

# Changes in K-12 Education

*Implications for the BC Post-Secondary System*

*Prepared for BCCAT by Dr. Fiona A.E. McQuarrie*

*November 2016*



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# K-12 Changes in Education

## *Implications for BC Post-Secondary Education*

### Introduction

It is generally assumed by educators that the K-12 curriculum – the curriculum used in primary, elementary, and secondary education – will affect students’ post-secondary educational experiences and their ability to enter the workforce. The content of the K-12 curriculum provides students with foundational knowledge and skills which are then built up at the post-secondary level. K-12 education is also intended to develop students’ general academic skills, such as reading comprehension, writing ability, researching ability, and presentation skills. These skills are also further developed in post-secondary education, which most British Columbia high school students will undertake at some point (Heslop, 2016).

There are also connections between the structure and content of K-12 curricula and post-secondary education. For example, the courses a student has taken in high school, and the grades they receive for those courses, will affect that student’s eligibility for particular post-secondary programs. A high school student’s academic experiences may also affect the conditions

The K-12 curriculum is only one of many factors that may affect students’ K-12 experiences and academic performance, their choice or ability to pursue post-secondary studies, and their post-secondary academic experiences.



under which a student is admitted to post-secondary study. For example, if a student’s high school grades do not meet the admission standards for a particular post-secondary program, the student may be required to take additional courses or to successfully complete a standardized test before they are formally admitted into the program. Also, in order to assess the likelihood of an applicant succeeding in post-secondary studies, nearly every post-secondary institution requires applicants to provide documentation of their high school academic performance. This documentation incorporates assessments of student achievement expressed in grades or percentages, and is based on the assumption that different levels of achievement or knowledge acquisition are associated with the range of values used in these assessments.

Despite these effects and connections, however, accurately measuring whether K-12 curriculum changes affect students’ post-secondary experiences is challenging. The K-12 curriculum is only one of many factors that may affect students’ K-12 experiences and academic

performance, their choice or ability to pursue post-secondary studies, and their post-secondary academic experiences. Perhaps because of this wide range of potentially influential factors, research that explores connections between K-12 education and post-secondary education has tended to focus on specific demographic student groups, or on academic performance in specific subjects. While the results of such research are undoubtedly useful for understanding connections within a particular setting, these results cannot be reliably generalized to the entire K-12 or post-secondary system – because what may be true in a specific situation may not necessarily be true for the systems within which that situation resides. Furthermore, many large-scale revisions of K-12 curriculum have occurred too recently for research to be able to accurately identify any effects these changes have had on students' post-secondary experiences, in addition to there being too many variables to isolate in a meaningful causal relationship.

