Finance, Insurance, Real Estate and Leasing" and "Services and Professions" are programs primarily from the Schools of Health Sciences and Business. In the financial industries, one in every four credential is from BCIT. For the category "Services and Professions," BCIT only supplies 10 percent of credentials. However, since this is by far the largest sector of the provincial economy, it is BCIT's second largest category in terms of the number of graduates produced at BCIT.

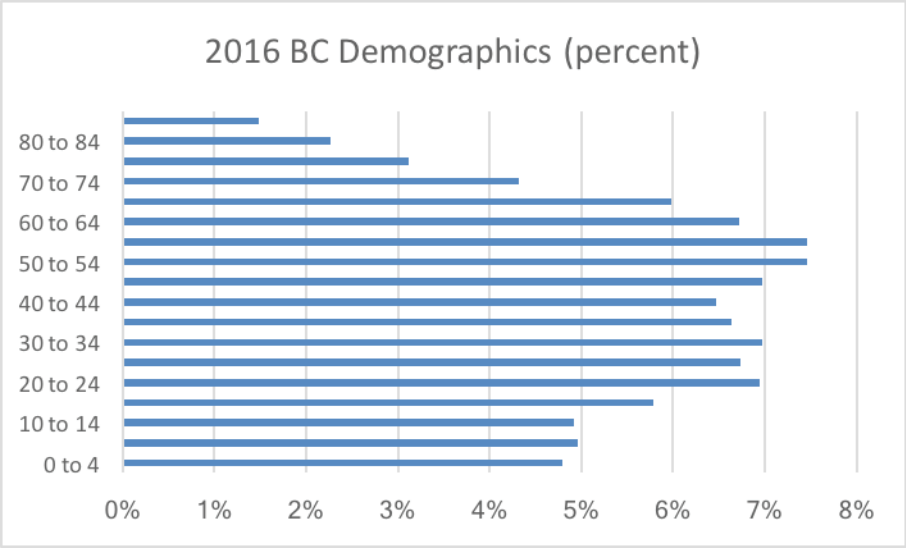
[48] This number can vary depending on the focus of individual reports developed by Statistics Canada (i.e., employment rates, capital investment, demographics).
[49] Data from the Ministry of Advanced Education's Central Data Warehouse (CDW).

Table 11: Credentials Awarded for Public Post-Secondary Institutions by Sector

MAJOR SECTORS OF BC ECONOMY	BCIT	SYSTEM TOTAL	BCIT %
Primary Industries	100	1,612	6%
Manufacturing	2,465	7,757	32%
Construction	1,399	4,302	33%
Transportation and Warehousing	57	1,585	4%
Trade (Retail/Wholesale)	1,067	6,999	15%
Finance, Insurance, Real Estate and Leasing	659	1,966	33%
Services (Public and Private) and Professions	2,150	20,896	10%
GRAND TOTAL	**7,897**	**45,118**	**18%**

Demographics for British Columbia in 2016

Figure 1: British Columbia Population by Age Grouping



The population of British Columbia in 2016 was 4.7 million. Figure 1 shows British Columbia's population by age cohort in 2016 (according to BC Stats). The distribution by age implies some future challenges in the labour market and supports the concern of a skills shortage in many sectors. The two largest cohorts are the 50–54- and 55–59-year-olds. The 45- to 74-year-olds represent 39 percent of the population and 54 percent of the workforce, whereas the 15 to 40 demographic is only 33 percent of the population and 38 percent of the workforce. Given that only 12 percent of those measured as retired work up to age 65 before retiring (average being 62 years; Canadian Census), there will be significant demand for skilled labour and middle management in the next ten years. Given the current age distribution, education and skills training will have a greater premium and there will be an increasing reliance on immigration.

