McGill Journal of Education
Revue des sciences de l'éducation de McGill

"What's the Big Idea?" A Case Study of Whole-School Project-Based Instruction in Secondary Education
« Quelle est la grande idée? » Une étude de cas d'enseignement école-entière basé sur le projet au secondaire

Patrick Howard, Chris Ryan and Ian Fogarty

Volume 55, Number 3, Fall 2020

URI: https://id.erudit.org/iderudit/1083425ar
DOI: https://doi.org/10.7202/1083425ar

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Publisher(s)

Faculty of Education, McGill University

ISSN

1916-0666 (digital)

Explore this journal

Cite this article

Howard, P., Ryan, C. & Fogarty, I. (2020). "What's the Big Idea?" A Case Study of Whole-School Project-Based Instruction in Secondary Education. *McGill Journal of Education / Revue des sciences de l'éducation de McGill*, *55*(3), 619–640. https://doi.org/10.7202/1083425ar

Article abstract

This paper presents the results of an inquiry into a creative, whole-school integrative learning project that started with posing a 'big question'. Data were generated to deepen understanding regarding the effects of implementing creative project-based learning Hi on student lived experience and student attitudes toward learning. Research on project-based approaches is required to reflect the current contextual realities specific to high schools. The focus on integrative and arts-based approaches as they relate to high school classrooms indicate that secondary education lags in comparison to elementary and middle grades. The findings presented here provide the possibility of a more informed, attentive, action-sensitive professional practice in the development of educational experiences designed to influence the learning experiences of secondary students.

"WHAT'S THE BIG IDEA?" A CASE STUDY OF WHOLE-SCHOOL PROJECT-BASED INSTRUCTION IN SECONDARY EDUCATION

PATRICK HOWARD *Cape Breton University*

CHRIS RYAN & IAN FOGARTY *Anglophone East School District, Moncton, New Brunswick*

ABSTRACT. This paper presents the results of an inquiry into a creative, whole-school integrative learning project that started with posing a 'big question'. Data were generated to deepen understanding regarding the effects of implementing creative project-based learning Hi on student lived experience and student attitudes toward learning. Research on project-based approaches is required to reflect the current contextual realities specific to high schools. The focus on integrative and arts-based approaches as they relate to high school classrooms indicate that secondary education lags in comparison to elementary and middle grades. The findings presented here provide the possibility of a more informed, attentive, action-sensitive professional practice in the development of educational experiences designed to influence the learning experiences of secondary students.

« QUELLE EST LA GRANDE IDÉE ? » UNE ÉTUDE DE CAS D'ENSEIGNEMENT ÉCOLE-ENTIÈRE BASÉ SUR LE PROJET AU SECONDAIRE

RÉSUMÉ. Cet article exprime les résultats d'une enquête sur un projet d'apprentissage, école-entière, intégratif et créatif qui a été déclenché par des enseignants qui se posaient les « grandes questions ». Des données ont été générées dans le but d'approfondir la compréhension des effets de la mise en œuvre d'un apprentissage créatif basé sur des projets sur l'expérience vécue des étudiants et leurs attitudes envers l'apprentissage. La recherche sur les pratiques d'apprentissage basées sur des projets est essentielle afin de refléter les réalités contextuelles actuelles propres aux écoles secondaires. L'accent mis sur les approches intégratives et fondées sur les arts dans les classes du secondaire indique que l'enseignement secondaire est en retard lorsque comparé aux classes d'écoles primaires et intermédiaires. Les résultats présentés dans cet article offrent la possibilité d'une pratique professionnelle plus informée, attentive et sensible à l'action dans le développement d'expériences éducatives conçues pour influencer les expériences d'apprentissage des élèves du secondaire.

Provincial school curricula are being reformulated to include what are commonly referred to as 21st century learning or global competencies (Alberta Education, 2011; Council of Ministers of Education Canada, n.d). The provincial initiatives reflect a global embrace of 21st century skills and competencies and are believed to represent an important and powerful shift in education. Momentum is building as countries, states, provinces, and school systems re-write curricular goals and learning outcomes to align with "deep learning and new pedagogies" (Fullan & Langworthy, 2013; 2014).