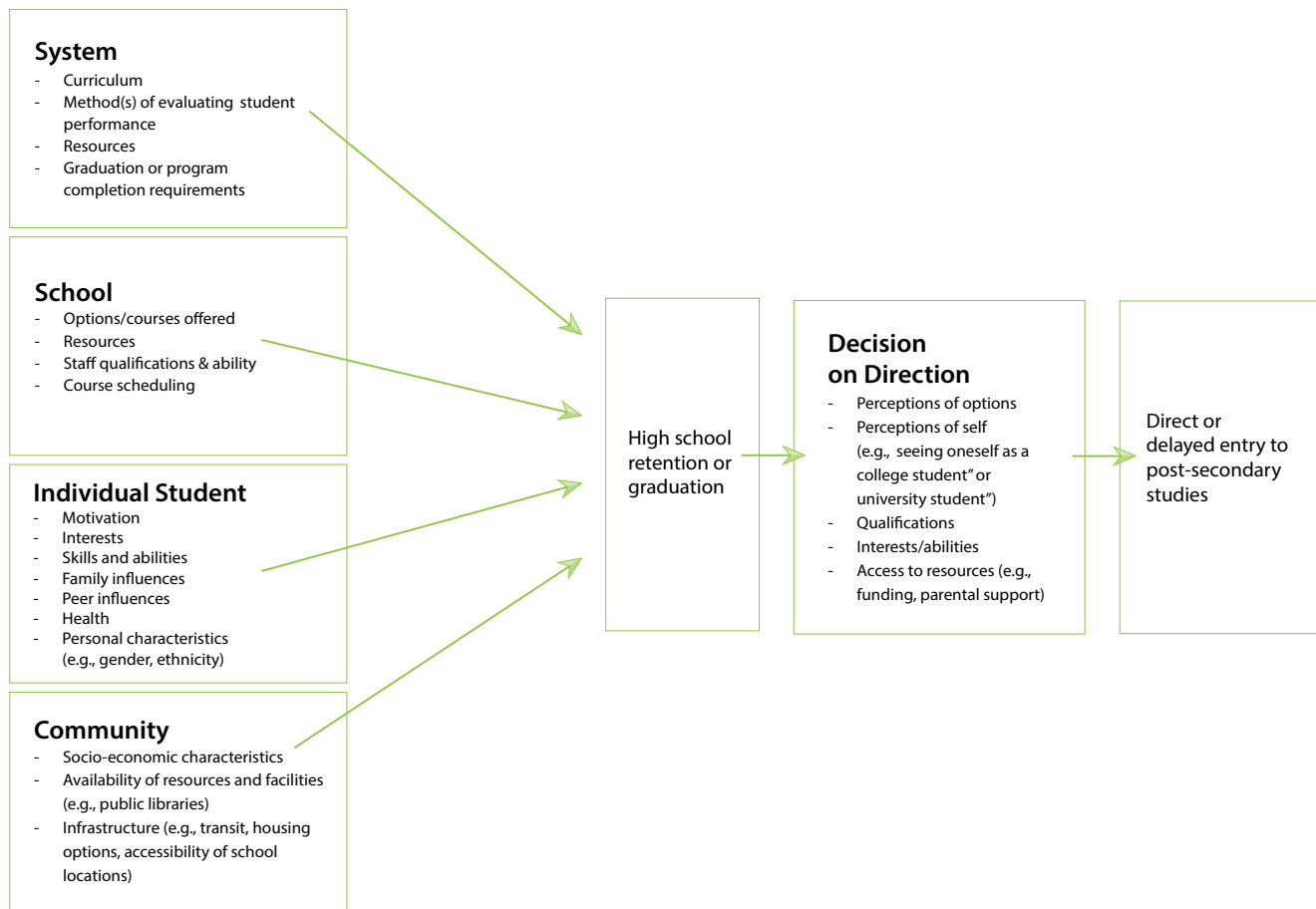
Because of these limitations, this report will take a multi-faceted approach to addressing the impact of changes in the K-12 curriculum on students' post-secondary experiences. First, the report will review the general findings of the literature examining influences on students' K-12 outcomes and subsequent post-secondary experiences. Second, the report will review several types of K-12 reforms to illustrate the potential scope and processes associated with such changes. Third, the report will review specific examples of curriculum change and whether there is research on their effects on post-secondary education. Finally, the report will examine the practical and operational implications of K-12 curriculum and program change for post-secondary institutions. While this approach will clearly not provide a definitive answer to whether or how K-12 curriculum changes affect students' post-secondary experiences, it will provide information on the issue that may provide a basis for further, more specific discussion, action, or research.

## Literature Review

A literature review was conducted to identify studies that examined factors influencing students' academic outcomes in K-12 education, and to identify any studies that related students' K-12 academic outcomes to their post-secondary academic outcomes. The databases used in the review were Academic Source Complete, ERIC [Education Resource Information Center], JSTOR, PsycInfo, and Teacher Reference Centre. The findings in the identified literature were used to develop a theoretical model that depicts the relationship between variables affecting students' K-12 experiences – including curriculum changes – and students' post-secondary academic experiences. The model is presented in Figure 1.

The results of studies conducted in several different countries, across different time periods, and among different demographic groups consistently indicate that students' academic performance in high school is a predictor of their academic performance in post-secondary studies (see e.g., Diseth, Pallesen, Brunborg & Larsen, 2010; Harackiewicz, Barron, Tauer, Elliot, 2002; McArdle, Paskus, & Boker, 2013; Wintre, Dilouya, Pancer, Pratt, Birnie-Lefcovitch, Polivy & Adams, 2011; Wouters, Germeijs, Colpin & Verschueren, 2011). Results from standardized tests, such as the Scholastic Aptitude Test (SAT) and the ACT test, can also be predictors of post-secondary academic performance, either on their own or in combination with other variables such as high school grade point average (see e.g., Bridgeman, Pollack & Burton, 2008). The authors of these studies acknowledge that many other variables related to students' high school experiences can also have an impact on students' post-secondary academic performance. However, the predictive value of these variables is not as easily identifiable, and different variables may have different impacts. For example, parental and peer

Figure 1. **Relationship Between Post-Secondary Experiences and Factors Relating to K-12 Student Experiences**



expectations may affect students’ high school grades both directly and indirectly (Christofides, Hoy, Milla & Stengos, 2015).

