Student Engagement: Enhancing Students' Appreciation for Learning and Their

Achievement in High Schools

by

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Abstract

Students' perspectives and ideas related to classroom learning seem to be mostly ignored in high schools. Not only does this issue result in both teachers and students struggling in the process of teaching and learning, but students also fail to appreciate the intrinsic value of the curriculum content. It is therefore important to explore the significance of *student engagement* on their appreciation of learning as well as any positive effects that it might have on their success. This paper has two main aims. First, it provides an overview of the significance of student engagement and the issues associated with disregarding students' views and their active roles in learning and how these roles are linked to their success in school. Second, it provides a sketch of the attempts made toward the use of technology and social media to motivate and engage students in content learning. Consequently, the paper has three main sections. The first gives succinct descriptions of *student engagement* and *motivation* in high school. The second part alongside with my own teaching experiences traces the ways that students are helped to develop an appreciation for learning and highlights the importance of the impact of *student engagement* in learning. The third section interweaves students' interest and engagement with digital media and an appreciation of content learning. In so doing, the paper suggests that social media could be an aid for students to learn the content in the subjects being studied, which connects their in-school context and experience to out of school.

Keywords: Student Engagement, Student Learning, Student Achievement, Social Media and Technologies, and High School

Lay Abstract

This paper reviews the research literature regarding the importance and influence of the students' engagement, interest, and motivation on their appreciation of content learning, which might improve students' achievement. My own teaching experiences led me to this paper, which considers research about student engagement in high school classes primarily in Canada, the US and elsewhere. The concept of *student engagement* is eloquently defined. Some issues that might affect students' appreciation of content learning and possibly their achievement, looks at evidence of successful student engagement efforts in high school classes. It examines how and why teachers can improve students' appreciation of learning and their success. It explores why attending to students' points of view and their engagement in the process of learning might improve their content learning and achievement. Finally, I recommend use of social media and discuss why social media not only motivates students but also engages them in learning.

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Chapter 1: Introduction

Knowledge about teaching methods and strategies to help students learn and improve has developed significantly in recent years (BC Ministry of Education, 2011). We, teachers and educators, continue to utilize and implement this new knowledge to change the students' learning environments and enhance the quality of education and its impact on student content learning and achievement (Dunleavy, Willms, Milton, & Friesen, 2012). Although "the level of students' engagement with science varies considerably across countries and economies" (OECD, 2016b, p. 119), the study of student engagement, specifically intellectual engagement, provides a great opportunity for exploring what types of experiences for adolescents might result in improved abilities and skills for learning and life (Dunleavy, et al., 2012). Therefore, students' engagement, students' points of view and their activity in high schools should be considered for effective improvement towards better achievement in education (Shernoff, Csikszentmihalyi, Schneider, & Shernoff, 2003; Ministry of Education, 2011; Dunleavy, Milton, & Willms, 2012).

Description of the Problem

Based on my own teaching experiences, observations, and a review of the literature with regard to student engagement, students' points of view, recommendations, and participation are often not appropriately appreciated by teachers. Students' perspectives, opinions, ideas and other aspects related to their involvement in school seem to be mostly ignored; and only the decisions and points of view of teachers and other adults — school's administrators, policy makers, and parents — seem to be important (Cook-Sather, 2006; Orr & Olson, 2007; Yonezawa & Jones,

2009). Not only does this issue seem to result in both teachers and students struggling in the process of teaching and learning, but students also fail to appreciate the intrinsic value of the curriculum content (Pugh & Phillips, 2011; Emdin, 2016) because they are not intellectually engaged with the content. "Low attendance, achievement and graduation rates" suggest that students struggle at school, which can create problems for teachers.

Results of studies that I reviewed illustrate from the students' perspectives that "they want to be at school, believe they were making a strong effort to do well in their classes, and want to be successful" (Dunleavy, Douglas Willms, Milton, & Friesen, 2012, p. 6). There seems to be a significant "gap between students' aspirations, their efforts to do well at school, and the marks they were receiving in their classes" (p. 6). Additionally, based on my own teaching experiences, observations, and review of the literature, it appears that students' interests and use of social media such as YouTube™ and Instagram™ and their use of digital technologies such as cellphones, tablets, computers, and other devices may not be properly and positively regarded by teachers as a way of learning and making connections between content and students' lived experiences both in and out of school (Sancho, 2009; Emdin, 2016). Therefore, why and how a teacher should address and consider students' perspectives, their points of view in the classroom, and their use of social media is important (OECD, 2014; OECD, 2016b). In brief, teachers and administrators seem to ignore the students' points of view by only regarding and favoring the views of adult decision-makers (Cook-Sather, 2006; Orr & Olson, 2007; Yonezawa & Jones, 2009); thus, students seem to be less intellectually engaged in learning and therefore may not achieve as well as they could.

Purpose

The main purpose of this paper is to explore the importance and impact of *student engagement* and anticipated appreciation towards the learning of course content, resulting in the improvement of their success in schools. I review research studies, which focus on how teachers can improve an appreciation for the learning of course content and students' achievement. I will implicitly illustrate students' achievement throughout the paper as it differs from a student to student and even from the teachers' views. I will focus on students at the high school grade levels. I will describe research studies, which suggest that the use of social media and digital technologies might engage students, enhance their appreciation of content learning, and transform teaching methods. I will discuss how teachers might gain from students' perspectives and ideas, and the use of social media might improve students' learning and success. The purpose of this review is not to delve and discuss all perspectives of student engagement and all aspects of social media with lots of cons and pros. This literature review focuses on positive and efficient impacts of social media on the student's content learning of science. I will review the literature with regard to issues associated with students' appreciation of content learning and their success. Furthermore, I will examine current research evidence through the literature review that might suggest a relationship between student engagement and academic success (Willms, 2011).

Research Questions

In this paper, I look at not only students' failure to appreciate content learning of science and mathematics, and their low achievement in high schools, but also at the failure of teachers to appreciate the students' perspectives and ideas in their process of learning. Moreover, students' experiences in high school and rates of students who are dropping out of high schools are

considered. Therefore, for the purpose of enhancing students' achievement through a greater appreciation of learning the course content, the key question to be explored in this paper is:

How can teachers improve students' success and their appreciation of learning content in science?

Organization of the Paper

In this literature review, I will first explain the method behind the literature review and describe the theoretical framework, which will inform the development of my study. Second, I will provide theoretical definitions that I will be using in this paper. Third, I will justify why disregarding the students' points of view and students' intellectual engagement is a problem worth investigating. I will look at this concern by highlighting and summarizing some of the different perspectives and approaches of the researchers described in this review. Subsequently, I will review some of the approaches and challenges to addressing student engagement based on recent studies in Canada, the US, and elsewhere. Throughout the paper, I situate and analyze my own teaching experiences in a series of self-reflective, critical and personal narratives that mirror an imperative to engage students by providing them with opportunities to have active roles in the process of learning. Therefore, as I include my own experiences and observations, I will propose solutions that I might potentially resolve some of the issues and lack of intellectual engagement identified in this paper.

Research Method

To conduct my literature review in this study, I utilized the University of British Columbia Library online resources (www.library.ubc.ca), the Education Resources Information Center (ERIC) database, PsycInfo database, Web of Science, database thesaurus, CBCA Complete, Academic Research Complete database, and Google Scholar. Moreover, I reviewed

some resources suggested by my supervisors and read some of the articles cited in those studies. "Students' engagement," "students' achievement," "learning content," "social media," "digital technology," and "high school" are some of the search terms used to obtain various search results. I sorted through research papers based on their relevance to my study, which are more focused on students' engagement, and learning of content of science or mathematics. I also considered the publication dates of the research papers. Papers published prior to the year 2000 were only considered if they were judged to be seminal pieces. Moreover, the studies are mostly in Canada and the US. Student demographic factors such as culture and socioeconomic status are varied and were not constant; as such, these are not variables considered in my study. This study does not inquire of all scenarios related to problems of students who drop out from education and have low achievement. There are many aspects, factors, and elements that influence students' achievement and their learning appreciation in schools, such as school environment, facilities, teacher proficiency, and so forth, which are not the focus of this study.

Theoretical Framework

In this section, I will provide a brief description of the learning theory that informs my perspective and the circumstances that under which students are able to improve their appreciation of learning the content and ultimately, their achievement in high school. The theoretical framework that I utilize for this study and experienced in a pragmatic way through my own teaching and learning practices is based on John Dewey's theory of learning. Dewey stated that learning occurs as a consequence of the individual's direct activities and personal experiences (Dewey, 1916). Dewey's "Pragmatic" educational philosophy emphasizes progressive education, a student-centered approach and the need to learn by doing and experiencing reality through a hands-on approach (Ayers & Schubert, 2012). Students, according

to Dewey, are active participants in their own learning and their teachers, as facilitators, should learn together according to democratic principles (Dewey, 1916). Consequently, I argue that if students are not provided with opportunities to take active roles and become more engaged in the process of their learning and experiences, the essential aspects of their learning will be disrupted. It will impede their appreciation of learning and, as a result, their achievement. My study will focus on exploring the conditions under which teachers enhance students' growth of learning in classrooms and their success.

Chapter 2: Literature Review

Definition of Student Engagement

Student engagement can be considered within three dimensions with social, institutional, and intellectual aspects. Also, there are several other types of engagement such as cognitive, emotional, behavioral, and psychological (Parsons & Taylor, 2011). However, I will not provide and review all definitions, types, and aspects of *student engagement* delivered by proponents and opponents in studies. What I will focus and consider in this paper is, first, to utilize a definition which matched more with the purpose of my study and accorded with the advocates' views and, second, the benefits of student engagement toward the students' appreciation of content learning which is a way to enhance their achievement in high schools.