Many educators realize that the new pedagogies being promoted can be traced to the tenets of Progressive Education and Experiential Education. The history of Progressive Education begins in the early 20th century and over the intervening decades has inspired inquiry and arts based learning, and experiential learning designed to increase student creativity and problem-solving skills. These have re-emerged as new pedagogies. The 5Cs[1] of 21st century education as skills, competencies, and dispositions bear a striking resemblance to progressive education aims from an earlier era, excepting the strong link to technology prevalent in the more recent initiatives. Many teachers have been pursuing these approaches for over a century. But today there is a renewed interest due to many factors, not least of which is the economic imperative to prepare a future generation for rapidly shifting technologies and the knowledge economy (Patrick, 2013). The recent initiatives, taken together under the umbrella term of 21st century education, continue to advocate for creative pedagogy and personalized instruction, student independence, global competency and awareness, and using technology as learning tools. A visit to almost any elementary or middle school in this country will illustrate a reliance on progressive, now 21st century, educational approaches.

The impetus for this research project is the recognition that secondary school, serving the interests of students roughly aged 15-18, "has arguably become a neglected part" of 21st century educational approaches (Brooks & Holmes, 2014, p. 11). A quick survey of 21st century education publications, websites, depictions, news stories, and media representations will, by and large, feature early childhood, elementary, and middle school students and teachers engaged in creative learning tasks associated with arts-based and 21st century learning. The focus on and support for creative, arts-based approaches as they relate to high school classrooms indicate that secondary education lags in comparison to elementary and middle grades. This is in keeping with secondary educational research.

> In general, there has been much more attention to pedagogy in elementary schools than in secondary schools. Debates over methods of teaching mathematics, over the role of phonics, or over whole class teaching, have

> been primarily in elementary schools. Pedagogy in secondary schools has been the subject of less research and less policy. (Levin & Segedin, 2011, p. 46)

This paper presents the results of an inquiry into a whole-school, project-based, integrative learning project that starts with a 'big idea' and involved the posing of a 'big question.' The research took place in a large suburban high school in Atlantic Canada. The research team, a university teacher educator and two creative high school pedagogues, inquired into the effects of an interdisciplinary, project-based approach to teaching and learning at the secondary level. Using case study methodology, data were generated to deepen understanding regarding the effects of implementing whole-school, project-based learning on several factors including student experience, student engagement, and attitudes toward learning.

BACKGROUND

What Does It Mean to Be Human? A Whole-school Project

The origins of the project span a number of years of teacher professional learning experiences aimed at increasing teacher creative agency (Carter et al., 2011). The broad professional development areas that contributed to the creation of the whole-school project were: the implementation of the Professional Learning Community (PLC) collaboration model; the development of a new model of assessment; and development of large scale, creative project-based learning opportunities. These three parallel strands of professional development contributed to teachers' understanding how to create an integrative project to meet the objectives of personalizing student learning by focusing on the Global Competencies as outlined by the Council of Ministers of Education Canada (CMEC, nd) while building capacity among teachers to develop the Global Competencies in students. Creativity, innovation, critical thinking, and problem solving are core to these competencies. The development of creative pedagogues capable of modeling these competencies is a gradual and incremental process in which teachers re-conceptualize their roles in safe environments in which risk-taking and experimentation is supported (Howard et al., 2018). In the high school under study, two earlier projects spanning almost a decade — the Xenotransplant Project in 2010 and the Saxby Gale Project in 2013 (Dealy et al., 2017) — provided important scaffolding toward the whole-school What Does it Mean to Be Human project in 2017 that is the subject of this inquiry.

Developing the "What Does It Mean to Be Human?" Project 2017

At the end of the 2017 academic year, the teachers at the high school learned of the New Pedagogies for Deeper Learning framework (Fullan & Langworthy,

2013; 2014) and joined a provincial government initiative Learning Through Personalization. This initiative placed the focus of competency-based learning, as described by Fullan and Quinn (2016), at the forefront of many classes. In October of 2017, a big question project was introduced by a small group of interested teachers to the rest of the staff. Of the 70 full-time teachers approximately 50 indicated interest in participating in a whole-school integrative project. The question "What does it mean to be human?" was connected to a foundational text, Sapiens by Yuval Harari, that was read by a core group of student volunteers and a number of interested teachers dedicated to designing and implementing the project.

From February to June 2018, time was spent coordinating teachers and students to respond to the big question. The project culminated in a public presentation to teachers attending a provincial professional learning day. This provided students a "real world" opportunity to present to a knowledgeable audience. Student content was displayed in an art gallery style exhibit with visiting teachers, guided by students, touring the high school. These exhibits included science courses using art, language arts courses representing aspects of humanity, interdisciplinary collaboration between four high school courses (Fine Arts, Psychology, Personal Development, and Leadership), design courses creating fashion representing human development, and student produced public Ed Talks representing learning growth.