Thus, the theoretical model presented in Figure 1 indicates that the relationship between K-12 curriculum changes and students’ post-secondary experiences has many intervening variables affecting the direction and strength of the relationship. Curriculum and curriculum

change are only two of many multi-faceted variables that can affect whether an individual student stays in or completes high school. If a student successfully completes high school, then s/he must decide whether to enter into post-secondary studies – a decision which may be influenced by variables other than the student’s K-12 educational experience, such as whether the student or their family has sufficient financial resources for further education. If the student does apply and

is admitted to a post-secondary institution, then the relationship of the K-12 curriculum to the student's post-secondary experiences may be further modified by the effect of other variables, such as the type of program the student enrolls in, or the student's individual circumstances and personal characteristics.

To further attempt to understand how K-12 curriculum changes might relate to students' post-secondary experiences, we now examine specific types of K-12 curriculum changes, and the potential effects of each type of change.

## Types and Effects of K-12 Curriculum Change

The first step in examining the types and effects of K-12 curriculum change is to look at the possible motivations for such changes. The Organization for Economic Cooperation and Development (OECD), in its 2015 publication *Education Policy Outlook: Making Change Happen*, provides a useful analytical framework linking "policy levers" to reasons for change and how those changes might be accomplished. The OECD's definition of "policy levers", based on the definition developed by Rivzi and Lingard (2010), is "the governing instruments which policy makers have at their disposal to direct, manage and shape change in public services [and] the range of functional mechanisms through which government and its agencies seek to implement policies" (OECD, 2015, p. 30). The OECD also categorizes potential changes into categories of changes related to students, to institutions, and to systems. The OECD framework is summarized in Table 1.

The OECD framework highlights two important characteristics of K-12 system change. First, the framework identifies three distinct sectors in the K-12 system – stu-

dent-related, institution-related, and system-related – and identifies different types of change that might occur in each sector. Second, the framework suggests that to maximize the chances of any type of K-12 change being successful, the desired outcomes of the change need to be clearly identified, and appropriate "policy levers" must be identified and used to create the change and to achieve the desired results.

As Table 1 indicates, the OECD considers curriculum to be a "policy lever" in the institutional sector. The OECD classification associates curriculum with the goal of strengthening program delivery in order to influence student achievement. Given that association, it would then be reasonable to assume that curriculum change is also a policy lever and would most effectively be used to change program delivery and thus affect student achievement. Changes in expectations of students at the K-12 level could potentially have an impact on a number of factors in post-secondary education, including program eligibility, admissions, program or course placement, and student performance.

It is also important to consider specifically what types of curriculum change could occur in the K-12 system. For the purpose of this analysis, we identify two different types of changes. Changes to the curriculum itself might include updating content, adding or deleting subjects or courses, modifying course sequencing, or adding themes that would influence how different topics were presented – for example, the addition of a First Nations or indigenous perspective to courses such as science, social studies or history. Alteration to program elements could involve changes to student evaluation methods or completion standards – for example, the introduction of a capstone project or a portfolio as a high school graduation requirement.

This distinction is important because, as with the differences between the sectors in the OECD framework, curriculum and program element change would have