According to empirical studies over the past twenty years, "engagement" has emerged not only as "a strategy for improving educational achievement" but also as "an independently valuable outcome of schooling" in education (Dunleavy & Milton, 2008, p. 5). It is significant that one of the aims of the curriculum in education is to maximize *student engagement* (Hargreaves, 2005). Furthermore, student engagement is a significant aspect of teacher self-efficacy and students learning (Schleicher, 2015). The authors of the Canadian Education Association provided one of the most comprehensive and impactful definitions of "student engagement," particularly for adolescent students. They define student engagement as:

> The extent to which students identify with and value schooling outcomes, have a sense of belonging at school, participate in academic and non-academic activities, strive to meet the formal requirements of schooling, and make a serious personal investment in learning (Willms, Friesen, & Milton, 2009, p. 43).

Under this interpretation, the authors identify three dimensions of student engagement — "Social Engagement, Academic Engagement, and Intellectual Engagement" (p. 6). This definition and the three forms of student engagement will be utilized in this research paper. The dimensions are described as follows:

Social engagement can be described as "a sense of belonging and participation in school life" (Willms et al., 2009, p. 7). In social engagement, students have opportunities to develop social skills, networks, and constructive friendships, and will eventually like school (Dunleavy & Milton, 2008). Therefore, in this form of engagement, students are participating in and involved in school activities and extracurricular activities, such as sports and clubs, which might bring the students a strong "sense of belonging" at school.

Academic or institutional engagement refers to the students' "participation in the formal requirements of schooling" or "school attendance" (Willms et al., 2009, p. 7). In other words, academic engagement develops students' personal responsibility, credit accumulation and subsequently their academic success for the purpose of high school graduation and post-secondary destinations (Dunleavy & Milton, 2008, p. 6). An academically engaged student is defined as a student that rarely skips a class, and studies hard even late at night in order to keep her marks and results at the top (Dunleavy & Milton, 2008) since they know it is important for their future. In addition, they are on time whether for class attendance or submitting and completing their assignments. With institutional engagement, students have opportunities and chances to improve an "orientation to good work and personal responsibility" (Willms et al., 2009, p. 40). Therefore, schools—where students are under adults' care and supervision—are excellent environments for students to learn skills, rules, and knowledge (Dunleavy, Douglas Willms, et al., 2012). However, all these do not "necessarily mean they love school, or have a

deep psychological investment in their learning" (Willms, 2011, p. 3). In short, Willms conveys that institutionally engaged students attempt to comply with the prescribed, assigned, and required affairs in schools regardless of their like or dislike.

Willms et al. (2009) delineate intellectual engagement as "a serious emotional and cognitive investment in learning, using higher order thinking skills (such as analysis and evaluation) to increase understanding, solve complex problems, or construct new knowledge" (Willms et al., 2009, p. 7). Students have opportunities to become "knowledge builders, problem solvers, conceptual thinkers, and confident learners" (Dunleavy & Milton, 2008, p. 6). In addition, intellectual engagement leads students toward the exploration of concepts and understanding of curriculum content, which not only enables them to think critically but also motivates them toward learning (OECD, 2014; 2016c). For example, curious students dig deeper in their science classes, enter science fair projects, and are ultimately interested in working with research scientists while they are still in high school (Dunleavy & Milton, 2008). Indeed, interest and motivation, effort, and quality instruction are factors of intellectual engagement (Dunleavy, Douglas Willms, et al., 2012). It is this, the intellectual dimension of student engagement, that is the primary focus of this paper. In summary, students are intellectually engaged in schools when they participate in the learning processes in classrooms with thoughtful and deep mental and emotional commitment to learning the content and concepts (Dunleavy & Milton, 2008; OECD, 2014).

Definition of Motivation

In this section, I will delineate "motivation" and provide a brief description of its related factors. The challenge for teachers is to develop motivated students who are actively engaged in learning (OECD, 2013d; 2016b). Therefore, it is necessary to provide a definition of motivation,

its aspects, and ideas to motivate students. These are explained with the aim of having a clear path towards motivating and encouraging students in their education.

Motivation can be defined "as an internal state that stimulates, directs, and maintains behavior" (Hoy & Miskel, 2013, p. 170). As such, there are some factors that may encourage, direct, and support students' conduct and performances in schools. Hoy and Miskel (2013) claim that students' "needs," "beliefs," and "goals," are the important aspects of motivation (Hoy & Miskel, 2013). However, some descriptions of motivation include personal and internal factors in the term "intrinsic motivation" — such as "needs, interests, curiosity, and enjoyment," (p. 170) while other factors associated with external and environmental factors are included in the term "extrinsic motivation" — like "incentives, rewards, pressure, and punishment" (p. 170). Although motivation is divided into two aspects, a dichotomy between intrinsic and extrinsic motivation is too simple (Hoy & Miskel, 2013). For instance, studying with the aim of receiving a good mark is arguably because of an extrinsic motivation; however, it becomes intrinsic when curiosity takes over. Thus, it is significant that for the aim of having actively engaged students in classrooms, we need to motivate them intrinsically or extrinsically (OECD, 2016b).

Intrinsic motivation is "the natural tendency to seek and accept challenges as we pursue personal interests and exercise capabilities" (Hoy & Miskel, 2013, p. 170). In other words, intrinsic motivation "is what stimulates us to do something when we don't have to do anything" (p. 170). Thus, our usual needs, interests, and satisfaction inspire us to pursue challenges, experiences, tasks, and tests which all are related to intrinsic motivation. As such, students are motivated by some normal and natural desires, requests, and wishes, such as doing what they passionately like to do.

Nevertheless, extrinsic motivation is based on what drives us from outside environments and external causes like prizes, bonuses, and penalties. These can be simply the influence of students' grades and positive and negative results on their academic success. Therefore, students may not be interested in the "activity for its own sake, but rather for what the activity will bring [them]" (Hoy & Miskel, 2013, p. 170). Extrinsic motivation "is a behavioral perspective of motivation because it explains motivation and behavior in terms of rewards and punishment" (p. 170). The point here is that extrinsic motivation provokes us to achieve regardless of our enjoyment, satisfaction, pleasure, and happiness (Hoy & Miskel, 2013). For example, we may choose to work hard on things that we do not particularly enjoy since we know that the accomplishments are important in achieving a valued goal such as getting a high grade, a diploma certificate, or a college/university admission (Hoy & Miskel, 2013). This motivation, as articulated by Hoy and Miskel, lasts a longer time and continues persistently when it is accompanied or undertaken along with intrinsic motivation. In short, extrinsic motivation encourages us to perform with enthusiasms and some hindrances (Hoy & Miskel, 2013).

Consequently, it is important to bear in mind that students are motivated based on their needs, beliefs, goals, interests, curiosity, enjoyment, incentives, rewards, pressures, and punishment — intrinsic and extrinsic motivation (OECD, 2013d; 2016b). Some are encouraged with intrinsic motivation, some with extrinsic motivation, and some with both. The level of motivation also differs from student to student (OECD, 2013d; 2016b). Even the ways, methods, and degrees that teachers may motivate them may vary between students (OECD, 2013d; 2016b). For example, a student with excellent work and performance skills might be treated differently from a student who performs inadequately and has different motivational needs. However, "students, including those with at-risk profiles, show more positive attitudes and

higher academic motivation if their teachers care about them, provide them with help when they need it, and let them express opinions and decide for themselves" (OECD, 2016c, p. 93). Therefore, from my point of view, the responsibility of teachers is not only to recognize the circumstances that motivate students, but also to stimulate students according to the aforementioned factors of motivation that work best for each student toward learning and actively engaging in the classroom.

Students in High School Classes

Do we know how students spend their time in high school classes? According to the research of Shernoff et al. (2003) on student engagement in high schools, 23% of students' time is spent on individual work, 21% on listening to lectures, 10% on taking notes, 7% on doing homework or studying, 13% is spent taking exams, 7% of their time involves watching television or a video, 9% is spent on discussion, 6% on group or lab work, 1% on talking individually with the teacher, and 4% on other activities like watching demonstrations and giving presentations (Shernoff et al., 2003, p. 166). In brief, the results of this study reveal that the majority of the students' time in high schools is spent on non-interactive activities while less of their time is spent on interactive activities in schools.

Additionally, there is a growing concern over the number of students graduating from Canadian high schools (Dunleavy & Milton, 2008). Approximately 25% of Canadian adolescent students "do not graduate within the standard twelve years of schooling" (p. 5). Moreover, there are many graduated students who report having "a low sense of belonging, low participation rates, and lower achievement rates" throughout their secondary school education (p. 5). Dunleavy and Milton argue that "disengagement from secondary school—whether a student leaves or struggles through—is a significant source of inequity in Canadian society" (p. 5).

Indeed, disengagement because of poverty, disability, minority, and being different from others for any reason keep the youth in disadvantaged conditions in school and society (Dunleavy & Milton, 2008). Meanwhile, they point out that the rates of graduated students have recently improved slightly; however, the rates of "inequity in engagement and achievement" have not changed in Canada (p. 5). Hence, these issues threaten the number of students graduating from high school in Canada.