Table 12: 2016 Employment Openings for Skilled Labour from Attrition and Economic Growth[50]

MAJOR SECTORS OF BC ECONOMY	OPENINGS	FILLED BY BCIT GRAD
TOTAL	**54,838**	**8,279**
Services (Public and Private) and Professions	26,046	2,680
Construction	4,641	1,509
Trade (Retail/Wholesale)	8,990	1,371
Manufacturing	4,033	1,282
Finance, Insurance, Real Estate and Leasing	3,450	1,156
Primary Industries	1,774	111
Transportation and Warehousing	2,891	104
Utilities	340	68

Table 12 shows the number of expected job openings in 2016 for skilled workers by sector due to attrition and economic growth. This estimate is the net effect since many positions, especially at the senior or middle management level, will be filled by internal candidates. It is assumed that openings for skilled workers will have a credential requirement as a condition of employment. Using the percentage of credentials in British Columbia that were awarded by BCIT, an estimate for the number of positions to be filled by BCIT graduates is reported in the last column of Table 12.

Economic Value of New Hires of Skilled Labour (Share of GDP)

This section calculates the value of new hires of skilled labour as a share of provincial GDP. We report the forecast for 2016 and the cumulative value for the next five years (2016-2021). For this forecast, an annual attrition rate of 2 percent and an economic growth rate of 3 percent (Canada's long run trend) were assumed.[51] The results are summarized in Table 12.

Table 12: Forecasted Value of New Hires of Skilled Labour

	2016 FORECAST (MILLIONS)		2016–2021 CUMULATIVE VALUE (MILLIONS)	
MAJOR SECTORS BC ECONOMY		BCIT GRADS	OVERALL	BCIT GRADS
Services (Public and Private) and Professions	$948	$98	$5,184	$533
Finance, Insurance, Real Estate and Leasing	$618	$207	$3,378	$1,131
Trade (Retail/Wholesale)	$252	$38	$1,376	$210
Construction	$217	$71	$1,187	$386
Manufacturing	$180	$57	$984	$313
Transportation and Warehousing	$148	$5	$812	$29
Primary Industries	$81	$5	$442	$28
Utilities	$56	$11	$308	$62
TOTAL	**$2,500**	**$377**	**$13,670**	**$2,064**

[50] Results are estimated using aggregate attrition forecasts based on turnover, demographics, and average retirement age of workforce

[51] Two percent attrition is considered a conservative estimate. Given the current age distribution of the province, the attrition rate could be as high as 6 percent, depending on the number of people who opt for early retirement (55 to 65 age bracket).

The forecast suggests that BCIT graduates will account for $377 million of new hires in 2016 and almost $2.1 billion over the next five years. The largest contributions are to construction ($386m), finance, insurance, real estate and leasing ($1,131m), retail and wholesale trade ($386m), and public and private sector services ($533m).

Although it is beyond the scope of this report, it is worth noting that within each sector there are a significant number of skill sets that are either solely taught by BCIT or BCIT is the only large scale provider of of skills training in this area. As a result, without BCIT, many industries will have to rely on out-of-province recruiting or immigration to fill the need for skilled workers in their sector.

RESEARCH AND DEVELOPMENT ACTIVITY IMPACT ANALYSIS[52]

As BC's premier polytechnic institute, BCIT and its faculty are engaged in a wide range of research and development activities on behalf of, and with, industry clients, including applied research, technology transfer, commercialization, technical and business consulting, and associated training.

Applied research takes place throughout BCIT, from student-led projects to collaborative research programs involving faculty, students, and external partners. Applied research provides unique learning experiences for students and innovative solutions to real-world problems facing business and industry.

BCIT applied research maximizes the Institute's impact on economic development and environmental sustainability, helping business and industry increase their competitive strength and productivity. Applied researchers use a collaborative and technology-based approach to problem solving that provides accelerated solutions that benefit society.

When evaluating the economic impact of applied research, it is important to recognize that the benefits tend to diffuse throughout the economy over a longer time horizon. Unlike the impact calculated in the previous two sections, the economic benefits of applied research will not necessarily be realized in the same year that the investments were made. The key differentiator between university and BCIT research is that the research conducted at BCIT focuses on activities with short-term or immediate industrial and commercial relevance, whereas university research is undertaken principally to develop new knowledge, which may not have an immediate economic or social benefit.

