

# Engaging Teens in Career Development through Technology: A Case Study in Canada

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**Abstract:** Countries and educational jurisdictions are finding innovative ways to use technology to enhance teenagers' career readiness and engagement in career development. Countries like Canada are known to seek creative solutions for high school students. This paper examines the impact of ChatterHigh, winner of the 2017 Canadian Educational Technology of the Year, on users. Results of this study reveal that ChatterHigh usage has a positive impact on students' access to relevant career and labor market information, awareness of post-secondary and work opportunities, engagement in school and personal career planning, preparedness for transitions, and hope for the future. This paper also identifies the need for career development tools in countries such as China, which have been facing significant systemic challenges to support their students due to a myriad of historical and cultural factors.

## Introduction

Compared to rates before the 2008 recession, youth unemployment continues to be elevated in many regions globally. In Canada specifically, youth underemployment remains a serious and growing challenge for young people (The Canadian Career Development Foundation; CCDF; 2015). For more than 10 years, Canadian youth have found it difficult to find stable jobs that match their level of education (CCDF, 2014). While this mirrors global trends, Canada is expected to be at the leading edge of economic recovery given its highly educated youth workforce, openness to immigration, and the acculturation of a diverse workforce (Arthur & Flynn, 2011). At the least, Canada is an excellent social laboratory for the study of innovative career interventions targeting young adults.

Studies have shown that students are unprepared for post-secondary life when they leave high school (Code, Bernes, Gunn, & Bardick, 2006). Magnifico (2007) found that employers believe high school does not teach the relevant skills needed in the workplace and

that students are not able to link coursework to work after high school. The challenging complexity of the 21st-century world of work seems to be overwhelming traditional models of education. Research also demonstrates that inadequate vocational education, coupled with weak links between labor-market learning and skill requirements (Bruce & Marlin, 2012), may result in students requiring additional post-secondary courses, diplomas, degrees and training to determine career orientation (Bezanson, et al., 2007 ; Sweet et al., 2010). The Council of Ministers of Education, Canada (CMEC; 2017) has identified the need for responsive, comprehensive and coordinated career development services to support youth work and/or post-secondary learning in their Reference Framework for Successful Student Transitions (CMEC, 2017). The purpose of career development is to help students understand their own interests and strengths, grasp the complexities of the labor market, and build the critical knowledge, skills, and strategies needed to support successful transitions within and between education and work.

Career education has been shown to reduce high school dropout (Kotamaraju, 2011) and improve student achievement, especially in key science, technology, engineering and mathematics (STEM) areas. Therefore, efficient career services are seen as a key to increasing economic productivity, the competitiveness of the labor market, employment, and career development and educational attainment (Hughes, 2012). As technological innovations change the way individuals explore and access information about careers, education, training, and employment opportunities, it is recognized that new technologies need to be more closely integrated with professional services and related professional practices (Kettunen, 2017; Sampson & Osborne, 2015).

### **Information and Communication Technology**

The rapid development of information and communication technology (ICT) has dramatically changed society over the past 20 years (Hoonakker, 2014). It transforms access to high-quality labor market information, enabling practitioners and their customers to access relevant information quickly. Social networking, web chats, and online video content all provide users with insight into educational and labor market options. Interactive technology can also provide career guidance in a more personalized way, directly responding to users' information needs (Bimrose, Kettunen, & Goddard, 2015). Through the development of ICT, the technological revolution provides unprecedented access to a variety of information and enables the world to conduct inexpensive and instantaneous communications (Kettunen & Sampson, 2018).

In terms of ICT application in secondary career development, the widespread use of social media platforms, such as Instagram and Snapchat, for communication has prompted professional career practitioners to recognize the need to better understand new technologies (Hooley, Hutchinson, & Watts, 2010). With all

these technological changes and new ways of accessing career services, integrating ICT into career practice is an increasingly complex process (Bimrose et al., 2015).

However, there are several controversies about the successful integration of ICT into career services, such as high-quality hardware, technical support, and student empowerment and participation (Kettunen & Sampson, 2018; Bimrose, Barnes, & Attwell, 2010). Researchers have also found that the effective integration of ICT into career practice depends on policy support, workforce development, the confidence and competence level of career practitioners, and a well-tailored ICT system at both the macro and micro levels (Bimrose et al., 2015).