Table 1. **Policy Levers for K-12 System Changes**

	Desired Outcome	Examples of Potential Policy Levers
<b><i>Student Related</i></b>		
Equity	Ensuring that personal and social circumstances do not hinder achieving educational potential	<ul style="list-style-type: none"> <li>- Investment in early childhood education and care</li> <li>- Adjustment of system-level policies (e.g., early tracking, ensuring pathways to secondary school completion)</li> </ul>
Quality	Ensuring that all individuals reach a basic minimum skill level	<ul style="list-style-type: none"> <li>- Funding strategies to meet school and student needs</li> </ul>
Preparation for the future	Preparing students for higher education and/or the labour market	<ul style="list-style-type: none"> <li>- Ensuring effective transitions from secondary to post-secondary education</li> <li>- Strengthening links between education and the labour market</li> <li>- Assuring quality and equity in post-secondary education</li> </ul>
<b><i>Institution-Related</i></b>		
School Improvement	Strengthening delivery of education in schools that can influence student achievement	<ul style="list-style-type: none"> <li>- Learning environments (including class size, curriculum, instruction time, and learning strategies)</li> <li>- High-quality teaching (including teacher recruitment and selection, working conditions, pay, and career opportunities)</li> <li>- High-quality school leaders (including attracting, training, and retaining principals)</li> </ul>
Evaluation and assessment	Supporting measurement and improvement of school system's outcomes	<ul style="list-style-type: none"> <li>- System, program, and policy evaluation</li> <li>- School evaluation (internal, external, and leadership)</li> <li>- Teacher appraisal</li> <li>- Student assessment (formative and summative)</li> <li>- Evaluation and assessment frameworks</li> </ul>
<b><i>System-Related</i></b>		
Governance	Ensuring effective planning, implementation, and delivery of policies	<ul style="list-style-type: none"> <li>- Formal structures (including locus of decision-making)</li> <li>- Defining national educational goals and priorities</li> <li>- Engaging relevant stakeholders</li> </ul>
Funding	Ensuring effective and efficient investment in education systems	<ul style="list-style-type: none"> <li>- Economic resources (including public investment)</li> <li>- Use of resources (time, human, and material)</li> </ul>

Source: OECD (2015)



different effects, and thus have different implications for post-secondary education. Changes to the curriculum could affect students' preparation for post-secondary study, and could also require adjustments to post-secondary curricula to ensure that students are not repeating material they have already mastered, or that they are not being expected to build on knowledge that they have not acquired. However, the effect of these changes would be moderated by factors such as the disciplines in which the changes took place. For example, changes to the curriculum of high school trades courses would not affect post-secondary institutions that did not offer trades programs, nor would they affect the post-secondary experiences of students not enrolled in trades programs or trades-related courses.

Changes to program elements could affect post-secondary education by, for example, affecting application requirements and assessment, or affecting student placement in programs or courses. The effects of these changes would be moderated by the extent of the change and the timelines of the change. For example, the addition of a capstone project or portfolio as a high school graduation requirement would not necessarily affect post-secondary admissions procedures if the established measures of high school academic performance (e.g., grades or percentages) were used to assess students' achievement in meeting that requirement. The effect of such a change on post-secondary students' experiences is less clear. For example, if students are accustomed to having their academic performance in high school evaluated with a system not based on grades, they might have difficulty adjusting to the standard forms of student evaluation used in post-secondary courses. But whether this becomes a problem for the student or the post-secondary institution could also depend on the individual student and their capacity to adapt. Along similar lines, large changes to post-second-

ary program elements with a relatively short timeline for implementation would have different implications for post-secondary education than smaller changes with a longer or more gradual implementation schedule. (Some of these issues will be discussed in more detail in the section on operational and practical implications for post-secondary education of K-12 curriculum change.)

## Examples of K-12 Change and Research on their Effects and Implications

Further information on the effects of change in the K-12 system, and their implications for post-secondary education, may be collected by looking at examples of actual changes. Tables 2 and 3 summarize some examples of curriculum and program element changes, in different regions of Canada and elsewhere. The tables also summarize the results of any identified research on the effects of the changes, and any stated implications for post-secondary institutions. To gain a balanced perspective on the effectiveness of these changes, the cited research on outcomes is restricted to research conducted by third parties that has been published in peer-reviewed academic journals.

Table 2. **Examples of K-12 Curriculum Change**

Location of Change	Type of Change	Research on Impact of Change?	Results of Research and/or Implications for Post-Secondary Education
Scotland	'Higher Still' reform; all upper-secondary academic and vocational curricula for students 16 and older merged into seven-level 'climbing frame' with flexible exit and entry points.	Yes (Raffe, Howieson & Tinklin, 2007)	University-entry level of the 'frame' was the least-changed part of the system, because of the admission requirements of universities. Secondary-level vocational courses did not replace college vocational courses, which colleges had feared. No significant increase in student attainments occurred after the changes.
Scotland	'Curriculum for Excellence' reform: broad general education followed by "senior phase of learning"; new set of National Qualifications implemented in 2014/15 and 2015/16.	None identified	Scotland Government Ministry of Education website states that "all 19 higher education institutions in Scotland have published statements setting out how their admissions policies will respond to Curriculum for Excellence".
New Zealand	New Zealand Curriculum implemented in 2007; identifies a set of values, five key competencies, and eight key learning areas; designed for both English-medium and Maori-medium state schools.	None identified	Emphasis of the curriculum is on developing learning pathways that match students' interests and aspirations. Some partnerships have been developed that allow students to take post-secondary courses while enrolled in upper-level secondary studies.
Quebec	Quebec Education Reform starting in 2000; emphasis on three key principles (to educate, socialize, and qualify), with increased class hours for specified subjects (e.g., French, history, citizenship), more stringent graduation requirements, and increased autonomy for schools.	No quantitative research was identified. Qualitative assessments are mixed, noting that not all desired outcomes, such as evaluation of cross-curricular competencies, were fully achieved; some measures of student performance, such as high school graduation rates, have not significantly improved; and that resistance occurred because the reforms were complex and not clearly explained.	CEGEP is identified as a destination in the "general applied training path" and the "general learning path". University is not a direct entry point but follows after CEGEP in these two paths.