BCIT Centre for Applied Research and Innovation (CARI)

The Centre for Applied Research and Innovation (CARI) is the home of BCIT's dedicated research groups: MAKE+, NRG, SMART, REDLab, and supporting labs. Formerly known as the Technology Centre, CARI has been a hub of multi-disciplinary research and development projects for business and industry for over 25 years. Research activities at CARI focus on product and process development and evaluation; smart microgrid research, energy efficiency, green transportation and cybersecurity; product quality and process improvement relating to natural health and food products; and rehabilitation engineering and assistive devices.

MAKE+ is a multidisciplinary research team focused on product and process development, evaluation, applied research projects, and education. The MAKE+ subgroup PART (Product and Process Applied Research Team) is the only academic product development group in Canada that is registered to ISO 9001 and 13485 Quality Management Systems. MAKE+ optimizes the functionality, user experience, value, and commercial success of products through the development of emerging health, consumer, and industrial devices; and the evaluation of new or existing products, technologies, and processes.

Recent research projects include a medical tubing manager for infants, hockey skate performance data collection and analysis, a longboard deck tester, and a GPS-enabled device for realtors and house buyers.

The **Natural Health and Food Products Research Group (NRG)** addresses issues of product quality, process improvement, and human health using basic and applied science along with state-of-the-art technology. Projects focus on areas including health policy, product formulation, botanical authentication, analytical method development and validation, and therapeutic monitoring for preclinical and clinical studies. NRG research and development is closely linked with the priorities of the natural health product, food, and agricultural industries and the government agencies regulating these sectors.

[52] Accurate data was only available up to 2005. Results in this section are based on extrapolations from that year.

The **Smart Microgrid Applied Research Team (SMART)** has established a reputation for unique expertise in the strategic research area of the Smart Microgrid. The Smart Microgrid program at BCIT advances the state of the electric power Smart Grid at an international level, working to identify cost-effective technologies and solutions for Canada's evolving smart electricity grid. BCIT's Smart Microgrid Program provides opportunities for electrical utility companies, technology providers, and researchers to work together to develop architectures, protocols, configurations, and models of the evolving Smart Grid. The program also enables Canadian researchers to develop and validate technologies required to meet Canada's priorities for co-generation, efficient transmission, and integration of clean energy sources into existing and future grids.

The **Rehabilitation Engineering Design Lab (REDLab)** is the central hub for Dr. Jaimie Borisoff's Canada Research Chair in Rehabilitation Engineering Design. The REDLab works with a diverse interdisciplinary network of researchers in areas including rehabilitation engineering, occupational therapy, mechanical engineering, and human kinetics, as well as industry and community partners. The research program seeks to research and develop technologies that positively impact a person's ability to interact with the built and natural environment and/or that promote health and community participation for those with disabilities. This research entails studying the issues, barriers, and gaps faced by people with spinal cord injury and other mobility impairments and developing new technologies to help mitigate these issues.

Other BCIT Research Centres

BCIT achieves its applied research goals through a number of unique research facilities that have been established at CARI and across BCIT as a result of partnerships with industry and with the help of federal and provincial programs:

Advanced Prototyping Hub

The Advanced Prototyping Hub serves a broad range of research disciplines and is equipped to allow researchers to develop prototypes not only at the lab mock-up level, but at an advanced level equivalent to that of commercial products that are released into the marketplace. It comprises two key platforms: (1) an integrated design/ machining platform and (2) a performance evaluation platform for life-sciences products, with emphasis on safety, efficacy, and environmental impact.

Biotechnology Laboratories

The Integrated Molecular Biology Lab is equipped with state-of-the-art instruments, including a genetic analyzer (sequencer), a microarray scanner, and an epifluorescence microscope imaging system. The main biotechnology lab is licensed for radioisotopes and contains all the equipment necessary to propagate bacterial cultures, perform small-scale fermentation, purify and analyze DNA, RNA, and proteins. There is also dedicated space for plant cell culture (including a greenhouse on campus).