### **A Case Study - ChatterHigh**

Given all these opportunities and challenges, this article aims to introduce an existing ICT online platform called ChatterHigh. This Canadian-based enterprise is a vehicle used to strengthen key career development and educational outcomes for middle and high school students. ChatterHigh uses technology to engage students in expanding their awareness of postsecondary education and career options, exploring possible pathways, and making more informed choices as they plan for their transitions from high school to post-secondary education and/or work. Capitalizing on gamification and supporting fundraising goals of schools, ChatterHigh endeavors to minimize the burden on educators to make this information accessible to students. In addition, it aims to maximize the motivation of students to actively explore options and resources while building career-related knowledge.

ChatterHigh's online activity includes a daily 10-minute quiz, used in Grade 6 through Grade 12 classrooms. Students receive quiz questions along with a link to the college or career webpages where the answers can be found. Questions are coded with Classification of Instructional Programs (CIP) and Standard Occupational Classification (SOC) codes, and

students score their level of interest and awareness in the occupation or program of study as they progress. This builds a profile for the student while the data is aggregated for the teacher at the classroom level, allowing them to see the interests of the class.

The activity is divided into three units with a set number of questions. The first unit ensures the student is exposed to questions across the major occupational categories. Subsequent units are partially “smart” in that specific questions of each quiz are targeted based on the occupations that the student has expressed as primary interest up to that point. Making only certain questions relevant to areas of interest allows the student the opportunity to continue to discover fields of study or occupations they may not have considered or been aware of while assessing their interest. Each unit ends with a self-reflection which feeds back to students the new institutions and programs they have discovered and those they ranked with the highest level of interest.

After the third unit, the student unlocks an objective recommendation report. This report captures all of the students’ interests and pulls from a complete database of all post-secondary institutional programs in North America to create an objective list of options possible for the student by state/province, country, and continent or world region. This list is tailored based on some preliminary questions the student was asked upon sign-up, such as listing any varsity sport or club that they wish to pursue at the post-secondary level. Students may continue to explore and update their profile and re-run the report at will once it is unlocked. This activity, in a sense, is a unique interest-inventory activity based on the student’s level of interest in programs and occupations they are presented, rather than simply soliciting answers based on what they know about themselves. The premise is that many students are not yet aware of the full range of occupations that exist. Moreover, in this age group, many have not identified what

their interests are, so an iterative exploration activity can be more useful to initiate reflection and discussion.

Students and educators at the high-school level were surveyed regarding the perceived impact of ChatterHigh usage on a range of indicators related to student awareness of and exposure to relevant information on post-secondary education, labor market opportunities, health and wellness, financial literacy, student engagement in school, and career planning.

## **Methods**

### **Participants**

A total of 370 respondents, both ChatterHigh users and non-users, completed the survey - including 279 secondary students and 91 teachers. The survey sample was drawn from a list of past ChatterHigh users, including students and teachers, from across Anglophone and Francophone school districts. The student list included a total of 7,709 students, including 4,756 students from Anglophone school districts and 2,953 students from Francophone districts. The teacher list included 619 secondary educators, with 340 representing Anglophone school districts and 279 from Francophone districts.

**Student Profile.** Overall 279 students, including 216 users and 63 non-users, completed the survey with 57.3% (n=160) from one of the Anglophone school districts and the remaining 42.7% (n=119) from a Francophone district. The respondents were distributed across Grades 9 through 12 but dominantly drew from Grade 10 or 12. While there was a reasonable representation of both male and female students, 60% of respondents self-identified as female. The majority of student respondents represented the Anglophone West school district, District scolaire francophone Nord-Ouest or District scolaire francophone Sud.

Table 1  
*Respondent Profile – Students*

Grade/Gender Identity	Number of Participants	Percentage (n=279)
9	49	17.5%
10	95	34.1%
11	56	20.1%
12	79	28.3%
Male	103	37.0%
Female	168	60.2%
Rather not say	4	1.4%
Other	4	1.4%
Total	279	100.0%

**Teacher Profile.** In addition, 91 teachers from the Anglophone West District. In the completed the survey with over two thirds (68.1%; n=62) coming from one of the English school districts and the remaining 31.9% (n=29) from a Francophone district. As shown in Table 2, over half of the Anglophone responses came from the Anglophone West District. In the Francophone district, the bulk of the responses (over three quarters) came from either the District scolaire francophone Nord-Est or District scolaire francophone Nord-Ouest.