Inequity in engagement and achievement are correlated with "socio-economic status," "family background," and "learning environments" in secondary schools (Dunleavy & Milton, 2008). Additionally, the rate of students experiencing inequity issues in engagement and achievement in their learning environments has increased in comparison with the other two inequity factors (Dunleavy & Milton, 2008). Therefore, it seems that the problems associated with students' disengagement and dissatisfaction—failing classes, suspensions, transitions between schools (Finn, 1989), leaving and dropping out from high schools—in the learning environment prompted teachers, administrators, and scholars to explore solutions and ways to improve student engagement in schools (Shernoff et al., 2003; Dunleavy & Milton, 2008). It is important to indicate that the statistics of the aforementioned issues of low engagement and poor achievement from other countries are worse than Canada (OECD, 2016a). As the level of unfairness in engagement and achievement differs from country to country, the rates of disengagement and dissatisfaction change. But lack of engagement and poor school attainment is correlated with the student's social class, family background, and learning environment.

Today, the persistent educational problems of students, an ongoing development of students' disconnection and separation from school—such as dropping out of school, learning underachievement, behavioral, and emotional underachievement—have also concerned and

provoked school psychologists (Battin-Pearson et al., 2000; Shernoff et al., 2003). The results obtained from some research demonstrate that the number of students with "boredom, alienation, and disconnection with schooling" has significantly increased (Shernoff et al., 2003, p. 159). Most students are bored in the classrooms, and they either stare out of classroom windows or count the seconds to the break times, which all ultimately demonstrate their disengagement from the process of learning in the classrooms (Shernoff et al., 2003). Studies reveal that 50% of students find their classrooms boring, and approximately one-third of the students convey that "they survive[ed] their school day by "goofing off" with their friends" (Shernoff et al., 2003, p. 159). However, this rate plummeted to about one-quarter of the students who do not feel challenged, interested, and successful in science between 2009-2010 in high schools (Willms and Friesen, 2012). These results indicate that 51% of the students in Mathematics subject and 58% of them in science feel interested and successful between 2009-2010 in high schools (Willms and Friesen, 2012). Therefore, Shernoff et al. argue that boredom, time wasting, alienation, disconnecting with schooling, and eventually dropping out of school is "a gradual process of student disengagement and alienation" from classrooms and schools (p. 158).

Accordingly, the described concerns and problems related to students' achievement and involvement in high schools necessitates investigation into how students spend their time in high school classrooms, and the conditions under which they become more engaged in their process of learning in schools (Shernoff et al., 2003). Therefore, the attention is directed to the importance of students' daily experiences in school and to the connections of students' experiences with their success in schools (Dunleavy & Milton, 2008). Moreover, a focus on school and classroom practices is being considered in education (OECD, 2016). "Healthy human development, motivation to achieve, sense of confidence, pride in success at school" are

highlighted positive aspects of school and classroom practices (Dunleavy & Milton, 2008, p. 6). Shernoff et al. believe that some positive conditions in school may encourage and stimulate students and create excitement, motivation, and engagement in the learning process. Consequently, studying the ways and conditions in which students spend their time in schools and become engaged and motivated in their own process of learning lead teachers toward a solution to the problems regarding a student's lack of involvement.

Why Student Engagement Is Important in the Process of Learning

Studies with regard to students' experiences in school and their achievement have underlined the importance of student engagement for learning and teaching in school (Shernoff et al., 2003; OECD, 2016b). Moreover, involvement, engagement, and participation in the process of schooling seem to influence students to achieve successful school completion and bring them "a sense of belongingness and commitment" (Christenson, Sinclair, Lahr, & Godber, 2001; Shernoff et al., 2003, p. 159). Shernoff et al. state that high engagement and involvement in classrooms reflect a student's "concentrated attention, interest, and enjoyment," which counter boredom, alienation, apathy, laziness, and lack of interest with instruction and education (p. 159). This is the "phenomenological aspect" of student engagement in classrooms (Shernoff et al., 2003). Thus, student engagement in the process of learning in high school classrooms is a significant factor related to students' experiences and outcomes in schools (British Columbia Ministry of Education, 2015; OECD, 2016b).

Shernoff et al. (2003) explored how adolescent students across the US are engaged in high school. They investigated the conditions and environments in which students show greater concentration, interest, and enjoyment in school. The results of their research revealed that the students are involved when they highly utilize and challenge their own tasks and skills, find the

instruction relevant to their own experiences, and can personally control the learning environment (Shernoff et al., 2003; 2016). In addition, students are significantly engaged when they are involved with individual or group work activities instead of listening to the teachers' lectures, taking tests, or watching videos in classrooms (Shernoff et al., 2003). Shernoff et al. suggested that "focusing on learning activities," which "support students' autonomy" provides students with a high level of challenge for their tasks and skills (p. 158).

How Students Are Helped to Develop an Appreciation for Learning

This section provides a review of "how engagement is enacted in classrooms or how it affects the quality of learning experienced by students" (Dunleavy & Milton, 2008, p. 6). In other words, what are the conditions and ways in high school classrooms in which students are first involved, actually engaged, and then learn through that engagement? Dunleavy & Milton (2008) argue that for the aim of enhancing the adolescent students' educational experiences and their achievement in schools, there is a need to reorientate thoughts and views about student engagement in Canada. Student engagement is important to develop a more consistent and interrelated "approach to achieving excellence and equity in Canadian secondary schools" (p. 7). However, we need to explore how we bring it about. "A key place to start is with an examination of the relationships through which students engage in schools, in classrooms, with communities, with their peers, and with the work of learning itself" (Dunleavy & Milton, 2008, p. 7). These arguments relate to positive perspectives and actions associated with students' views.

I elaborate on my own teaching experiences in school in relation to how teachers might regard the students' viewpoints and consider their engagement with the aim of improving their appreciation of content learning and success in school. Teaching physics in the only public international school in my country was not an easily acquired experience for me. Initially, I was

motivated by the students, who came from various educational systems from different countries around the world and had different levels of knowledge in physics and mathematics. Teaching with minimum resources and educational materials to the foreign students —who had diverse objectives and needs in education—was a struggle. Teaching in a traditional educational system to 21st-century students, who were familiar with a new and modern educational system, became a challenge for me. Meanwhile, working with other teachers who were completely used to the more traditional methods of teaching was another concern since they were not interested in making any changes. In brief, these issues and challenges became an opportunity not only for me to transform and develop my ways of teaching and learning, but also for the students, who came from a wide variety of knowledge, culture, and education system backgrounds.

These issues prompted me to challenge myself and to contemplate how I can improve not only students' interest and enjoyment in content learning, but also enhance their achievement in school. Moreover, the problems persuaded me to listen to the students' perspectives and opinions. I informally and formally commenced by asking students and collecting their points of view about all the issues related to the subjects, curriculum, textbooks, classes, teachers, and other matters related to school. The students passionately disclosed what they would like to do and have in the classroom, how they would like to study, even how they would like to sit in the classroom, what kind of projects and activities they were interested in, and so on. Because, they had a hope to be heard and have a voice in their own education, I attempted to gain more information from the students themselves.

Cook-Sather (2006) illustrated the emergence of "student voice" in the early 1990s. Not only are students' perspectives on learning, teaching, and schooling significant in their education, but also their active engagement demonstrates that the youth would like to change and

improve their education. Students deserve to have an active role in their education (OECD, 2016). This approach of considering students' engagement and giving students a voice is regarded differently in educational practice since the students are not only and simply engaged, but also have active roles in their own learning processes (British Columbia Ministry of Education, 2015; OECD, 2016). Cook-Sather describes the relationship between student voice and students' "rights" and "respect" in terms of their education, which is dependent on a practice called "listening." He provides readers with a great opportunity of going not only through, but also beyond the diverse practical aspects of discussions about and critical analyses of student voice.

Students wish to be heard and counted by the teachers and adults in the education system. Student expression and influence transforms teachers into facilitators who, in my educational experience, were in complete authority; students were in a position without any space, possibilities or opportunities, points of view, recommendations, suggestions, or active participation. From my perspective, the underlying premise is that democracy is defined as an equal power relationship between two parties, and in education these parties are the teacher and the students. Moreover, in a democratic society, participation is a citizen's right, and "children are the citizens who arguably have as much right to consideration as any other individual" (Pollard, Thiessen, & Filer, 1997, p. 2; Cook-Sather, 2006, p. 366). Thus, students should be provided the opportunities to actively design their own education. Teachers should consider what students say and listen to their concerns since, in this way, they are able to recognize the students' struggles. Although Cook-Sather articulates the nature of student voice with all its positive and negative aspects, the students' concerns and challenges need more practice and feasible actions in addition to listening.

In the context of teaching in a traditional educational system, even changing the arrangement of the students' desks and chairs in my classes had become a challenge since the conventional educational system did not believe in the new strategies and methods of education. After listening to the students' voices and being aware of their points of view, recommendations, and suggestions, now it was my turn to implement and fulfill their needs and desires. My physics classes were the only classes where the students were sitting in an elliptical arrangement instead of in rows and columns. After some time, I asked the school principals to adequately provide a physics laboratory for the students as I was going to hold the physics classes in the laboratory, not in a regular classroom. This was a big change in such a traditional system, and I became viewed as a bizarre physics teacher in the school.