Literature Review

With the beginnings of the Progressive Education in the early 20th century and the "Project Method" as early as 1918 (Little, 2013), it is not surprising that there has been a great deal of research on these educational approaches over the intervening decades. Project-based teaching and experiential learning and the related approach of problem-based instruction (now common in medical and science education and training) have been studied across a number of measures (Neufeld & Barrows, 1974). These measures include effectiveness (in comparison to more traditional approaches); achievement; performance on standardized tests; content knowledge retention; long term retention; application and skill development; student motivation; and teacher attitudes (Harris, 2014).

For the purposes of this study, we are reminded that a majority of the research conducted on project-based approaches involves primary, elementary, and middle school classrooms, with far fewer studies examining secondary levels (Holm, 2011). Also, a review of the literature did not reveal any studies at the secondary education level of a whole-school, project-based learning approach similar in intention, size, and scope as the one being described here.

There is renewed interest in project-based approaches in the last decade as part of the growing global uptake of 21st century education initiatives (P21, 2016;

C21, 2017), global competencies (CMEC, n.d.), and "new pedagogies for deep learning" (Brooks & Holmes, 2014; Fullan & Langworthy 2013; 2014). These initiatives have motivated stakeholders to look again at project-based learning research and the many comparative studies. As expected, the results of this renewed interest and the interpretation of the results have sparked debate as to the efficacy of inquiry-based, integrated, student-centred approaches compared to more didactic, discipline- and teacher-centred approaches. Holm (2011) conducted a review of research specific to the effectiveness of project-based instruction in pre-kindergarten through 12th grade classrooms. The research was conducted between 2000 and 2011. The findings supported earlier positive findings regarding the overall efficacy of project-based instruction (Thomas, 2000). Holm (2011) concludes:

> Project based instruction in pre-kindergarten through 12th grade has yielded improved content learning, higher levels of engagement and more positive perceptions of the subject matter. With such a clear research base in support of its effectiveness, project-based methods appear to offer the possibility of success both overall and to a broader range of students than traditional lecture-based instruction. (p. 10)

Kokotsaki et al. (2016) conducted a literature review of Project-based Learning (PBL) research that provided recommendations for key elements for the successful adoption of PBL in mainstream schooling. The researchers do not draw a certain link between PBL and positive student outcomes. Primarily found in American research are the studies that show project-based learning to be as effective as traditional methods as measured by direct, summative achievement or standardized tests. (Duke & Halvorsen, 2017). One of the most cited studies in the literature (Bell, 2010; Bender, 2012; David, 2008) is the research by Boaler (1998a; 1998b; 1999). The Boaler study describes a three-year inquiry into project-based and traditional approaches in middle school mathematics. The study took place in two schools: one used a traditional textbook approach to teach mathematics to middle school students and another used a more open project-based environment to learn mathematics.

Ultimately, the Boaler (1998b) study suggested the students from the two schools developed different kinds of mathematical knowledge (Thomas, 2000). Students from the more didactic, traditionally taught school were able to apply specific mathematical skills shortly after taught and demonstrated knowledge of mathematical procedure. Students at the more open, project-based school were able to still sufficiently demonstrate knowledge procedure, but also showed superior mathematical conceptual knowledge and were able to apply that knowledge beyond traditional classroom contexts.

Many of the skills inherent in project-based learning have a greater focus on students building knowledge through the process of tackling a problem rather than rote memorization after lecture. Standardized tests measure the latter rather than the former (Ravitz, 2009). For this reason, selected literature suggests that project-based learning is not the most effective means of addressing some student learning as measured by standardized tests especially when the tests are designed to assess skills or knowledge obtained through rote memorization. The Boaler (1998a) study showed the students performed on par with their traditionally taught peers on sections of the assessment designed to assess procedural math. Nevertheless, the literature supports that students who engage in project-based learning do significantly better than their peers in application of concepts (Boaler, 1999; Geier et al., 2008; Strobel & van Barneveld, 2009).

In Canada, Hutchison (2015) provided an Ontario Education What Works: Research into Practice monograph and outlined both the strengths and the challenges of Project-based Learning (PBL). The author claimed that PBL had much to offer as a "holistic strategy" promoting "student engagement" and instilling "21st century skills," including creative problem solving and critical thinking. However, it faced "challenges that can limit its effectiveness" (2015, n.p.). The challenges described focused on teacher readiness to adopt the approach and the constraints of time, concerns about classroom management, project management, and content mastery in preparation for standardized and exit testing, particularly at the secondary level (Hutchison, 2015; Ryan, 2016; Fogarty & Ryan, 2017).