Table 2  
*Respondent Profile – Teachers*

District	Number of Participants	Percentage (n=91)
Anglophone North	7	7.7%
Anglophone South	16	17.6%
Anglophone East	7	7.7%
Anglophone West	32	35.2%
District Scolaire Francophone Nord-Est	13	14.3%
District Scolaire Francophone Nord-Ouest	10	11.0%
District Scolaire Francophone Sud	6	6.5%
Total	91	100.0%

## Research Questions

What is the effect of ChatterHigh on secondary student users?

How do teacher users perceive the impact of ChatterHigh on students?

What are the differences between ChatterHigh users and non-users, if any?

## Resources of Data

Two tailored online surveys were developed: one for secondary students and another for educators. The student survey was comprised of four sections. Section A gathered demographic information (grade level, gender, school district) and information regarding their usage of ChatterHigh. Section B included a series of attribution questions using a 4-point Likert scale to determine the extent to which ChatterHigh usage resulted in changes in the student with respect to a range of indicators related to awareness, exposure, and engagement with information to support career development. This section also included a series of open-text questions about students' views of ChatterHigh (what they liked best and least, their most important learning from ChatterHigh, and their recommendations for changes to ChatterHigh). Section B culminated in direct attribution questions about whether using ChatterHigh was related to their likelihood of studying or working in New Brunswick after completing high school. Students who did not participate in ChatterHigh automatically skipped this section. Section C included a series of forced-choice questions on a range of career information and development indicators to allow for a comparison of ChatterHigh users and non-users. Finally, Section D invited students to enter in a drawing to win a free iPad.

The teacher survey mirrored the student survey in many aspects. It included three sections. Section A gathered data on school district and usage of ChatterHigh. Section B included a series of attribution questions using a 4-point Likert scale to determine the perceived

impact of ChatterHigh usage on their students' awareness, exposure, and engagement with information to support career development. This section also included a series of open-text questions about teachers' views of ChatterHigh (what they liked best and least, the most important learning derived by students from ChatterHigh, and their recommendations for changes to ChatterHigh). Section B culminated in direct attribution questions regarding the impact of ChatterHigh usage on student perceptions of post-secondary education and/or work in New Brunswick. Teachers who did not participate in ChatterHigh automatically skipped this section. Finally, section C included a series of forced-choice questions on the career preparedness of students to allow for a comparison of ChatterHigh users and non-users.

## Procedures

Teachers all received personal email invitations from the Canadian Career Development Foundation (CCDF) and all students received an automated invitation via the online platform hosting the survey. A second invitation was sent to those who had not completed the survey at the mid-point of the active survey period. Invitations sent to students and teachers were in both English and French.

In addition to contact lists provided by ChatterHigh, there was active outreach to professional networks to promote survey completion. Representatives from the New Brunswick Department of Education and Early Childhood Development (Ministère de l'Éducation et du développement de la petite enfance) sent messages to school districts to raise awareness and promote completion of the survey. ChatterHigh followed up directly with its teacher users to promote survey completion and wider dissemination. New Brunswick Post-Secondary Education, Training and Labour (Éducation Postsecondaire, Formation et Travail) sent direct messages to educators and guidance professionals via their Work Room Coordinator,

and the New Brunswick Career Development Association (L'Association pour le développement de carrière au Nouveau Brunswick) sent an invitation with survey links to all members across the Province. CCDF's network of trainers, facilitators, researchers, service providers, and career development leaders in New Brunswick were likewise engaged in promoting the survey.

**Data Analysis.** CCDF conducted an analysis of all data gathered. Quantitative analysis was completed using SPSS (Statistical Package for the Social Sciences). In addition, NVivo was used to conduct content analysis of qualitative data (open-text responses) to identify dominant themes across each question. ChatterHigh user and non-user comparisons were completed using chi-squared to determine statistical significance. NVivo 9 was used to assist in the analysis of the open-ended questions. All data were imported into the software for content analysis and a two-step process was followed for manual coding of each question. First, an initial pass was made through the responses to

identify key themes. Once the process was completed for each question, a second pass was made to recheck the coding. A codebook was developed outlining the themes reported in the analysis.