I continued to challenge the traditional ways by adding new publications and available online sources to the old and previous resources in the school. I gradually reformed the archaic resources. This change in an educational system where the books are not chosen by teachers and has a very complicated process by the ministry of education continued my challenge to authority and the old ways. By proving the connection between the physics content and the new resources, which were more updated and related to students' lived experiences and events, made the process more complicated for the school administrators. However, it was an aid to spark the students and gain their appreciation for the physics content through those new resources. Pugh and Phillips (2011) argue that students do not appropriately and justly appreciate the curricular content. To support their claims, the authors utilized Brophy's model of "content appreciation" (1999; 2008a; 2008b) and put more emphasis on student engagement. According to this model, the teachers need to first rediscover the content worth teaching; second, frame the lessons properly in terms of the content's value in students' lives, which motivate them; and third,

scaffold "appreciation" according to students' "motivational zone of proximal development" (Pugh and Phillips, 2011, p. 290). This is a zone that the students cannot independently solve the problems and make connections; therefore, they need teacher's assistance (Vygotsky, 1978). Although the relationship between learning and development of thinking in the student is vague and complicated, there is a definite and reciprocal relation (Vygotsky, 1978). The authors demonstrate the importance of relating content to the students' everyday lives, events, and experiences with different actions, supports, and structures, which makes the content more understandable and tangible; thus, it results in students' appreciation of the content. This is how students might better appreciate the learning of content and will more likely follow the sources provided by their teachers.

Some issues and questions, as argued by Pugh and Phillips (2011), emerge since students do not always appreciate the content of the curriculum, which results in teacher frustration. I wonder whether the teachers are able to recognize and address the sources of their frustrations. Brophy recognized the reasons for this frustration and addressed the issues existing in school classrooms. For instance, students may be disappointed and fail to appreciate the value of the content. One aspect of this issue is the inclusion of heavy content in the curriculum. What is the content that teachers should care about it? "Teachers and curriculum developers need to be selective in choosing" the curricular content (Pugh and Phillips, 2011, p. 287). This means providing opportunities that enable students to solve problems, see the world differently, and improve their own skills. Students may not be able to change "concepts" to "ideas" like telling the story of a concept, using metaphors, or modeling the concept. Pugh and Phillips (2011) argue that it is the teacher's responsibility to passionately refer the actions and examples that not only convey the purposes and goals of a lesson (concepts), but also make a connection between a lesson and its

application to the students' lives (ideas) outside of school. In summary, the authors affirm that the problems related to the appreciation of content are reflected in the teachers' teaching methods and styles.

I argue that teachers sometimes forget that the students are the best "source of data and a force for data collection and analyses" (Yonezawa and Jones, 2009, p. 206). According to the author's research, for instance, one of the students' more controversial research topics was grading policies. They discovered inconsistencies in grading practices between science teachers and mathematics teachers across the school. When the grading practices differ from one subject to another subject, we see more failing grades in one class than the other. However, this topic used teachers' suggestions to solve the issues at hand. I wonder whether students' suggestions are also being used to solve the grading issues. What are the actual reasons for failing grades in science and mathematics subjects? The point here is that the teachers should elicit the students' responses to issues from their critiques and perspectives (Yonezawa and Jones, 2009). Consequently, we would be able to explore the educational challenges from the students' perspectives and points of view and create greater engagement and motivation in classrooms (Yonezawa and Jones, 2009).

Given the numerous required topics in the science and math curricula, there might not be enough time for students to engage and have an active role in classrooms since the majority of the time is given to in a teacher-centric environment. Less engagement and less motivation might result in less participation in math and science by students. Another issue that arises for science and mathematics subjects is that "the growing competitiveness for marks as measures of competence for entry to post-secondary institutions detracts from a focus on deep learning" in classrooms (Dunleavy & Milton, 2008, p. 8). This suggests that policy makers and post-

secondary leaders need to cooperate on admission requirements. The issue points out the importance of the students' institutional engagement and their success in schools. We should accept that students are able to recognize their educational needs and make better learning opportunities with their own goals, although this might not be easy. Therefore, teachers should provide opportunities for students to take an active role in the delivery of subject matter as this could raise the students' interests and level of challenge in that subject or classroom (OECD, 2013d; 2016b).

At the international school where I taught, all my students in grade 10 and 11 exhibited innovation and creativity in their physics studies in school, which had unbelievable effects on the students' engagement, enhancement, and academic achievement. The students could passionately demonstrate their abilities, skills, efforts, and capabilities by being involved and intellectually engaged in my innovative methods of teaching physics. Researchers argue, "interest provides the basis for becoming engaged with a topic for its own sake" (Shernoff et al., 2003, p. 161). Each of the students, according to their interest (student-selected), had chosen one or two chapters of their textbooks (required topics in their curriculum) to create an innovative project and make something remarkable related to the topic. During the completion of their projects, the students were collaborating with each other not only just for the aim of completing the project but also to learn from each other and teach each other too. They had to find the answers to the physics questions related to their projects throughout their communication, co-facilitation, and collaboration with other students and finally confirm these with me. Although students were working individually on their own project and interest, they had to work together as a group. The more responsible and persistent students were encouraging and helping the others who had a lower level of interest. These approaches transformed learning to a "real-life and real time for

students" in the classroom and school (Fullan, 2016, p. 12).

I was listening to them about what they would like to do and what they were interested in, and these are the key considerations to motivate and engage the students. "An interest is always directed towards an object, activity, field of knowledge or goal" (OECD, 2016b, p. 125). I believed in and stepped towards fostering students' intellectual and institutional engagement and improving their success in physics matters. According to PISA 2015 Results (OECD, 2016c),

> Students who reported that their science teachers frequently use these methods and adapt their teaching to meet students' needs score higher in science, show stronger beliefs about the value of scientific enquiry, and are more likely to expect to pursue a science-related career than students who reported that their teachers use these methods less frequently (p. 17).

They were continuously receiving my feedback and encouragement; therefore, they could know whether or not they were on the right track. In my view, leading students and keeping them on the right track of learning and performing are the most important factors in teaching and motivating the students. From David Hargreaves (2009) viewpoint, 21st century teachers are mentors or coaches who provide feedback and comment on the students' work rather than grading it. Teachers should let the students know if they are on the right track or not since most students either are not able to recognize the right track or they do not know that they are off-track when learning and achieving educational goals.

In my physics classes, the students were continuously being encouraged and helped to believe themselves that they can perform well. According to Schleicher (2015), teachers "get students to believe they can do well in school work" which is an efficacy in student engagement. This encouragement gave them a feeling of enjoyment since they were working on their own

interests in the subject. They were extremely engaged and concentrated on activities and it was recognizable that they had enjoyable experiences with complete involvement. They were utterly motivated by knowing that their voices, ideas, perspectives, and interests were being heard since the level of their active work and their feeling of satisfaction were being displayed. They were not reluctant to perform and participate in physics activities, projects, and the process of learning. They became knowledge builders, problem solvers, conceptual thinkers, and confident learners throughout their learning in the physics classrooms, which are the significant consequences of engagement (Dunleavy & Milton, 2008). In fact, they could be intellectually engaged in and motivated by their learning. "When students are intellectually engaged, they experience serious personal, psychological, and cognitive investment in learning" (Dunleavy & Milton, 2008, p. 7). Their intellectual engagement led them toward exploring physics concepts that enabled them to think critically, motivated them towards content learning, and helped them understand curriculum content. It brought them a feeling of content appreciation since they could connect the relationship between the content and their lived experiences and events, which made physics more exciting for them. I recall that many of the students stated that "time passed very quickly!" or "We did not know where the time went in this class!" These statements reflect their attention and level of focus on the activities in the physics classroom. The extent to which students are involved in and concentrate on activities and learning in classroom demonstrates the level of engagement and "flow" in activities (Csikszentmihalyi, 2007).

Dewey defined "learning" in two ways: first, "the sum total of what is known, as that is handed down by books and learned men" — which is related to traditional education and content learning —, and second, "something which the individual does when he studies; an active, personally conducted affair" — which is associated with progressive education and Dewey's

perspective of experience (Dewey, 1916, p. 334). "In educational contexts, deep absorption in activities has been shown to promote optimal learning experiences" (Shernoff et al., 2003, p. 161). During their hands-on work, newly experiencing and learning physics, motivation and involvement were being subsequently generated in their "real-life and real time" (p. 12). I find myself in agreement with Fullan (2016) that these approaches converted learning physics to a "real-life and real time for students" (p. 12). Recently, British Columbia's curriculum was redesigned to better develop student engagement, "content, concepts, skills, and big ideas that foster the higher-order thinking demanded in today's world" (British Columbia Ministry of Education, 2015, p. 3).

Consequently, all those efforts and the lived experiences in my physics classes reflect the key aspects and significant factors of student engagement such as encouragement, interest, enjoyment, creativity, collaboration, communication, and concentration in learning. These key factors effectively impact students' achievement and their success (British Columbia Ministry of Education, 2015; OECD, 2016c). Hattie (2009) realized that "the most powerful single influence enhancing achievement is feedback" (Hattie, 2009, p. 12). In other words, both students and teachers should receive feedback. Students need teachers' feedback and the teachers also need to listen to the students' views, critiques, and evaluations, which can be regarded as the students' feedback for the teachers. The students utilized higher order thinking skills of analysis and evaluation to increase understanding, solve complicated problems, and construct their new knowledge (Willms et al., 2009) in physics. These are good reasons to believe that the students become able to think critically, to develop creativity, to communicate successfully, to work collaboratively, and to enhance their success and achievement (Fullan, 2016).

Flow Theory and Its Impact on Learning

Flow, as proposed by Csikszentmihalyi (1990), "is a state of deep absorption in an activity that is intrinsically enjoyable, as when artists or athletes are focused on their play or performance" (Csikszentmihalyi, 1990; Shernoff et al., 2003, p. 160). In other words, full concentration and complete involvement in an activity demonstrate flow experiences (Csikszentmihalyi, 2007). Moreover, "individuals in this state perceive their performance to be pleasurable and successful, and the activity is perceived as worth doing for its own sake, even if no further goal is reached" (Nakamura & Csikszentmihalyi, 2002; Shernoff et al., 2003, p. 160). Therefore, people enjoy conducting the activity with high enthusiasm and interest, and the aim is for the sake of the activity not any other outcomes. The experience of flow is what creative and passionate artists and scholars experience during their full involvement and engagement in their best work (Csikszentmihalyi, 1996; Shernoff et al., 2003).