As stated above, further research on project-based approaches is required to reflect a renewed focus on 21st century competencies and the current contextual realities specific to high schools. Areas largely absent from the research include how secondary school structures and policies might be adjusted to best support teachers and learners; and how to maintain content integrity and meet mandated curriculum outcomes and standardized assessments while incorporating the recognized benefits of project-based teaching and learning. Holm (2011) states, "Researchers should continue to refine understanding and respond to the practical challenges of this teaching method" (p. 11).

APPROACH AND METHODS

Theoretical Framework

In this current study, the researchers situate the study, the methods, and the approaches to analysis in the experiential — in the well-known theory of learning most often associated with Dewey (1938/1997), and also in the expanded sense that education has as its central purpose a focus on human

becoming. Therefore, education is also an existential undertaking. We are interested in student lived experience as it relates to project-based teaching and learning. As we have seen, 21st century learning is grounded in creative and purposeful learning by doing. Teachers are learning designers, partners, and co-learners who enter a different relationship with students to support young people in discovering what it means to connect, thrive, and flourish in a constantly changing world (Greene, 1995).

Data are available that verify the large numbers of students who are disengaged from schooling, specifically secondary schooling (McKeown & Nolet, 2013), and there is ample evidence of the alarming rise in the emotional and mental health issues among children. Suicide accounts for 19% of all deaths among children aged 10-14 and 23% of deaths of young people aged 20-24; 14% of high school students have seriously contemplated suicide and 4% report having attempted suicide (Centre for Addiction and Mental Health, 2020).

John Dewey wrote extensively about the impact of experience on learning in Experience and Education (1938/1997). His work on the impact of experience on a child's education is foundational to the formation of project-based learning as we know it today. Dewey's work focused on a theory of experience that challenged both traditional and progressive forms of education. Dewey also reminded us many years ago, "Experience is not something which goes on exclusively inside an individual's body and mind" (1938/1997, p. 39). Experience is inherent through bodily engagement and it is also an interactive process. Interaction "assigns equal rights to both factors of experience — objective and internal conditions…[and] is an interplay of these two sets of conditions" (1938/1997, p. 42). Our experience directs us toward some sort of contact with the world, and the world calls forth our experience.

Progressive approaches adapted for the 21st century (Little, 2013) have the potential to address the weaknesses in education today (Atlass & Wiebe, 2017). Historical barriers should not prevent credible attempts to examine the challenging issues facing secondary schools with a holistic perspective that connects social, environmental, economic, and health issues to the lived experience of both students and teachers in our secondary schools (O'Brien & Howard, 2016). The creativity, imagination, discovery, and resilience inherent in arts-based, integrative projects provide secondary students with a range of essential skills, as well as the flexibility to apply those skills in new contexts (Carter et al., 2011).

Methodology

In keeping with the experiential and the existential orientation of the research, a Qualitative Case Study (QCS) methodology was chosen that best aligned with these underlying orientations. Researchers' views about the nature and production of knowledge, their epistemological leanings, underlie the inquiry

project they conceptualize and implement. We were fundamentally interested in the lived experience of students immersed in a whole-school project-based learning activity. The whole-school learning activity was the case; however, the research was focused on the experience of individual students participating in the whole-school project. It was a priority of the researchers not to lose sight of the student experience over the macro level of organizations, design, and implementation aspects of such an ambitious project. To this end, we chose an approach to case study conceptualized by Stake (1995; 2005). This approach to case study includes "naturalistic, holistic, ethnographic, phenomenological, and biographic research methods" (Stake, 1995, p. xi). From a Stakian viewpoint, constructivism and existentialism (non-determinism) should be the epistemologies that orient and inform the qualitative case study research since "most contemporary qualitative researchers hold that knowledge is constructed rather than discovered" (Stake, 1995, p. 99). The researchers also draw on the work of Merriam (1998) who conceives Qualitative Case Study as "an intensive, holistic description and analysis of a bounded phenomenon such as a program, an institution, a person, a process, or a social unit" (p. xiii).