**Results**

From the students' perspective, 61.1% to 81.5% of students either agreed or strongly agreed that ChatterHigh had the intended impact. As shown in Table 3, the most positive attributions were reported for the following indicators, with approximately 80% of students agreeing or strongly agreeing that ChatterHigh: (1) was fun; (2) increased their awareness of options for post-secondary education; (3) helped them think about their own interests, skills, strengths, and personality "fit" with possible options for work; (4) made them aware of possible future schooling options; (5) made them aware of possible future work options; and (6) made them feel more motivated to learn more about possible work options.

Table 3  
*Positive Indicators Attributed by Students to ChatterHigh Usage*

ChatterHigh Attribution Question	Number of Responses	Percentage (n=216)
Was fun	174	80.6%
Increased my awareness of options for post-secondary education	174	80.6%
Increased my awareness of career/work options	166	76.9%
Exposed me to useful and relevant information about My health and wellness	150	69.4%
Exposed me to useful and relevant information about managing money	132	61.1%
Helped me to be more aware of what is required to succeed in post-secondary programs	165	76.4%
Helped me to be more aware of the realities and requirements of various work settings	166	76.9%
Helped me to think about how my own interests, skills, strengths and personality "fit" with possible options for Post-secondary education	168	77.8%
Helped me to think about how my own interests, skills, strengths and personality "fit" with possible options for work	171	79.2%
Made me aware of possible future schooling options for me	176	81.5%
Made me aware of possible future work options for me	173	80.1%
Helped me to feel hopeful about my future	169	78.2%

Helped me to see how what I'm learning in high school Now can help me get to my preferred future	149	69.0%
Made me feel motivated to make an effort at school	151	69.9%
Made me feel motivated to find out more about possible post-secondary options	168	77.8%
Made me feel motivated to find out more about possible work options	175	81.0%
Helped me to feel more engaged in my own career planning	162	75.0%
Is something I'd like to do again if I had the chance	153	70.8%
Is an experience I would definitely recommend for others	163	75.5%

Similarly, positive attributions were reported among teacher respondents, with the percentage of educators agreeing or strongly agreeing with attribution statements ranging from 65% to 95%. The most positive attributions were reported for the following indicators, with 90% or more of teachers agreeing or strongly agreeing that ChatterHigh: (1) increased their students' awareness of options for post-secondary education; (2) increased their students' awareness of work and/or career options; (3) made their students aware of possible future schooling options; (4) made their students aware of possible future work options; and (5) helped

their students to see how what they're learning in high school applies to their preferred future. In addition, it is noteworthy that considerable overlap existed between indicators receiving the highest percentage of attributions by both students and teachers. For example, approximately 80% of students and 90% or more of educators agreed or strongly agreed that ChatterHigh: (1) increased student awareness of options for post-secondary education; (2) made students aware of possible future schooling options; and (3) made students aware of possible future work options.

Table 4  
*Positive Indicators Attributed by Teachers to ChatterHigh Usage*

ChatterHigh Attribution Question	Number	Percentage (n=60)
Was fun	50	83.3%
Contributed positively to my ability to achieve curricular outcomes	42	70.0%
Contributed positively to my ability to achieve other important learning outcomes with my students	44	73.3%
Increased my students' awareness of options for post-secondary education	56	93.3%
Increased my students' awareness of work/career options	57	95.0%
Exposed my students to useful and relevant information about their health and wellness	46	76.7%
Exposed my students to useful and relevant information about managing finances	40	66.7%
Helped my students to be more aware of what is required to succeed in post-secondary programs	53	88.3%
Helped my students to be more aware of the realities and requirements of various work settings	53	88.3%