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Table 2. **Examples of K-12 Curriculum Change** (cont'd)

Location of Change	Type of Change	Research on Impact of Change?	Results of Research and/or Implications for Post-Secondary Education
United States	Detracked math curriculum (all students taking same introductory college-prep math topics).	Yes (Horn, 2006) looking at outcomes in two schools)	The research is a case study of differences in teaching techniques between traditional and detracked math classes. Footnotes in the research indicate that on standardized exams, students in the detracked classes outperformed students in traditionally structured classes.
United States	High Schools That Work (HSTW)- national initiative including detracked math and science courses, offered in “pipeline” sequence progressing toward level of mastery needed for post-secondary admission.	Yes (Miller & Mittleman, 2012), looking at outcomes from 18 schools in one state)	The research compares course outcomes pre- and post-HSTW implementation. There was no indication that HSTW increased college readiness. The HSTW structure also may reduce the persistence rates of disadvantaged students.
Canada	Western and Northern Canadian Protocol common curriculum frameworks for English (K-12, 1998), mathematics (K-9, 2006) and 10-12, 2008), Aboriginal language and culture (K-12, n.d.), international languages (K-12, 2000), and social studies (K-9, 2002).	None identified	Where implemented, the protocol frameworks may affect content/sequencing of post-secondary curriculum, content of post-secondary placement tests, and admission standards related to student achievement or mastery in the relevant subject areas.
Hong Kong	Learning to Learn curriculum reform, (2001); Basic Education curriculum (Primary 1-6) updated in 2014, Secondary Education curriculum update scheduled for 2015; seven learning goals with focus on three skill areas (basic, thinking, and personal/social), and promotion of STEM skills.	None identified in English	The Joint University Programmes Admission System uses grades from Hong Kong Diploma of Secondary Education examinations.

Table 3. **Examples of K-12 Program Elements Changes**

Location of Change	Type of Change	Research on Impact of Change?	Results of Research and/or Implications for Post-Secondary Education
Germany	Introduction of standardized state-wide exit examinations in high school subjects	Yes (Merki & Holmeier, 2015)	Research compared exit exam results with results of standardized achievement tests in advanced mathematics courses. Data were taken from four years of results from all high schools in a single state. At the school level, across time the differences between schools on the results of the state exam became closer to the differences between schools on the results of the standardized test.
Russia	Introduction of Unified State Examination [USE] (combined high school graduation/ university admission exam) in 10 subjects in 2001; accompanied by new university application system that allows applicants to simultaneously apply to as many as five institutions.	Yes (Ampilogov, Prakhov, & Yudkevich, 2014; Khavenson & Solovyeva, 2013; Kovaleva, 2005; Luk'yanova, 2012)	USE results across time showed improvements in students' mastery of basic skills. The centralized exam system was not always responsive to specific regional or demographic conditions. Students with higher USE scores were more likely to apply to multiple institutions. USE results correlate to first-year university performance but less strongly to performance in subsequent years.
United States	More rigorous state-level graduation requirements in high school mathematics in several states.	Yes (Daun-Barnett & St. John, 2012)	The change in requirements increased student performance on SAT tests, but did not affect college continuance rates.
United States	High school student athletes wanting to play NCAA college sports had to undergo academic evaluation by NCAA to be eligible.	Yes (McArdle, Paskus & Boker, 2013)	High school grades were the best predictor of first-year college grades; ACT and SAT scores were the next best predictors.