As well, in keeping with the focus on student-lived experience that emerged out of the data while staying oriented to the distinctive case study attributes as explicated by Merriam and listed above, the researchers employed human science meaning-making methodologies related to interpretative research approaches useful in uncovering or isolating thematic aspects significant to the participants' experiences (van Manen, 1997; 2014; Vagle, 2014). This provided for the identification of important experiential themes that recur in the analysis of the data. Data collection and instruments employed are described next.

Data Collection

At the end of the 2017 academic year, the teachers at the high school learned of the New Pedagogies for Deeper Learning framework (Fullan & Langworthy, 2013; 2014) and joined a provincial government initiative Learning Through Personalization. This initiative placed the focus of competency-based learning, as described by Fullan and Quinn (2016), at the forefront of many classes. In October of 2017, a big question project was introduced by a small group of interested teachers to the rest of the staff. Of the 70 full-time teachers approximately 50 indicated interest in participating in a whole-school integrative project. The question "What does it mean to be human?" was connected to a foundational text, Sapiens: A Brief History of Humankind by Yuval Harari, that was read by a core group of student volunteers and several interested teachers dedicated to designing and implementing the project.

From February to June 2018, time was spent coordinating teachers and students to respond to the big question. Each week teachers allotted time in

the traditional high school timetable to the project. The time devoted to the project and the class structure varied among teachers and subject area. Time, scheduling, and the tension in organizing class schedules and curriculum coverage emerged as an important theme. Teachers were provided professional learning through the professional development (PD) initiative above and interpreted best practice in PBL including structuring the class and supporting students through the project based on that learning. There were two methods of data gathering for both students and teachers in this project. The focus on this paper is on the student data and findings only. The two sources of student data, student surveys and conversational interviews, provided an opportunity to collect two distinct sets of data. The data collected from the student survey asked specific questions regarding levels of engagement, types of learning environments, and depth of content learning. This provided aggregated data that allowed researchers to understand the broad changes that took place for students participating in this project. The conversational interviews were conducted in a focus group setting using open-ended questions to allow students to provide more details and share stories of their experiences during the project.

Bagnoli and Clark (2010) suggest that focus groups work well because group members influence each other with their comments and participants may form opinions after considering the views of others. Tapping into this interpersonal dialogue can help identify common experiences and shared concerns. The researchers conducted the conversational interview following ethical guidelines. The interview was audiotaped and subsequently transcribed, supplemented with notes taken during the process. The main interview questions focused on: the overall impressions of students; students' thoughts on how project-based learning compared to traditional teaching methods; and the benefits and challenges of project-based learning Planned follow up questions were asked to make interview questions more specific and provide opportunities for elaboration. Spontaneous questions from the interviewer were asked after listening to the first responses to add richness and to help clarify the meaning of responses.

To assist in the early analysis of the case studies a decision was made to use the Codes and Coding technique (Atkinson, 2002). The research software Atlas.ti was used for this purpose. According to Miles and Huberman (1994) and Atkinson (2002), the codes and coding technique utilizes a strategy referred to as "partial ordered displays" to analyze case study data. This strategy allowed for the quick identification of the segments relating to the research questions and any potential themes to be identified. The identification of the codes was facilitated by the creation of meta-matrices to assemble descriptive data from the different cases into a standard format. The process grouped all the condensed data together allowing for comparisons to be made between them.

TABLE 1: *Survey Questions and Focus Group Procedure*

Grade 9 n=23
Grades 11/12 n=19

1. What has been your experience in the past with projects that are part of multiple classes?
2. How did this project-based learning style compare to your previous experience with big projects?
3. Would you look forward to more opportunities to learn this way?
4. How would you describe your interest/attitude toward the topic after participating in the project?
5. What do you think could have been done differently? Suggestions for future projects?
6. Were you interested in learning when it was connected to a larger question? Why/why not?
7. Did your participation in the project increase your interest in classes? Why/why not?
8. How would you describe your classmates interest level in learning?
9. Provide examples of what you observed that was different from other classes.
10. How would you describe your teacher's engagement? Provide examples.
11. Did you feel differently coming to class? Why/why not?
12. Do you feel an integrated project-based approach helped you learn the subject material? Why/why not?
13. Do you feel you gained knowledge and understanding about the big question?
14. From your experience do you think PBL is as effective as traditional methods? Why/why not?
15. What did you learn about yourself in taking part in this project?