Helped my students to think about how their own interests, skills, strengths and personality “fit” with possible options for post-secondary education	49	81.7%
Helped my students to think about how their own interests, skills, strengths and personality “fit” with possible options for work	49	81.7%
Made my students aware of possible future schooling options for them	56	93.3%
Made my students aware of possible future work options for them	55	91.7%
Helped my students to feel hopeful about their futures	45	75.0%
Helped my students to see how what they’re learning in high school now can help them get to their preferred future	54	90.0%
Made my students feel motivated to make an effort at school	39	65.0%
Made my students feel motivated to find out more about possible post-secondary options	47	78.3%
Made my students feel motivated to find out more about possible work options	46	76.7%
Helped my students to feel more engaged in their own career planning	48	80.0%

Students were also invited to share their thoughts and perspectives about ChatterHigh by completing the following two open-response questions: 1) “what I liked best about ChatterHigh was...” and 2) “my most important learning from ChatterHigh was...”

**What Students Liked Best about ChatterHigh**

There were 129 students who listed what they liked best about ChatterHigh. Four common themes emerged from their responses: (1) provision of useful career information, (2) opportunity to research relevant information, (3) ease and/or enjoyment of usage, and (4) the contests. Over a third (36.4%) of student respondents liked that ChatterHigh provides a wealth of career information that is useful to them as they start to think of their futures. Examples of student responses, translated from French to English as necessary, follow:

“The opportunity to discover myself and learn more about the topics that interest me. In addition, the sites visited gave me a suitcase full of useful references.” (English Translation)

“The work options were very useful.” (English Translation)

“They helped me pick a career path.”

Over a quarter (26.3%) of student respondents liked the fact that they had the chance to do research and complete surveys to find out about relevant and interesting topics:

“The questions were interesting and I learned a lot about different topics.” (English Translation)

“That it made you research your information by going to different sites to expand your knowledge about those programs.”

Almost 18% of student respondents made statements about how ChatterHigh is fun, engaging, interactive and easy to use:

“I really liked the ChatterHigh concept, and the resources for answers were always available!” (English Translation)

“How they made finding your future career fun and finding new opportunities for jobs.”

Finally, 15.5% of student respondents liked taking part in contests and competitions, and having the chance to earn points and win prizes:

“One quiz per day. I also love that we can collect points and give them to other people or to participate in contests.”

“What I liked most was the fact that we compete against other schools.” (English Translation)

**Students’ Most Important Learning from ChatterHigh**

There were 83 students (38.4% of n=216) who elaborated on the most important thing they learned from ChatterHigh. The dominant theme (seen in 85.5% of the responses) focused on the extent, quality and/or relevance of the career planning information they accessed through their use of ChatterHigh. This theme spoke to a widening of students’ horizons with respect to possible post-secondary or work futures. Students reported the value of learning firsthand and that there are a wide variety of options and opportunities waiting to be discovered:

“That there are different things that universities offer that I was not aware of.” (English Translation)

“I learned about many career options and the requirements necessary to succeed.” (English Translation)

“Post-secondary institutions that had my field of study within their various bachelor’s degrees. I loved to learn about my options for universities and colleges after high school.”

**What Teachers Liked Best about ChatterHigh**

There were two dominant themes in the teacher’s responses to this question (see Table 5).

Almost half of the teachers liked the fact that ChatterHigh provides students with the chance to start thinking about their futures and to explore different post-secondary options that could be available to them. This theme is exemplified in the following comments:

“The opportunity for 9th and 10th-grade students to research post-secondary programs of study.” (English Translation)

“Students thinking about options for future education and employment.”

The second theme that emerged from teacher responses related to the ease and enjoyment of using ChatterHigh. More than one-third of teacher respondents (36.7%) noted that the site is quick, easy, and fun for students to use. Sample comments exemplifying this theme include:

“The amount of information available and quick access to web pages where the answer could be found.” (English Translation)

“Interactive - students enjoyed learning.”

“I could see the results of my students in one click. Some questions opened the door for nice class discussions. The students who used it seriously learned. It’s different than in the classroom.”