Furthermore, there is a relationship between challenges in an activity and the skills required to tackle those challenges; moreover, flow theory is grounded on this mutual relationship (Shernoff et al., 2003). When an individual's "skills are neither overmatched nor underutilized to meet a given challenge" (p. 160), flow experience — high skills and high challenges — happens. Low challenge and low skills cause apathy; low skills and high challenges produce anxiety; low challenges and high skills bring boredom (Shernoff et al., 2003). Figure 1 depicts the instructional challenge and the relationship between challenge and the level of skills on a task. Moreover, it displays the relations between apathy, anxiety, boredom, and flow with the resulting of feelings of the students.
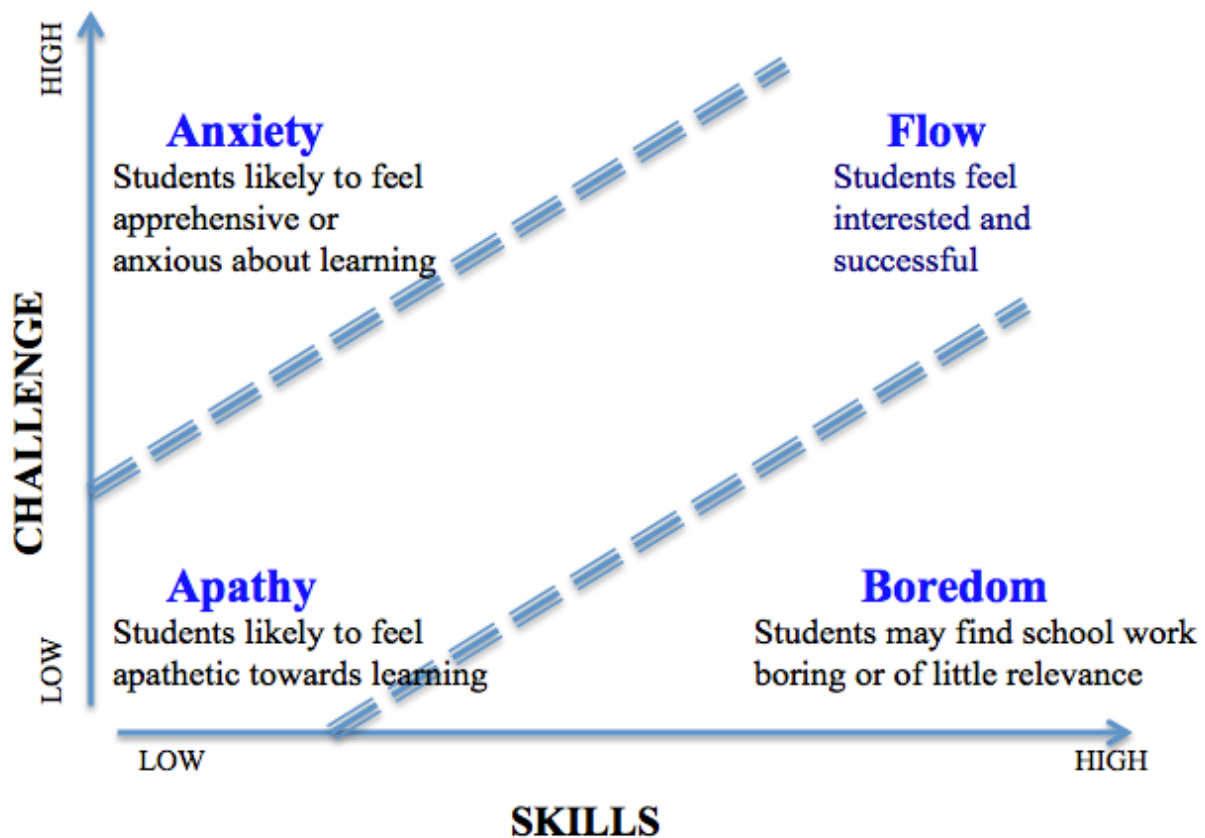
Instructional Challenge - Flow

Figure 1: Instructional Challenge (adapted from Willms et al., 2009, p. 14)

At the international school where I taught, school administrators received the results of the students' work and their performances at the end of the school year. The average grades of the students had significantly increased (with no failing grade in my classes), the number of students interested in taking and participating in physics classes had also improved substantially. The formal and informal feedback and evaluation received from the students illustrated their interest, enjoyment, and concentration on their learning of content in physics classrooms—all are "the fundamental aspects of flow experience" (Shernoff et al., 2003, p. 161). Therefore, the results of the students' success in physics classes demonstrate their experience of flow and their

full engagement in the class since they were happy working on physics topics and they were interested and enjoyed acquiring and learning new knowledge in physics. Indeed, this process of learning, according to Dewey's theory of learning, was a progressive approach in my classes. A way that the students could progressively develop their learning skills and challenges through learning physics content. Eventually, the increasing trend of student achievement in physics, not only with academic engagement but also with intellectual engagement, caused some changes in the school. The school principal gradually pursued my revolutionary methods in teaching and learning regardless of the traditional teaching methods in the school and encouraged the teachers to implement the same for the purpose of educational progress.

Why Teachers Should Engage and Motivate the Students

It is significant that student engagement is measured according to three components: "interest," "concentration," and "enjoyment" (Shernoff et al., 2003, p. 158; OECD, 2016b). The results of the studies indicate that students experience "increased engagement when the perceived challenge of the task and their own skills were high — [which is related to flow theory] — and in balance, the instruction was relevant, and the learning environment was under their control" (Shernoff et al., 2003, p. 158). Therefore, when the students have concentration, interest, and enjoyment, they experience flow, which is associated with their challenge and skills, and eventually, student engagement increases (Shernoff et al., 2003; OECD, 2016b). This engagement is related to their autonomy as the students seek the conditions of learning in which they have autonomy and control (Shernoff et al., 2003).

According to scholarly studies, there is a growing concern over the rates of students who are intellectually engaged in schools and enjoy learning (OECD, 2016b). PISA 2015 Results discloses that 68% of fourth-grade students and 43% of eighth-grade students on average

reported they enjoy learning science and this rate decreases dramatically by increasing the students' grades in high schools (OECD, 2016b, p. 121). In addition, the studies reveal a significant drop in students' intellectual engagement in the last two years of their education in high schools (in grade 11 and 12) (Dunleavy, Milton, & Willms, 2012). These are the important grades in which the students are becoming ready to receive a high school diploma when they will either continue for further education in colleges or universities or enter career fields. "The decline in or durability of enjoyment has also been linked to teaching practices that can either undermine or nurture students' natural motivation to learn science" (OECD, 2016, p. 121). It is significant that the intellectually engaged students are able to think critically and develop creativity and have high analysis and evaluation skills. Moreover, their intellectual engagement leads them toward the exploration of concepts and "research-based learning" approaches. Therefore, with decreasing numbers of students who are intellectually engaged in their learning, the number of critical thinkers, problem solvers, and innovators is declining. It is therefore critical that teachers should step forward to motivate and intellectually engage students in their learning.

This concern is depicted in Figure 2, which illustrates the average annual increase in the percentage of intellectually engaged students by grades and reveals the differences between grades. According to the reports of Dunleavy, Milton, and Willms (2012), there is a significant decline in the average annual increase in the percentage of intellectually engaged students.
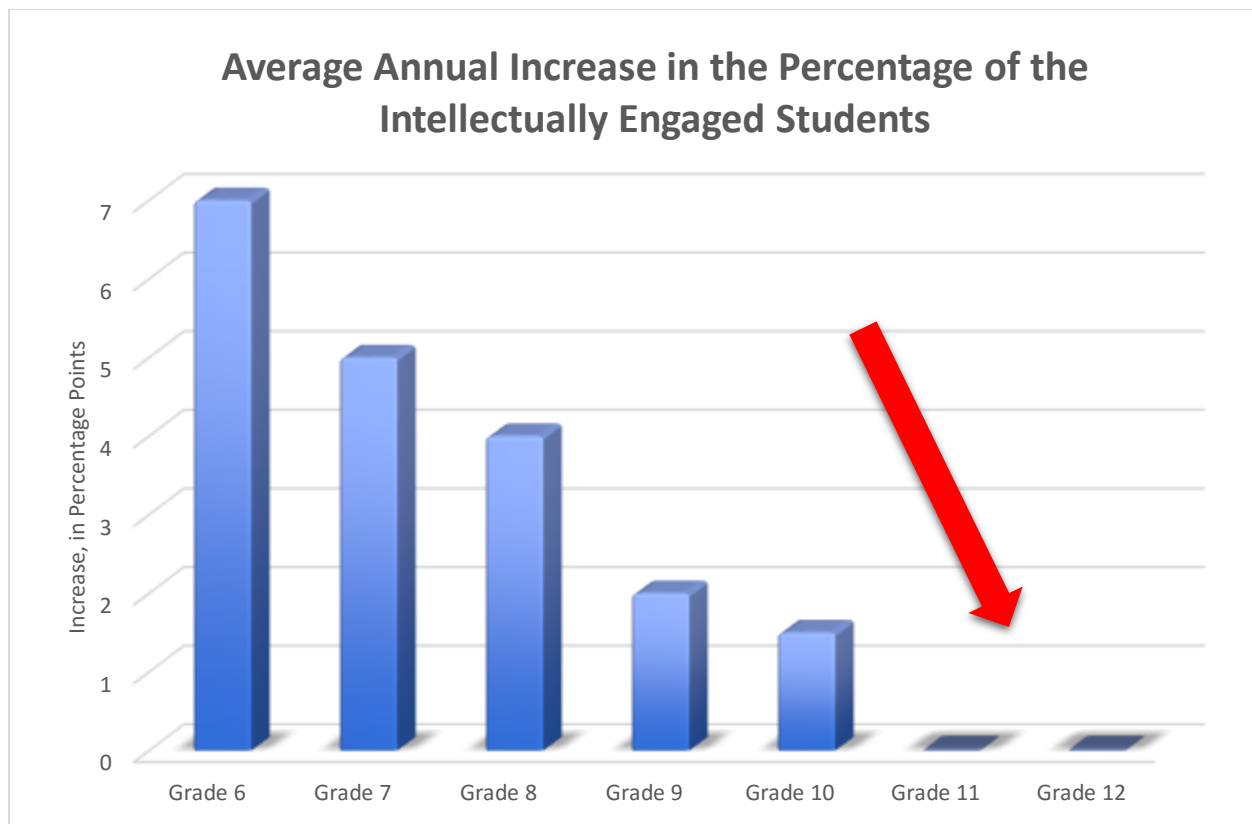
Figure 2: Average Annual Increase in the Percentage of Intellectually Engaged Students, by Grade in Canada (Adapted from Dunleavy, Milton, & Willms, 2012, p. 6)