Additionally, to align with experiential and lived dimensions of the inquiry, the researchers used, as a guide to deepen reflection on the coding generated by the analysis data, the "four structures of meaning" employed in human science research (van Manen, 1997; 2014). It is given that all participants have different experiences. The four existentials of lived time (temporality); lived body (corporality); lived space (spatiality); and lived relations (relationality or communality) provide a fundamental existential structure and a useful heuristic by which to arrive at relevant themes and further insight. It is important to note that the four existentials can be differentiated but not separated from each other. They form a unity that assists us in making meaning from the complex, multi-faceted experiences of people.

RESULTS AND DISCUSSION

The "What Does it Mean to be Human Project?" provided students a very important "real world" opportunity to explore a big idea through an interdisciplinary lens. Teachers provided support and acted as guides, mentors, and coaches. Students collaborated in small groups across the disciplines to respond meaningfully to the big question. The project culminated in the presentation of student work to teachers attending a provincial professional development event. Student content was exhibited as visiting teachers toured the high school and students provided interpretation. The exhibits included

science concepts represented through art. Language Arts provided the means to explore aspects of human communication. A model of the human brain the size of a classroom included interdisciplinary collaboration from Fine Arts, Psychology, Personal Development, and Leadership. Students in design courses created fashion representing human development, and a series of Ed Talks were student produced and demonstrated learning and growth. The approach represented a dramatic departure from traditional pedagogical approaches with which many students are most familiar.

Lived Body

Lived body or corporeality refers to our primary way of moving through the world as embodied beings. In our physical or bodily presence, we understand and experience the world through felt sensations, and emotions and these feelings permeate our language as metaphors we use to describe, represent, and make sense of certain phenomena. A great deal has been written about our use of metaphor in thinking (Lakoff & Johnson, 2003), but by way of illustration we have only to recall the popular phrase to describe teaching that reaches the head, hands and heart. This phrase encapsulates the immediacy of embodied images to represent abstract ideas and complex experiences in ways that make sense to us.

The data revealed many instances of students describing their experience that evoked an embodied response. One theme to emerge related to the focus group question about students' general impressions about participating in a project-based learning activity. The theme was the experience of "support" or conversely, the "lack of support". Sometimes recalling the origins of a word can shed new light on the experience with which it is most connected. Support comes from the Latin supportare, from sub- , "from below" + portare , "carry". The students talked about various aspects and forms of being guided, helped, and assisted by the teachers. Some students welcomed the teacher taking a less direct approach during the project, other students did not. A student commented, "It was scary at first; you don't know what to do, where to go, and I kept thinking, how am I going to be supported to complete these things?" Students were challenged to negotiate the feelings that accompany experiencing more open-ended structures inherent in project-based learning. When the teacher's role shifted from one of a didactic, transmissive coordinator of all learning activities, some students experienced trepidation. The concepts of fear and support also point to the important relational quality of the teaching required in this approach to teaching and learning. Teachers are challenged to be sensitively oriented to when to intervene directly as students communicate levels of discomfort, anxiety, and frustration. This represents a tension with knowing when to hold back that aligns with making room for student agency. It speaks to a sensitivity and patience to give the

student the space, the time, and the opportunity to struggle, and thereby learn.

While students recounted feelings of insecurity, of "stress," and "being uncomfortable" at various times during the project, others described feeling "excited," "loving the hands-on learning," and being "not distracted". The project was interpreted as a welcome respite from students who understood traditional classroom learning as "sitting at a desk," "taking notes," and "memorizing stuff for tests". The students' experiences speak to the tension often described by teachers when a student does not seem to know something or be able to perform a task. We are inclined to intervene. When expectations in a project are set at appropriate developmental levels, teachers can respond to students in a manner that supports the student's personal growth and development.

Another embodied response to the experience of the project-based learning approach was manifested in the idea of risk and risk-taking. "We were not really sure what the final product was going to look like… risk-taking was a big thing for us in class." Feelings of fear, discomfort, and of doing something new were also related to change and the unknown. "I think a lot of us were not willing to take the risk, make a decision, everyone had different ideas on what to do. It's difficult because there's not set instructions." Risk can have negative meanings, but to take a risk also includes positive possibility. Smith (1998) reminds us that genuine risk implies growth and development and the increasing acceptance of who we are. With this in mind, Smith writes, "the most responsible thing we can do is allow and encourage another person to take risks" (1998, p. 12). In this sense risk-taking is a form of pedagogical responsibility that again requires thoughtful attunement to the student who is being asked to take a risk. Developing creative capacity calls for both teachers and students to be risk-takers and thereby develop the dispositions to push boundaries, try new things, and embrace change and failure (Fullan & Langworthy, 2014: Brooks & Holmes, 2014). This expectation requires a deeper appreciation of the risk-taking experience and attention to how teachers can appropriately orient sensitively towards encouraging the risk-taking of young people (Howard et al., 2018).