Building Science Centre of Excellence

Research activities in the Building Science Centre of Excellence are centred on themes related to the performance of a building as whole—including the building envelope and its durability and energy performance—and healthy indoor environments. Facilities include a Hygrothermal Property Measurement Laboratory, Building Envelope Test Facility, Water Penetration Test Chamber, Environmental Chamber, and Whole Building Performance Research Laboratory (WBPRL).

Centre for Architectural Ecology (CAE) – Collaborations in Living Walls and Green Roofs

The BCIT Centre for Architectural Ecology – Collaborations in Green Roofs and Living Walls is evaluating the function and performance of green roofs and living walls in the rainforest climate of coastal BC through collaborations with industry, government, and academic partners. Facilities include the BCIT Green Roof Research Facility in Vancouver, the White Rock Operations Centre, and the Elevated Research Platform and Sound Transmission Facility at BCIT Burnaby.

Centre for Cyber Security

The BCIT Centre for Cyber Security is an interdisciplinary centre for research and education. The Centre's primary goal is to advance the state of practice in areas related to information security and computer crime. Towards this end, the Centre supports BCIT's educational offerings in Computer Security and Forensics. They also conduct both theoretical and applied research in a variety of areas, including cryptographic protocol verification, criminal intelligence analysis, network security, sensor networks, and ethics and policy.

Centre for Energy Systems Applications

The BCIT Centre for Energy Systems Applications is focused on better understanding the integration of energy systems applications. Integrated Energy Systems Applications integrates the demand and supply side management of energy through waste reduction, efficiency improvement, and alternative and renewable energy source use.

Centre for Rehabilitation Engineering and Technology that Enables (CREATE)

CREATE, developed in partnership with the Neil Squire Foundation, is a research facility devoted to development of devices, technologies, and products for people with disabilities. Equipped with a state-of-the-art Rapid Prototyping Machine, CREATE is the first research facility of its kind in BC.

Phytoanalytics Laboratory

The BCIT Phytoanalytics Laboratory positions BCIT as a Canadian leader in the agricultural and natural resources health products sectors. The lab's research and development platform is designed to advance laboratory testing of products, support development of novel therapeutics, improve agricultural management practices, and support policy development in the regulation of natural health products.

Rivers Institute

The BCIT Rivers Institute will build on the Institute's vision of being integral to the economic, social, and environmental prosperity of British Columbia by uniting the public in an effort to protect the world's rivers; increasing public awareness about the importance of our waterways; and conducting state-of-the-art river-related research.

SITE Centre: Centre of Excellence for Sustainability, Infrastructure, and Transportation Economics

The SITE Centre carries out research in the areas of human capital and economics. The Centre is nationally recognized for its contribution to developing alternative methods of assessing skills and knowledge for advanced placement and prior learning. The SITE Centre also carries out research and analysis on the BC economy, with particular focus on labour markets. The SITE Centre is the home of the National Advanced Placement and Prior Learning portal and the Careerbuild portal. Since 2015, the SITE Centre has received $1.2 million in government and private funding.

Spartan Controls Centre for Energy Education and Research

The Spartan Controls Centre for Energy Education and Research is the School of Energy's boiler, co-generation, and industrial instrumentation facility, drawing together students, faculty, and operations personnel in a cross-disciplinary learning and research environment focused on energy production, distribution, sustainability, and management. The Centre includes a multi-fuel boiler and a 220 kW electrical generator, which is tied in to BCIT's Smart Microgrid.

RESEARCH AND DEVELOPMENT ECONOMIC IMPACT ANALYLSIS

Compared to the impact multiplier used in the above sections, research and development (R&D) can have a larger multiplier effect in the local economy due to the commercial nature of the expenditures, technological spillovers, and network externalities.