Table 5  
*Teacher Responses – What I liked best about ChatterHigh*

Responses	Number	Percentage (n=60)
Reflection on future/PSE info	29	48.3%
Quick and easy to use	22	36.7%
Contest/competitions	12	20.0%
Other	6	10.0%
Not sure/don’t know	2	3.3%

**The Most Important Student Learning Derived from ChatterHigh**

Overall, teachers applauded ChatterHigh for its capacity to expand students’ horizons and expose them to a broader range of possibilities for post-secondary study and/or work. Teachers reported that ChatterHigh made students more

aware of the world of options and opportunities available to them once they complete high school (see Table 6):

“The large number of options available to students seeking post -secondary [education] or work.”

“The breadth of options for post-secondary [education]. They were exposed to programs that they were not expecting to see.”

Table 6  
*Teacher Responses – The Most Important Learning Students Derived from ChatterHigh*

Responses	Number	Percentage (n=60)
All the potential opportunities and program options	46	76.7
Other	7	11.7
Not sure	7	11.7

Comments in the “Other” category included learning about requirements of entry into specific post-secondary education and/or occupations, the importance of career planning, and the development of research and time management skills.

**Comparing ChatterHigh Student Users to Non-Users**

Table 7 provides a delineation of the differences between students who used ChatterHigh and those who did not with respect to their reported capacity to find the information they need to support successful transitions.

Table 7  
*Differences in Percentage of Students (ChatterHigh Users and Non-users) Who Knew Where to Find Career/Life Information*

	User (n=216)	Non-user (n=63)	Increased
Be clear about the pathway I want to follow after I finish high school.*	63.0%	38.1%	65.4%
Choose a post-secondary program that is right for me.	63.4%	54.0%	17.6%
Succeed with a post-secondary program.	50.9%	49.2%	3.5%
Choose the kind of work I want to do after graduation.**	63.9%	49.2%	29.9%
Secure work once I am ready to enter the workforce.	39.8%	34.9%	14.0%
Succeed in the work I choose.	53.2%	41.3%	29.1%
Manage my finances once I’m out “on my own”***	45.4%	31.7%	42.9%
Manage stress, my time and the demands of life once I’m out “on my own”.	45.4%	44.4%	2.0%

Note. \*X<sup>2</sup> (1, N = 279) = 12.331, p=0.000; \*\* X<sup>2</sup> (1, N = 279) = 4.403, p = 0.036 \*\*\* X<sup>2</sup> (1, N = 279) = 3.710, p = 0.054

When the responses of ChatterHigh users were compared to non-users, there were three areas where a significant difference was present. As Table 7 has shown, compared to non-users, a significantly higher percentage of ChatterHigh

users knew where to find information to support their clarity with respect to their preferred pathway following high school, how to choose the kind of work they want to do after graduation, and how to manage their finances

once they were living independently as compared to the non-users.

However, the differences between users and non-users are possibly caused by other factors rather than the use of ChatterHigh only, such as previous or concurrent career exploration activities, social desirability bias, self-reporting bias, etc. For example, the student users may not be aware that they tend to answer questions in the way the researcher intended. This is one of the limitations of the study, and future research is needed to examine the potential impact of these factors.

### **Discussion**

Both students and teachers agreed that using ChatterHigh resulted in positive student outcomes related to living, learning and working. A majority of students who used ChatterHigh (61.1% to 81.5%) attributed a wide range of positive outcomes to it. Students reported that ChatterHigh usage increased their awareness of post-secondary education and career options, and exposed them to useful and relevant information about their health and wellness and money management. Students said that using ChatterHigh made them feel more motivated to make an effort at school, more engaged in their own career planning, and more hopeful about their futures. These attributions were mirrored in teacher responses, with 65% to 95% of teachers attributing similar positive outcomes to ChatterHigh usage.

Students and teachers appreciated the wealth of relevant information and how ChatterHigh usage broadened students' perspectives on future possibilities. Both students and teachers liked the wide range of relevant information provided through ChatterHigh and that it exposed students to options and opportunities for post-secondary education and/or work that they might not otherwise have considered. ChatterHigh users appreciated the practical information provided about post-secondary requirements and the realities of work in various industries. Students and teachers applauded

ChatterHigh for its capacity to broaden students' notions of what could be possible for them in the future with respect to post-secondary education and/or work.