Finally, students related the experience of being "stuck," of "struggling," and of "not knowing which way to go." At the same time, there were descriptions of "having my eyes opened," and "seeing the big picture," and "I can do more than I think." Authentic learning is often fraught with confusion and struggle, of not knowing how to proceed, and of being lost. English (2013) draws heavily on Dewey when she refers to the experience of struggle and doubt as the "in between realm of learning" (p. 55). "It is in this space," she writes, "that learners can find possibilities for experimenting with the new and, on that basis, develop new learning experiences" (p. 56). When the teacher

provides space for students to work through difficulties together, the students come to understand the discomfort as a shared experience of what authentic learning feels like. When this is made explicit, it becomes a point for discussion and reflection in the classroom, and students can begin to "learn how to learn" (English, 2013, p. 56).

Lived Space

A quality of lived space, or spatiality, was described in many student responses in interesting ways. First, lived space refers to how we experience space. We are very aware that certain spaces and places affect the way we feel, even if we are not consciously aware of it. Popular media shows us that how we design, build, and furnish our living spaces is an area of great interest.

There is also a sense of inner and outer space, and spatiality may help us gain further insights into the experiences of the students in this case. The concept of "structure" revealed itself as a common theme across the grade levels. Also related to the idea of structure was the experience of "being free" or "freedom." Some examples are; "I like having freedom;" "some people feel they need more structure;" "I like working toward a bigger picture and the freer open structure;" "It felt more open to me; the project helped us collaborate;" "...to know that I was participating in something bigger made me feel more important." In descriptions such as these we see an inner experience of spatiality that represents open, expansive, less restricted experiences of learning. While learning occurred in the same physical spaces (classrooms, labs, library, etc.), something felt different while in these spaces. We did see the physical space also emerge in a comparison made to more traditional learning that was described as "sitting in desks, taking notes, memorizing stuff..." This depiction, it could be argued, aligns more with a restrictive, contained, and controlled experience of previous learning situations.

The experience of freedom, of more openness and less structure, addresses an increased sense of student control and engagement. One student went as far as to comment the experience of the project was more like, "... democracy instead of a benevolent dictatorship... we were given responsibility, control, which was refreshing." In response to the survey questions: "Would you look forward to more opportunities to learn this way?" and "Do you think PBL is as effective as traditional ways of learning?" students indicated they welcomed "more choice," "more freedom," and felt they were "more engaged." At the same time, students, sometimes the same students, commented they found learning this way, "harder," "more challenging," "difficult because it required deep thinking and there was no set structure." In the Grade 9 group, 70% of students indicated they would look forward to more opportunities to learn using PBL, citing "more creative expression", "individualized research," and "being open to different perspectives" as some of the reasons. A third of the

students indicated no, they would not look forward to more PBL saying, "it was confusing," and "I prefer direct instruction."

These student responses draw on language aligned with spatiality, openness, expansiveness, freedom, and choice by pointing to the concept of agency. Human agency is a complex topic and the subject of social cognition and sociological theories related to the field of social psychology and self-efficacy (Bandura, 1986; 2001). It is beyond the scope and intention of this study to take up the discussion of human agency in detail as our primary interest is in student experience. However, educational theorists (Barnett, 2007; Biesta et al., 2008; Klemencic, 2015) have inquired into student agency and help us understand the student experience of agency in this case. According to Biesta et al., student agency is something that individual students or groups develop alone or by interacting with others, with materials and ideas connected to a specific socio-structural and relational context of action. Agency is the quality of self-reflective and intentional action and instruction and not something a student possesses but develops (Biesta et al., 2008). A student with a more highly developed sense of agency welcomes less structure and more choice, while another student with less developed agentic resources (social competencies, self-regulating skills, and self-efficacy beliefs) may find the more open, democratic, student-centred PBL approaches to be less than personally optimal resulting in stress and a general level of discomfort and aversion (Bandura, 2001).