Of the more than 20 economic impact studies surveyed, only two organizations reported multipliers specifically for applied R&D. Most expressed their impacts in terms of anecdotal evidence of the relationship between their research institution and industry. This is likely due to the need for confidentiality concerning client firms' production costs and profits and the labour resources required to collect relevant information for purposes of determining the multiplier effect.

A Michigan State University study estimated their R&D multiplier effect to be 4.04. Alternatively, a 2001 report by the Science Council of BC estimated the multiplier effect associated with the Technology BC Program to be 18. NASA's officially stated multiplier is 23. In other words, depending upon the multiplier factor used, one dollar of applied research and development expenditure will return $4.04 or $18.00 to the economy. Selection of an appropriate multiplier factor is therefore critical in estimating the economic "ripple-effect" associated with applied research and development.

In 2015, BCIT received $6.3 million in research funding to support applied research conducted by students and faculty and Institute-mandated projects. The funding for BCIT research projects decreased 10 percent within the last year, but even with this decrease in funding, BCIT was ranked 5th in the 2016 Canada's Top 50 Research Colleges list published by Research Infosource.

Research has shown that direct post-secondary funding for applied research will, on average, produce 60 percent more indirect funding by private corporations working in collaboration with the post-secondary Institute. Therefore, the BCIT funding of $6.3 million will generate an additional $3.8 million for a total injection of $10.1 million.

Unlike other sections of this report, the economic impact of applied research presents some additional challenges. All other activities cited (spending, wages, graduates, etc.) are recorded in annual values, which means they are considered flow variables producing a stream of benefits. Applied research does not lend itself well to a simple annual flow analysis. Rather, it is a stock variable that produces a stream of benefits over time. This is analogous to a consumer durable (e.g., a refrigerator or automobile) that is a one-time purchase that produces benefits over a time horizon. The impact multipliers for applied research referenced above reflect the cumulative impact of investment in applied research. To be consistent with other sections of this report, it is required that we convert the total impact to an annual average over a specific time horizon. For the purpose of this study, we chose a five-year horizon (2015–2020). Using the 2015 direct and indirect injection of $10.1 million, we produce both a cumulative and annual impact for a range of impact multipliers. The results are listed in the table below. For the summary and calculation of BCIT's impact from all sources, we use the realistic value of the forecast.

Applied R&D at BCIT likely has a larger economic multiplier than that associated with university research since a large percentage of research undertaken at universities is for the sake of knowledge only and usually does not translate into efficiency enhancing or commercially valuable applications—at least not in the short term or with any direct localized effects. For example, research in philosophy, pure mathematics, and the like are funded but not expected to have any real short-term economic impact.

This differs markedly from applied R&D, where the sole objective is efficiency enhancement and the development of commercially viable applications. Given the commercial nature of applied R&D, the tax revenues received by the provincial government from spin-off economic activity are likely much higher for a dollar spent on applied research, compared to the same expenditure made in a traditional R&D environment where the funding is allocated to both pure and applied research.

Furthermore, applied R&D develops not only new products and processes offered for sale, but often also results in operating cost reductions, which are reflected on financial statements in the form of higher profitability. Such productivity gains benefit the Province through increased corporate tax revenues.

A conservative approach to measuring the tax revenues generated by applied research is to determine the additional income tax that results from the economic impact, indicated above. The following assumptions are used in calculating tax revenues:

- 65 percent of economic activity reported above is labour income.
- Per CCRA's 2015 tax table, 22 percent federal tax, and 11 percent provincial tax.

Based on these assumptions, the following impact (GDP) plus federal and provincial tax revenues are generated for each multiplier:

MULTIPLIERS		CUMULATIVE	ANNUAL	FEDERAL TAX	PROVINCIAL TAX	TOTAL TAX
Conservative	4	$40.3	$8.1	$1.2	$0.4	$1.5
Realistic	8	$80.6	$16.1	$2.3	$0.7	$3.0
Optimistic	12	$121.0	$24.2	$3.5	$1.1	$4.6
BC Tech	18	$181.4	$36.3	$5.2	$1.7	$6.8
NASA	23	$231.8	$46.4	$6.6	$2.1	$8.7

CONCLUSION

BCIT, as an economic entity with 2,434 employees operating in the province of British Columbia, generated a short-term impact of $467 million and supported 10,151 jobs, directly or indirectly.