There is no growth in the percentage of the intellectually engaged students in grade 11 and 12. Grade 6 students experienced the highest average annual increases of engagement, whereas grade 12 students did not show any annual increases in the engaged students. Therefore, the levels of intellectual engagement decrease noticeably from grade 7 to grade 10 and then levels off. It displays that the levels of engagement in grade 10-12 is lower. Indeed, "improving low levels of intellectual engagement over time is proving to be a more challenging process in secondary schools" (Dunleavy, Milton, et al., 2012, p. 6). Eventually, less engagement causes less motivation, which results in less participation and graduation within the standard twelve years of schooling (Dunleavy & Milton, 2008).

How students learn reflects the concept of intellectual engagement (Dunleavy & Milton, 2008). It is significant to know, as Dunleavy and Milton state, that "effective [students] take responsibility for their own learning, persist in the face of difficulties, and find intrinsic value in the work that they do" (p. 8). Therefore, the students attempt to solve problems, to be engaged with knowledge and learning, connect their subjects and content learning in school to out of school contexts, and learn from others and experts in their communities (Dunleavy & Milton, 2008; Emdin, 2016).

British Columbia's New Curriculum

Though British Columbia is one of the best education systems in the world (OECD, 2016b; 2016c), with skilled teachers, high rates of student achievement in international and national assessments, and excellent educational facilities, the ministry of education has to transform the education system and consider student engagement with the aim of improving their learning, skills, competencies, and success (British Columbia Ministry of Education, 2015). To this end, researchers and experts agree to support a curriculum that focuses on developing students' skills in "critical thinking, creative thinking, and social and personal responsibility" (p. 1). "They suggested that to prepare students for the future, the curriculum must be learner-centered and flexible and maintain a focus on literacy and numeracy, while supporting deeper learning through concept-based and competency-driven approaches" (p. 1). Twenty-first century students are very different from past generations and are more connected to technology and via social media today; therefore, they need to be more engaged and motivated in learning and becoming competent thinkers and communicators (British Columbia Ministry of Education, 2015). Consequently, "British Columbia's redesigned curriculum honours the ways in which

students think, learn, and grow, and prepares them for a successful lifetime of learning where ongoing change is constant" (p. 1).

Students who are effectively motivated to participate and engage in learning with their active roles think critically, communicate clearly, work collaboratively, and develop their creativity (OECD, 2016b). The students should be provided with opportunities, which enable them to develop their skills, strategies, and processes over the time of learning, to think critically, to communicate effectively and explicitly, to collaborate respectively, and to be creative (OECD, 2016b). Thus, they need to have autonomy over the actions of learning, which makes them independent decision makers. With these approaches in the 21st century, the rate of student achievement and success increases not only in education but also in society (British Columbia Ministry of Education, 2015). Ultimately, the students with these strengths are becoming educated and better citizens for today and for the future (British Columbia Ministry of Education, 2015).

Students as Agents of Development

I hasten to say that few teachers look to "students as agents of change" and development in schools (Yonezawa & Jones, 2009, p. 205). In other words, students are able to be educational partners with teachers for the purpose of improving and reforming schools toward better achievement and success in education (Fullan, 2016). Hargreaves (2009) believes that 21st century students are able to "help make the curriculum, tell the school how to use information technology, set standards and learning objectives, assess their own and one another's work, spend half or whole days on collaborative projects, sometimes work at home" (p. 1). Yonezawa and Makeba Jones (2009) demonstrate this approach through their research project, Student Co-researcher Project (SCR), in San Diego area high schools. With this project, they not only

promoted "youth engagement" and "student voice" in high schools, but also displayed how adolescent students are able to act as partners and influential agents in educational reform for the aim of learning. The results of their project and its impact on schools are discussed with the schools' principals, administrators, and teachers through students' presentations and accomplishments in schools. Yonezawa and Jones' study illustrates the mutual and effective interaction between students, teachers and administrators. Indeed, they show through their study that educational reformers need to utilize the students as effective partners to make change and improve the schools. In my view, Yonezawa and Jones' research study explicitly demonstrates that students can be active and successful "educational partners" in classrooms and schools.

In the following example, two educators (Orr and Olson, 2007) describe their experiences of "curriculum moments" by students and new teachers in classrooms. Orr explored the importance of student perspectives and their teachers' experiences in the classroom and focused his research on a student who brings his own epistemology to the "curriculum moment" and acts against the dominant interpretation of a good student. Olson investigates teachers' conventional ways of instruction and their cooperation with pre-service teachers through narrative inquiries in school classrooms in which the knowledge is transferred from cooperative teachers as expert to pre-service teachers as novice. Orr and Olson illustrate transformative possibilities for teachers and students to create curriculum per Connelly and Clandinin's (1999) points of view about teachers' curriculum. They believe and consider "how students shape curriculum alongside teachers in classrooms" (Orr & Olson, 2007, p. 819). According to the Orr and Olson's studies, teachers should find a window into their students' epistemology and identity, which is connected to the events and lives in the school. Curriculum is created through the "moments of possibility" within the relationship between students and teachers in classrooms (Orr & Olson, 2007).

Orr (Orr & Olson, 2007) illustrates a "curriculum moment" and "moments of possibility" by an example in the classroom. The teacher asks students a question: "What have you learned?" Where most of the students seem to be working away and some are looking at their pages, the teacher, by walking among the students' desks, checks the answer of one of the students who was sitting looking at his page. The student had written "NOTHING." Orr indicates that this example is a curriculum moment, which can create transformative possibilities for both teachers and students. Orr argues that this is the moment in which teachers are encouraged to slow down and consider the possibilities and create spaces to improve or transform. Moreover, Orr and Olson "view the relationships between teachers and students as central in creating spaces for transformative curriculum encounters" (Orr & Olson, 2007, p. 823). Transformative curriculum is developed by considering students' engagement and the relationship between teachers and students.

The observations in the Orr and Olson study suggest how teachers should continually reflect on themselves to prevent perpetuating and replicating their own conventional ways of knowing, teaching, and learning in classrooms. Teachers need to slow down in the "moment of possibility" to consider the issues from different perspectives. Moreover, teachers and researchers might share those curriculum moments with students. Admittedly, sharing teachers' stories with students is a way to engage and motivate youth in the process of retelling the story in their daily lives (Connelly and Clandinin, 1999; Orr and Olson, 2007). Thus, they actually engage the students in the process of transforming. Arguably, this is the moment that teachers are able to recognize the students' problems and issues. However, curriculum transformation does not happen with the teachers who are following their own conventional ways of knowing, teaching, and learning in classrooms. Consequently, students and their engagements are an aid to

recognize the simultaneously transformative possibilities for teachers and students. In addition, the moments of tensions and relationships between teachers and students in classrooms could be the "moment of transformative possibilities" if the teachers could slow down the moment for critical thinking and reflection.

Social Media as a Means to Engage Students

Emdin (2016) illustrates teachers' practices and the contemporary approaches to implementing reality pedagogy with different examples of teachers' and students' lived experiences in urban education. His approach is to prepare teachers to become facilitators and a student of their own students by providing occasions for students' engagement. Moreover, Emdin believes in the importance of using powerful digital tools for the aim of student engagement and the importance of the ways that the technology is being utilized. Emdin states that digital technologies, videos, metalogues, and social media are the most influential tools for teachers, not only to find the adolescents' learning interests, but also to improve their content learning since youth are involved with it in their everyday lives out of the classrooms. However, there is a disconnect between in-school and out-of-school learning, which "is often magnified by students' personal use of technologies unavailable to them in school" (Dunleavy & Milton, 2008, p. 8). He suggests ways that enable teachers to bring social media into the classrooms for the purpose of teaching, learning improvement, and students' engagement.