The contents of these tables are by no means comprehensive lists of curriculum or program element changes, but they do highlight several issues around assessing the effects of K-12 changes on post-secondary education. First, the nature of curriculum or program element change is dependent on the design of the K-12 education system in the specific jurisdiction, and on the outcomes that the change is intended to achieve. Second, K-12 curriculum or program element change has been

used as a mechanism to achieve a range of different outcomes, from improving student learning to supporting a wider range of student qualifications or career and education options. Third, it is often unclear whether or how these changes affect post-secondary education, beyond the general acknowledgement that changes in the K-12 system have the potential to affect the post-secondary education system. Thus, it is not feasible to draw definitive findings from these examples.

# Practical Implications of K-12 Curriculum Changes for Post-Secondary Institutions

The final part of this analysis outlines some potential practical and operational implications of K-12 curriculum changes for post-secondary institutions. The two areas of post-secondary education where changes in K-12 curriculum or program elements are likely to have the most impact are admissions and course/program design. The range of potential implications for post-secondary institutions in both areas indicates the importance of post-secondary institutions being involved in the planning and design of K-12 curriculum changes.

## Admissions

In order to set appropriate admission standards – to ensure that students are adequately prepared for post-secondary study, and to maximize students’ chances of academic success – post-secondary institutions need to be aware of the content of relevant high school courses, and to design admission standards in accordance with that content. Admission standards also must be designed in accordance with the content of the institution’s own courses, particularly at lower levels, so that entry-level students are admitted with the content knowledge and mastery appropriate for those courses.

To be able to set appropriate admission standards, then, post-secondary institutions must be involved as early as possible in the process of developing K-12 curriculum changes, particularly if those changes are to occur at the secondary level where courses have the most direct connection to post-secondary courses. Changes to post-secondary admission standards also must go through internal approval processes at post-secondary institu-

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tions – processes which are important to ensure that the changes are appropriate and will achieve the desired outcomes. Thus, post-secondary institutions ideally will also participate in determining timelines for the implementation of K-12 curriculum changes; at minimum, post-secondary institutions need to be fully informed of the content of any such changes and the schedule for their implementation, so as to have adequate time to design and implement whatever adaptations may be needed as a result.

If K-12 curriculum changes involve changes in methods of student evaluations, post-secondary institutions may have to adjust their application requirements (as in changing the type of documentation required in support of an application), their methods of evaluating admission applications, or both. If this type of change involves a non-standard form of student evaluation, such as a portfolio, post-secondary institutions will need to determine how demonstrations of students’ skills or knowledge in these formats relate to the skills or knowledge considered necessary for admission and for maximizing students’ opportunities for success. If the change involves the introduction of a skills test to assess competencies – such as the provincial numeracy and literacy tests proposed for the BC secondary curriculum (BC Ministry of Education, 2016) – in place of standardized course-specific exams, post-secondary institutions will need to know what specific skills the tests assess and how the test results demonstrate students’ abilities in the relevant competencies. Post-secondary institutions will then need to determine

It is worth noting that the current admission processes at most BC post-secondary institutions have options for applicants with non-standardized secondary- or high school-level credentials.

how test results relate to the skills and knowledge that the institutions have determined are appropriate for admission, and that give students the foundation necessary for academic success at the post-secondary level.

Curriculum changes will pose a particular challenge to admissions at post-secondary institutions if the changes introduce personalized learning options allowing students to choose the material they wish to study or concentrate on – particularly if these choices are available within the framework of a standardized course title. If students are each acquiring different knowledge and skills while receiving credit for the same course, post-secondary admissions procedures will be tasked not only with assessing what each student has learned within each individualized course, but also determining how much that individualized knowledge has prepared the student for post-secondary studies.

It is worth noting that the current admission processes at most BC post-secondary institutions have options for applicants with non-standardized secondary- or high school-level credentials. Some institutions require or recommend that such applicants complete a standardized and recognized measure of achievement, such as the provincial Dogwood Diploma or Adult Graduation Certificate. Additionally, many BC post-secondary institutions have internal forms of evaluation to assess entering students' skills or accomplishments, such as placement testing in mathematics or English, and PLAR (Prior Learning Assess-

ment and Recognition) policies. The existence of these mechanisms indicates that post-secondary institutions are able to design and implement admissions processes that can adapt to non-traditional measures of student achievement or credential completion. However, it seems reasonable to assume that the majority of applicants for admission to BC post-secondary institutions have acquired credentials from recognized and relatively formalized K-12 education systems. Thus, large-scale change to student evaluation formats or methods in the K-12 system might mean that post-secondary institutions would have to expend considerable time and resources either on redesigning admissions processes, or on internally- or externally-conducted tests or evaluations of applicants' relevant skills or competencies to ensure appropriate admission or program placement.