In 2016, the 7,897 apprenticeship completers and graduates of BCIT earned $324 million annually in gross income, which is $129 million more than they would have earned if they had not pursued higher education. Further, because they chose BCIT, they will earn a premium of $49 million, or 19 percent, more than the system average income (excluding the research universities).

The overall impact of BCIT on the economy is $2.6 billion ($2.45 billion net impact). The totals are summarized as follows:

Table 13: Summary of BCIT's Value Added to the Economy

	GROSS INCOME (MILLIONS)	NET INCOME (MILLIONS)	TAX REVENUE (MILLIONS)
Value Generated from BCIT Operations	$467	$467	$79
Value Added by BCIT Graduates	$324	$129	$42
Value Added by Applied Research Initiatives	$16	$16	$3
Value Added by Alumni	$1,837	$1,837	$239

The investment in education, as measured by the increased tax revenues associated with a BCIT education, is 18.7 percent and the payback period is six years after graduation. The overall annual tax contribution related to BCIT's various activities is $321 million dollars.

BCIT'S ECONOMIC IMPACT

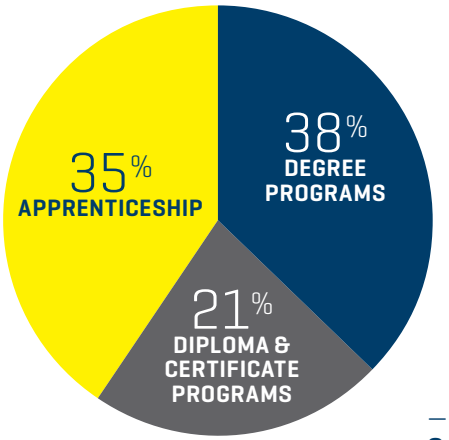
EDUCATION FOR A COMPLEX WORLD.

BCIT™

BCIT BENEFITS THE PROVINCE

The value of new hires with a BCIT credential is forecasted at **$377 million for 2016** and estimated to have a total value for the **next five years of $2 billion**.

Return on investment*



ANNUAL FIGURES 2016

$807M
BCIT's overall economic impact on the economy (gross income)

10,151
Jobs supported by BCIT (directly or indirectly)

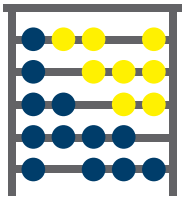
$324M
Total graduate income

$1.84B
Total spending by alumni

BCIT produces **1/3** of BC's credentials in 2016 in:**

- Finance, Insurance, Real Estate & Leasing
- Construction
- Manufacturing

2,150 BCIT graduates entered BC's **Health Sciences** Services and Professions sector in 2016.



For every $1M in taxes, BCIT contributes the following:

$1M ▷ BCIT 〓 $3.54M in regional economic activity

$1M ▷ BCIT 〓 76 jobs created

OPERATIONS

The total economic impact of BCIT operations is $439 million. This includes:

$195M
salaries and compensation

$93M
spending on goods & services

$151M
spending by students & visitors

2015/16 STUDENT FACTS

	Apprenticeships	Diploma & Certificate	Degree
BCIT graduate wages	$31/hr	$23/hr	$68,000
System-wide wages**	$28/hr	$20/hr	$50,000
Premium	11%	15%	36%

BCIT's indigenous students earn over $60M annually.

The additional value of indigenous learners getting an education at BCIT is $32M annually.

3,125 international students attended BCIT in 2015/16, creating an overall **economic impact of $189 million**.

*Return on investment is calculated by internal rate of return calculations for cost-per-graduate.
**System-wide comparisons exclude research universities.

MCD 3264, JUNE 2017

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