One of the ways that Emdin advocates for it is the use of metalogues. "Metalogues are a way for students and their teacher to engage in conversations about the classroom" (Emdin, 2016, p. 201). Metalogues enable teachers not only to assess the students' learning informally, but to also obtain the students' views about the themselves, the classroom context, and the instruction (Emdin, 2016). It is interesting that during the metalogue, the students can select a

song or music to be played during their task or activity, which does not require any specific interaction or concentration while they work or write. Emdin states that "the music sets the context for the task that students are about to engage in, and allows them to think of the activity as a release from the structure of the traditional class" (p. 207).

From my point of view, Emdin creates a relationship between the students' learning issues in classrooms with digital technology and social media. Through one of his examples, he articulates a critical and essential question: "What major issue was getting in the way of their [students] learning?" This is the most important question, which might be stated in the classrooms. I wonder who should answer this question or how it should be answered. Emdin seeks the answer from the students' perspectives and the students' responses to it. The answer to the question is confirmed and acknowledged through a recorded video. Video can be a teaching and learning tool for both students and teachers in the classroom, where part of the teaching is letting students evaluate and criticize the learning environments and issues (Emdin, 2016; OECD, 2016b). The teacher, however, may not always like the response he or she hears. Regardless, videos are the significant parts of the social media and it is important that "the technology alone is not enough to engage the students" (Emdin, 2016). What engages the students is how technology is being used (OECD, 2016b). Finally, Emdin demonstrates the ways in which teachers do not regard students' perspectives and interests associated with social media and digital technology in their education.

Digital Technology and Learning

Sancho (2009) points to the fundamental juxtaposition between a rapidly changing world and a relatively static educational system. She not only questions the relationship between education and technology, but also implies the positive impact of digital technology on students'

learning achievement, their ways of learning, and their tendencies to learn. In addition, Sancho claims that digital technology is a powerful tool in education reform for updating and making education interesting to the students. She introduces Bigum and Kenway's (1998) theory of "boosters," "anti-schoolers," "doomsters," and "critics" when discussing the use of technology for learning in the classroom. However, as previously stated, this paper is not delving in various perspectives. Sancho articulates the hesitation that many teachers have in integrating technology into their classrooms. Subsequently, the study reveals that even when schools do have access to technology, it is not necessarily utilized, and when they do use it, their routines, expectations and approaches stay the same (Sancho, 2009). Therefore, schools are slowly adapting to the opportunities of technologically driven change, which mostly disconnects from the learning patterns and lives of the children and youth whose development is profoundly influenced by it (Sancho, 2009). Finally, Sancho outlines the essential challenges facing educational systems in correcting the disparity between children's experiences inside and outside of school.

One of the challenges is "engaging students in passionate personal and social projects" (Sancho, 2009; Hargreaves, Lieberman, Fullan, and Hopkins, 2010, p. 441). This perspective illustrates the value of student-centered learning, an approach that informs my own teaching practices. According to this philosophy, teachers are responsible for facilitating learning, but students are encouraged to take ownership over their learning. It capitalizes on student interest and expertise to motivate and engage students (OECD, 2016b). In the broader context of technology and educational change, this type of approach would allow students to interact with different technologies in ways that are innately relevant and meaningful to each individual student (OECD, 2016b). I wonder how we sufficiently equip teachers who are not "digital natives" to effectively interact with unfamiliar, contemporary technologies within the classroom.

In addition, there are some issues that Sancho brings forward in her study, especially issues that speak to the fact that technology alone cannot solve problems or change a classroom. Some challenges are highlighted that the educational systems will need to address in order to respond to "young people's experience in and out of school" (Hargreaves, Lieberman, Fullan, and Hopkins, 2010, p. 440-441). Implementation needs to be structured in a way that is progressive for both the teacher and the students and needs to be deeply thought about before trying to integrate new technology into the classroom (Sancho, 2009).

As an illustration, Scott and White (2013) indicate that technology is used as an exciting opportunity for African-American and Latino girls to deliver learning in new and myriad ways. Their research project not only fulfills traditional ideas of learning that consist of technical skills and content, but additionally, as they describe it, the development of "techno-social analytical skills" (Scott and White, 2013, p. 663). When participants were recruited in the project, they claimed an expectation of learning computer skills at the very beginning; however, they also learned project design, development, and management instead (Scott and White, 2013). Scott and White's research demonstrates the increased access to technology particularly for girls in urban areas and encourages them towards utilizing technology in a way that allows students to personalize their learning experiences. Consequently, according to the research project and with their program, Scott and White pursue greater opportunities for "marginalized voices" ("girls of color") to progress through a multimedia program called "COMPUGIRLS," and to inspire the participants and the researchers.

Scott and White's work introduces the concept of culturally responsible computing as an approach to providing students with the opportunity to "manipulate technology and learning experiences as a means of self-expression and research (Scott and White, 2013, p. 658)." One of

the most impactful effects of the "COMPUGIRLS" program is the fact that they are using

technology to encourage young girls to engage in authentic research about issues in their

community. It is not simply just showing the girls the different technologies and hoping they can

derive some application out of them; instead, it is engaging and involving them to be researchers

and giving them the tools to help their research, which in turn provides them the skills to use the

tools. I wonder whether a program like "COMPUGIRLS" is only successful outside of school, or

if this type of program could be run as a course—combined with other relevant courses such as

math and science—within a traditional school setting. This is exactly what the students

performed and learned in my physics classes: to be researcher, use digital technology, and

improve their skills. The new themes weaved into the technology are continuing and developing

as something to learn, like the content of a curriculum (British Columbia Ministry of Education,

2015; OECD, 2016b). In addition, the focus is on the personalization of learning and allowing

students to engage with issues that they are passionate about (British Columbia Ministry of

Education, 2015; OECD, 2016b). It is inspiring when students take the initiative with the new

technology in which they have more space and allowance to explore knowledge. This approach

to technology may be more accessible and effective to many students; however, it also requires a

fundamental shift in classroom routines and expectations.

Consequently, as the students' everyday experiences in school and out of school are

strongly connected to digital technology and social media in the 21st century, this becomes a

necessary component and tool in learning and improving skills and content knowledge (Fullan,

2016; OECD, 2016b). It is clear that social media and digital technology engage students and

admittedly enable them to experience new ways of learning (Emdin, 2016; OECD, 2016b). The

scholarly studies and reports demonstrate that most students are not only interested in utilizing

technology and social media, but also are enthusiastically immersed in what became ubiquitous (Emdin, 2016; OECD, 2016b). Therefore, in my point of view, students are more passionate about learning and using the tools which they are already involved with and have at hand, such as social media.

Proposing a Way to Engage the Students and an Opportunity for Effective Learning

Adolescents are routinely interested in and actively engaged in various forms of social media such as YouTube**TM**, Instagram**TM**, Facebook, and Pinterest, (Schurgin O'Keeffe & Clarke-Pearson, 2011). "In literature, the term "social media" has been used interchangeably with Web 2.0 tools and social networking software" (Mao, 2014, p. 213). In this paper, social media are defined as new applications and digital technologies using "the internet and Web 2.0 technologies" which allow users to communicate, interact, collaborate, share, manage, and publish (p. 213). Schurgin O'Keeffe & Clarke-Pearson (2011) research demonstrates that social media benefits adolescents by improving their connections, communication, skills, and knowledge. The authors reveal that "the number of adolescents using such sites has increased dramatically" (p. 800). Figure 3, in the 21st century, illustrates that social media sites and the use of digital devices have become two important ways for students to feel like they belong.

Figure 3: Engaged and motivated students with digital technologies and social media (Google images of high school students with digital devices, 2017)

Recent survey results reported by the American Academy of Pediatrics indicate that:

22% of teenagers log on to their favorite social media sites more than 10 times a day, and more than half of adolescents log on to a social media site more than once a day. Seventy-five percent of teenagers now own cell phones, and 25% use them for social media, 54% use them for texting, and 24% use them for instant messaging (Schurgin O'Keeffe & Clarke-Pearson, 2011, p. 800).

These statistics illustrate youth engagement and interest in social media. The results of the studies demonstrate that "students depend on social media in their daily lives for leisure and social connections" (Mao, 2014, p. 213). Indeed, this is not all that engages them in their everyday lives and activities, but the content on the social media sites is also what they are interested in and what motivates them. Although some people believe that social media and the use of digital devices just for texting is isolating people and count them as distractions, these views might change when they see the impacts of media on their adolescents' content learning.

Social media can be an excellent method and tool to motivate and engage students in their learning of content — actually so-called traditional learning. The students should read the books (perhaps in the libraries) and search throughout the books for exploring and learning; however, with appropriate media, they can learn the topic or content in a shorter time through a video or a recorded demonstration on YouTube™ or Instagram™. For example, a video of a physics demonstration about one of the complicated topics on YouTube™ would not only help the students to learn easier and faster but also makes the content more tangible, understandable, and visible. In short, I raise a helpful question: Who would prefer to read a long cookbook instead of watching a short video on YouTube™ or Instagram™ for cooking a meal? Therefore, if we bring the contents into media and make them more visible and tangible, it would admittedly motivate and engage the students in content learning.