Two scenarios indicate the implications of incorporating non-traditional forms of K-12 assessment into post-secondary admissions processes. First, the work associated with the use of PLAR at many BC post-secondary institutions – requiring the establishment of acceptable common standards for evaluations of portfolios or documentation, ensuring evaluators are appropriately trained or qualified, and accurately mapping the results of PLAR evaluations onto course or program credit – suggests the scope of the work that would be needed to create reliable and useful assessment methods for non-standardized post-secondary application materials. Second, when the University of British Columbia moved to a broad-based application system that included “personal profiles” of applicants – with each profile read by two assessors – “50,742 assessments of applicant personal profiles were conducted to select the 2014 incoming class of UBC students” (Farrar, 2015, p. 7). This experience suggests that a province-wide movement to non-traditional assessment in the K-12 system could require post-secondary institutions to incur substantial cost and effort in adjusting and operating their admissions processes.

Changes to high school graduation requirements could also require adjustments in the content or structure of post-secondary courses or programs, particularly at lower levels.

Post-secondary admissions processes are implicitly based on the assumption of discrete levels of knowledge or abilities in required subject areas. There is increasing interest in interdisciplinary course and program offerings in post-secondary education; however, secondary-level curriculum focused on developing cross-curricular competencies, such as those proposed by the BC Ministry of Education (2013), would pose a challenge to post-secondary admissions processes because of the subject-specific and specialized structure of post-secondary education. A secondary-level curriculum that assessed student achievement in cross-curricular competencies in addition to, or in place of, assessments of specific knowledge or skill acquisition would require post-secondary institutions to determine how cross-curricular competencies would fit admission standards based on subject-specific knowledge, and then to redesign their admissions processes accordingly.

It should also be noted that different post-secondary institutions in British Columbia tend to appeal to different groups of applicants. Students with non-traditional credentials, or who have not achieved particular academic qualifications, may apply to a local or regional post-secondary institution where they can enter into post-secondary education at their own pace or level. This means that changes in K-12 curriculum may have different impacts on application or acceptance processes at different BC post-secondary institutions, depending on the academic experience that applicants generally bring to a specific institution, and how the institution assesses that experience.

## ***Courses/Programs***

The practical implications of K-12 curriculum changes on post-secondary courses or programs may depend on a number of factors. One is the amount of choice or flexibility in any revised K-12 system, especially at the secondary levels. If the amount or type of required coursework changes, or if there are changes to the amount or type of elective courses or access to other learning opportunities (e.g., practica, work experience, international study), these could affect post-secondary courses and programs in the relevant areas. The importance of this integration is shown by the results of a recent study sponsored by the Higher Education Quality Council of Ontario (Dooley, Payne, Steffler & Wagner, 2016), which looked at factors affecting high school students' progression into post-secondary STEM programs. In the authors' words, "the most important reason for failure to prepare for a university STEM program is the rate at which students stop taking university and mixed courses in science at Levels 3 and 4. These are the levels when courses in these subjects are no longer required for the Ontario Secondary School Diploma" (p. 13). Thus, students' preparation for post-secondary studies is strongly influenced by what is or is not required for high school graduation – which then affects the knowledge or expertise in the subject that students bring to their post-secondary studies. Such changes may then create the need for post-secondary institutions or programs to redesign their courses, course sequencing, or program content.

Changes to high school graduation requirements could also require adjustments in the content or structure of post-secondary courses or programs, particularly at lower levels. For example, if there is a reduction in the minimum grades or percentages required for graduation, the content of 100-level or introductory post-secondary courses might have to be adjusted, on the assumption that entering students would have less proficiency in

the subject matter than in previous years. Changes in how the academic performance of high school graduates is evaluated might also require changes in course or program content, particularly across related courses within a single discipline or subject. For example, if high school graduates took a literacy or numeracy test rather than receiving a grade in a specific math or English course, that might require post-secondary programs to assess the fit of the competencies associated with the results from those tests with the sequence of learning within their program curriculum. That in turn might require changes in course sequencing or course content, to ensure either that students were placed in the appropriate introductory course, or to accommodate any additional skill development that might be considered necessary before students could proceed to more advanced study.