ChatterHigh usage had a positive impact on students' perceptions of post-secondary education and career options in New Brunswick. Just over half of student respondents said that ChatterHigh usage made them more likely to consider career opportunities in New Brunswick, while 55% indicated that it made them more likely to consider post-secondary programs in New Brunswick. Similarly, 80% of teachers reported that ChatterHigh usage had a positive impact on students' perceptions of post-secondary education options in New Brunswick, while 73.3% believed that it had a positive impact on student's perceptions of career opportunities in the Province.

Students continue to struggle to find the information they need to inform their future planning and transitions, especially those students who had not used ChatterHigh. Between 40% and 60% of all student respondents reported that they do not know where to find vital information regarding post-secondary education and work options, finances, stress management, and personal career planning. When focusing specifically on non-users of ChatterHigh, these measures increased to between 45% and 65% of students reporting that they did not know where to find this information.

ChatterHigh users were more likely than non-users to know where to find the information they need to inform career planning and support successful transitions. More positive outcomes were reported across the board by ChatterHigh users than for non-users. The following differences were statistically significant: 1) clarity about the pathways available to students after high school, 2) a higher possibility to choose a post-secondary program that is right for them, and 3) managing their finances once they are out "on their own."

Limitations of the study include: (a) ChatterHigh is not the only potential factor affecting the differences between users and non-users and the analyses of other potential factors should be examined; (b) the validity and reliability of the questionnaires were not tested; and (c) triangulation, using multiple raters, and bracketing could have enhanced the trustworthiness of the qualitative findings.

In summary, there was a high level of consistency across student and teacher responses in all survey categories. Overall, the data paints a positive picture with respect to the impact of ChatterHigh usage on outcome indicators related to: access to relevant career and labor market information, access to information to support financial literacy and health and wellness, awareness of post-secondary education and work opportunities, engagement in school and personal career planning, and preparedness for transitions and hope for the future.

### **Future Implications**

While this study evaluated the impact of ChatterHigh usage on Canadian students' career exploration, the platform's implementation extends beyond Canada. Already implemented broadly in the United States, ChatterHigh is currently also being developed for implementation in China. The implications for Chinese students and school systems, and by extension the broader Asia Pacific region, will be briefly discussed below.

Chinese high-school education represents one of the most demanding curriculums in the world. With strong competition for limited university seats at the center of educational purposes, there is little emphasis on personal career development. Starting in 2014, China has been reforming and amending the national college entrance examination system, which is also known as Gaokao (Jin, 2018). The current Gaokao system is called "3+3 mode." The first "3" refers to Chinese, mathematics, and foreign language, and the second "3" refers to three

other subjects from a student's selection at the end of the first year of senior high school. Students need to choose three of the following six subjects: history, geography, politics, physics, chemistry, and biology. After the Gaokao, the vast majority of senior students will apply for universities and majors only based on their Gaokao total scores (Jin, 2018).

In this context, it is crucial for high school students to be able to understand and evaluate themselves in order to choose the exam subjects and majors that suit them best. However, such a need is difficult to meet because of several factors. First, there is a lack of professional counselors and/or qualified career development professionals relative to need. In Chinese high schools, career development services and supports are generally only available through regular subject teachers or administrative staff members. Typically, the career development role is assigned to educators or administrators on a temporary basis and they lack training specific to the domain. Therefore, it is questionable whether these teachers and administrators are adequately prepared to provide effective career development services. Second, there is not yet an independent career development-focused curricular system in China. Due to the long-term influence of exam-oriented education, China's K-12 education emphasizes knowledge-based and subject-based education rather than career development. Consequently, few schools have implemented career development courses; most are not yet aware of the potential value of such courses in their educational system. As a result, schools and students have relatively little focus on career development and career planning awareness is weak. China's traditional K-12 education focuses heavily on study through textbooks and factual knowledge. Accordingly, many Chinese students have limited knowledge of occupations and are not used to considering their careers in high school. Therefore, an online career development platform such as

ChatterHigh could be a vehicle for introducing career exploration at the high school level.

This study has shown that ChatterHigh usage has a positive impact on student's awareness of post-secondary education and career options, provides useful information about possible future jobs, and increases career-oriented engagement in schools. These are factors that may be useful in informing the career decisions of Chinese students and in providing tailored information on post-secondary options. However, product localization would need to be considered in extending its usage to Chinese students.

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