The recent changes with the use of digital technologies and social media promote virtual active learning and experiences in education. The use of social media such as YouTube™, Instagram™, and the other applications make learning easier and faster for high school students. It is important to note that most smartphone applications or programs are social and less academic, which should be considered when developing programs with the aim of education. This is illustrated in Figure 4 in which I have added "math," "science," and "physics" programs/applications to the previous programs. This is a way to bring science and math closer to the students and make them more "user friendly."
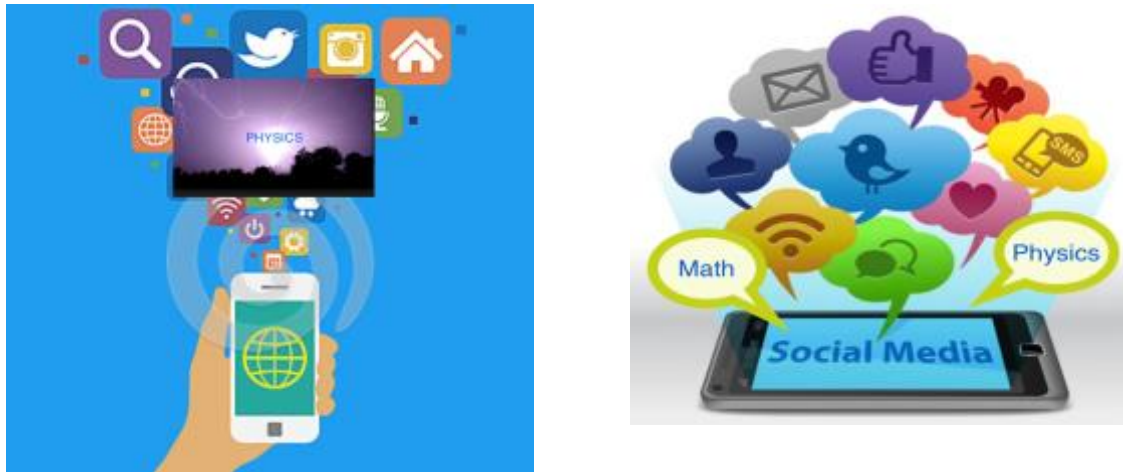
Figure 4: Smartphones with social programs and applications (Google images of smartphones with different programs, 2017)

Moreover, it is significant to explore the position of science and learning of content knowledge through the use of social media. According to PISA 2015, only 15% of students reported engaging and following the science matters via "blogs," "twitter," and the other social media (OECD, 2016b). About one in ten students visit the websites, computer programs, and applications with virtual labs or technical processes for the aim of learning science (OECD, 2016b). Therefore, the PISA 2015 results reveal the extent to which students are engaged with social media and technology to learn science outside of school. However, the studies illustrate that "educational uses by teachers for classroom teaching and learning are sporadic, while uses by students on their own for learning purposes seem to be abundant but also incidental and informal" (Mao, 2014, p. 213). Moreover, Mao's findings (2014) suggest that the students' attitudes and beliefs about social media use in education are positive. Thus, these results demonstrate that the students either have not become interested in science in their classrooms or have not being encouraged by teachers toward the use of media for the aim of learning science. It displays that teachers could not be successful in making science attractive enough in the

classrooms that students become interested and engaged with science activities during their free time outside of school (OECD, 2016b). This is the critical point related to teachers and their ways of teaching, engaging, and motivating students in the classrooms. According to the analysis of data from the Teaching and Learning International Survey (TALIS) and the OECD Program for International Student Assessment (PISA), "encouraging teachers … to lead innovation in the classroom" enhance students learning and success of the education system (Schleicher, 2015, p. 11). Thus, teachers should attempt to make science more enjoyable through innovative teaching.

Social media benefits most adolescents by enhancing their socialization and communication skills, providing opportunities for "community engagement," "enhancement of individual and collective creativities," "creation of blogs, sites, videos, and so on" and "expansion of one's connections" to the different personal and global issues (Schurgin O'Keeffe & Clarke-Pearson, 2011, p. 801). Moreover, social media could improve science education by making it more accessible to students and helping them to improve their understanding of the subject. Introducing students to science education via the vast environment of social media can enhance not only their social communication but also their learning of content in science education, thus benefiting not only the students but also the teachers who use their own teaching methods in the classrooms (Schurgin O'Keeffe & Clarke-Pearson, 2011). For instance, social media provides students with opportunities to collaborate and exchange ideas about learning subjects' content, assignments, and their learning problems (Schurgin O'Keeffe & Clarke-Pearson, 2011). Moreover, they receive prompt feedback from their peers by way of collaboration and learning through digital media (Ito et al., 2008). Some schools successfully utilize social media "as teaching tools," which "has the benefit of reinforcing skills, written expression, and creativity" (Schurgin O'Keeffe & Clarke-Pearson, 2011, p. 801).

For example, "in a flipped classroom, students watch the lectures outside of class through the use of screencasts, and class time is spent engaging students through a variety of learning activities" (Schultz, Duffield, Rasmussen, & Wageman, 2014, p. 1334). This kind of class actually flips the traditional approach of teaching in class and problems practicing and learning at home (Schultz et al., 2014). According to Dewey's approach in education, "to think progressive on the one side and traditional on the other side is a mistake"; hence, "we should look at a deeper level where they can both be integrated" (Ayers & Schubert, 2012, p. 11). Social media and digital technologies within a flipped classroom approach can transform a classroom from a boring environment to an active, engaging, and motivating one for students (Schultz et al., 2014). The flipped classrooms bring simultaneously traditional and progressive education together into the classroom (Schultz et al., 2014). Moreover, Murphy and Lebans (2008) explores that "the integration of Web 2.0 tools in secondary school classroom teaching increased student engagement with content, quality of assignments, and a sense of responsibility for their learning" (Mao, 2014, p. 214). The results of their studies reveal, "teacher use of Web 2.0 tools and resources has expanded teacher collaboration, changed classroom practice, and increased student engagement in learning" (p. 143-144). Using social media might be a way and an opportunity to innovate teaching and learning science and mathematics. Consequently, social media, which could be YouTube^{TM} videos or any other programs, applications, and technologies in these examples, can be a helpful and useful tool in the learning of content.

Furthermore, access to social media through the use of their devices already exists in most students' hands, so there is no need to encourage or urge students to use them or not. However, it is the responsibility of the schools to provide students with equal opportunities to access social media and digital technologies. Though equity should be the first concern of

teachers and administrators, accommodating students with electronic devices is related to the

schools' socio-economic conditions, which is not the focus of this study.

Chapter 3: Conclusion

At the beginning of this paper, I described my perception of students' problems in learning, their disengagement from learning, and their lack of an active role in the process of learning content in classrooms. The processes of disengagement and disconnection that I write about are not caused by traditional teachers through a breakdown in the educational system, but rather by a systematic disregard for students' ideas and an inability to engage them and inspire them to have an active role in the classroom. Through students intellectual engagement, which "is characterized by students putting in extra effort in their studies and being motivated to learn" (Willms, 2011, p. 4), "the teachers are interacting with that positive effort and motivation on the part of students, providing effective learning time, and having relevant, exciting instruction in the classroom" (Willms, 2011, p. 4).

I wish to highlight and encourage that listening to students and counting on their perspectives and voices provides excellent opportunities not only for increasing students' engagement and enhancement in achievement, but also for the schools' improvement and educational progress (Dunleavy & Milton, 2008; Dunleavy, Douglas Willms, et al., 2012; Willms et al., 2009). I emphasize that students' issues around their appreciation and learning of content are associated with their level of engagement and their active roles in school classrooms (Pugh & Phillips, 2011). Students' engagement brings their voices to the table and gives them space to be heard and counted in the educational system (Cook-Sather, 2006). Students are not the only individuals who wish to be heard, we all have a desire to be heard, to have a voice, to display our perspectives, ideas, and viewpoints in which we are living, working, learning, and teaching. It matters who you are when you have a voice, which is being heard by some. Therefore, this compels teachers to listen with respect to students' ideas and fulfill their "rights"

as learners (Cook-Sather, 2006). With these points of view, my perspective after researching and completing the paper and study was transformed from my lived experiences and beliefs about teaching and learning to one supported by the literature. As a physics teacher who was always strongly connected to the subject matter and heavy content, understanding the aforementioned perspectives about students is valuable and noteworthy not only for me, but for all teachers. Here is the moment that a teacher, myself included, might understand why some students do not appreciate the curricular content and how a teacher would be able to recognize, realize, understand, and address the students' learning issues and their struggles in the classroom.

The students' engagement and their points of view, according to the scholarly articles, should be regarded for the aim of positive changes in high schools since educational issues and students learning problems result from their perspectives and critiques (Yonezawa & Jones, 2009). Indeed, "the most motivated and resilient students are not the ones who think they have a lot of fixed or innate intelligence [but those] who believe that their abilities can be developed through their effort and learning" (Dunleavy & Milton, 2008, p. 7), and this is exactly what the teachers should consider in their relationships with the students in the classrooms. The teachers are responsible for fostering students' abilities and skills through their struggles in learning (OECD, 2014; 2016b). In addition, "when students are intellectually engaged, they experience serious personal, psychological, and cognitive investment in learning" (Dunleavy & Milton, 2008, p. 7). The point here is that the students are a great source of information, data, and ideas (Yonezawa and Jones, 2009) and are able to develop not only their learning, but also improve schools in which their perspectives and intellectual engagement are significant factors in their educational progress (Dunleavy & Milton, 2008). Therefore, the effectiveness and value in student engagement is to "get students to believe they can do well in school," "help them value

learning," "motivate [them] who show low interest," and "help students think critically" (Schleicher, 2015, p. 42).

Ultimately, if young students are learning, interpreting, and interacting with information in different ways due to the massive proliferation of digital technologies, teachers have a responsibility to evolve in a way that reflects this reality and systematically cultivate the skills and adaptability required for students to navigate the opportunities of modern society. Indeed, using social media can possibly be an aid toward more easily learning the content knowledge in the subjects being studied, which connects students' context in school to out of school (Dunleavy & Milton, 2008). From my point of view, students' lived experiences outside of schools and their interests in using social media and digital technologies can be connected to their curricular content learning in the classrooms.

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