In many BC post-secondary institutions, specific programs have admission standards in addition to the standards for admission to the institution itself. If completion of particular K-12 courses is required for admission to specific post-secondary programs, any changes to those courses – either in content or in evaluation methods – would require those program programs to review and/or adjust their own admission standards. Similarly, if specific post-secondary courses have pre-requisites based on achievement in a K-12 course (e.g., a specific grade in English 12 as a pre-requisite for admission to a particular 100-level English course) changes to the K-12 course, or changes to how achievement in the course or the relevant subject is evaluated, could require changes to the post-secondary course for which that course is a pre-requisite.

K-12 programs structured to develop cross-curricular competencies, and other forms of K-12 learning not structured as completely separate courses, already have parallels in some BC post-secondary programs, such as the Arts One and Science One programs at UBC and the

K-12 programs structured to develop cross-curricular competencies, and other forms of K-12 learning not structured as completely separate courses, already have parallels in some BC post-secondary programs.

interdisciplinary “block” courses at Quest University. However, if cross-curricular program structures became the dominant mode in BC’s K-12 programs, that would require significant adaptations in post-secondary education – not only in admissions processes, as described above, but also in accommodating students not used to a curriculum based on discrete course units and subject-specific specialization.

Changes to individual programs or courses at specific post-secondary institutions, as a result of making adjustments to accommodate K-12 curriculum changes, would also have implications for transfer credit agreements between or across post-secondary institutions. This would be of particular concern if course content at some institutions was adjusted differently than at other institutions, to accommodate students graduating from Grade 12 with different skill levels or different learning experiences. For example, if, after a K-12 curriculum change, an institution in one region adjusted the content of its 100-level courses to accommodate the knowledge or skills that high school graduates in that region generally acquired, the transferability of those courses would be negatively affected if similar adjustments were not being made at other institutions participating in the transfer credit agreements involving those courses.

Finally, in addition to including post-secondary institutions in consultations and planning of K-12 curriculum changes, it is vitally important that post-secondary



instructors be included in these processes as well. In some parts of the BC education system, there are already established linkages between secondary school teachers and post-secondary instructors; for example, several articulation committees within the BC Transfer System include representation from secondary school instructors in the relevant subject areas. Additionally, post-secondary instructors have subject matter expertise and pedagogical knowledge that would be extremely valuable in designing K-12 curriculum changes that would better prepare students for success in post-secondary studies, if they wish to pursue that pathway after high school graduation.

At the very least, post-secondary instructors, like post-secondary institutions, need to be informed of the content of K-12 curriculum changes in order to assess the potential impact of those changes on their courses and program. Being informed of these changes well in advance is also crucial for any needed course or program revisions – such as course content, course sequencing, or program requirements – to reduce difficulties in students’ transition from secondary to post-secondary studies.

## Conclusion

The literature reviewed for this report indicates that changes in K-12 education structures and process are only one of many factors affecting students’ experiences in secondary education; thus, such changes cannot clearly be linked to students’ subsequent experiences in post-secondary education. However, because changes in K-12 education can affect many aspects of post-secondary education, it is clear that such changes need to be designed to achieve specific outcomes, and need post-secondary participation in the planning and implementation process.

As indicated by the OECD analysis quoted in the report, a successful change in K-12 education has a clearly defined set of desired outcomes (e.g., improved readiness for employment; improved performance on knowledge or skill assessments; better preparation for post-secondary admission or credential completion) and is accompanied by the use of the most appropriate “policy levers” to generate the desired change. Changes in K-12 curricula and program elements both have implications for processes and structures post-secondary education; thus, even if post-secondary access or success is not explicitly stated as a reason for change in a K-12 system, post-secondary education needs to be considered in the change because the majority of secondary school students will eventually undertake some form of post-secondary education.

The discussion in the third part of this report indicates the wide range of potential adjustments or changes that might be necessary in different parts of the BC post-secondary system to respond to different forms of change in the BC K-12 system. The possible extent of these changes, and the amount of resources that would be needed to design and implement such changes, emphasizes the importance of ongoing, formal linkages between the BC K-12 system and the BC post-secondary system. Such linkages would facilitate meaningful and timely input from one system if changes are being considered in the other system, and would support change processes in each system that complemented and supported the work of the other system. Such linkages would also support cost-effective and responsible uses of resources in both systems. If one system was an active participant in planning changes in the other system, including the extent of the changes and the timeline for their implementation, it would be able to appropriately allocate its own resources to accurately and efficiently adjust its own operations to accommodate the impacts of the change.

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