Biesta et al. (2008) assert that student agency can be developed, and it emerges only when students are given the opportunities to act intentionally and to interact with someone or something — and then reflexively self-engage to better understand their learning experience. To be agentic, students need to act intentionally even if their intentionality is not supported by a clear idea of goals and action plans, but some anticipation of likely outcomes and some belief by the student in their efficacy (they can achieve the desired results by their own actions). Again, this seems to point to the central role of teachers in assisting in the design of developmentally appropriate projects through which students may acquire a deeper sense of agency. Pedagogical sensitivity, the tactful awareness of which students require additional support as they continue to grow and build agentic resources, is crucial. Young people at the secondary level inhabit a life world that is a developmental in-between space. Barnett (2007) writes that the secondary years are a stage for being free and becoming. And in that sense, it is highly agentic — highly conducive to the action and interaction in the spaces of openness and choice inherent in project-based learning approaches.

Lived Time

Lived time, or temporality, refers to subjective time, our felt sense of the passage of time. This is different from clock time or objective time. A common theme to arise out of the data was the experience of "feeling rushed," of "not have the time to sufficiently explore," and "feeling pressured" or "squeezed" for time. These descriptions surfaced most often in response to the survey question: What do you think could have been done differently? Also, it came up in the focus group session when students raised the issue of having "more time."

Time emerges as a constraining factor for the students. They do not seem to be as interested in objective time, how many more hours or minutes would be required. No student mentioned the length of the working sessions as measured in hours or minutes, other than to refer to "class time." The experience of time seemed more qualitative at this point. Time was equated with opportunity or even activity — as in "time to explore." Time unfolds as a multitude of experiential occurrences and the tempo of time can then be interpreted, or felt, as a hurrying or being squeezed. These descriptions are most likely related to the fact that the project was undertaken largely within the parameters of a traditional secondary timetable with limited allotment of time within each subject area to devote to the project.

The concept of time management was also an aspect that arose for students. In response to the question that asked what they learned about themselves by taking part in this project, students commented on the need to juggle responsibilities and meet deadlines. "I suck at time management" was how one student summarized the experience. Other students related that managing the project was something they would have liked more support with, including "regular check- ins;" "help with clear goals" and "deadlines to meet" were all connected to the concept of managing time.

It is a common human experience that when thoroughly engaged in an activity, or when doing something enjoyable, that time will seem to disappear or speed up; we "lose track of time" as one student put it when describing the experience of her group's detailed planning of the final presentation. "When you really got into it, there never seemed to be enough time." And conversely, we can also perceive time slowing down, dragging, or seeming much longer than the minutes measured by the clock. Without an objectivity of time we are unable to think, plan, organize, execute, and solve problems. An integral part of growth and development is to assume responsibility for time. Dependability, trustworthiness, successful social relations, and the ability to collaborate are related to being responsible for time.

Lived Relation

Lived relationality or lived self/other guides us in exploring the relational aspects of student experiences during project-based learning. It became evident in the analysis of the survey and focus group data that themes connected to relationality were prevalent. Students focused on experiences of working with others and on how the self is experienced in relation to others. Comments representative of a strong relational orientation included; "we learn a lot from each other;" "building consensus and agreeing on our priorities was sometimes challenging;" "... it's hard when we all have different ideas and what the final product should look like;" "We connected with a bunch of different classes through filming;" "We worked with a group from the business class and talked to them about ethics and how that related to being human;" "it allowed more connection with others...I'm not artistic but working as a team helped me enjoy making the sculptures;" "I liked the integration of the classes...I was excited to be a part of the group;" "I learned I am more capable than I think and that I really enjoy working with others... really it all comes down to being collaborative, I guess."

The last student comment succinctly captured what many students expressed. Collaboration and the creative pooling of abilities, perspectives, and approaches proved to be challenging, yet rewarding for the participants. Learning through collaborative projects places learners in authentic situations that call on a much richer set of skills than more traditional lessons do (Thompson, 2013, p. 194). The skill of being a team member, of being a valuable collaborator, is central to 21st century education approaches. The opportunity to work together in an environment and with a facilitator and mentor who guides and promotes productivity and innovation builds in adolescents' developmental proclivities to connect socially with peers. As indicated above, student agency is enhanced when activities align with the developmental capacity of the learners. Developing agentic resources through collaborative learning approaches may assist in addressing what Brooks & Holmes (2014) call "...chronic disengagement that sets in at secondary schools across the world creating social, economic and health problems" (p. 13).

"Together we create our futures" (John-Steiner, 2000, p. 204) is the last line in the ground-breaking work Creative Collaboration. The Western ideal of the self-maximizing individual is culturally embedded and how we organize schools and curricula still reflect this enduring cultural value. However, in the past two decades the focus of individual attainment and personal creativity is starting to shift. Despite many years of employing teaching strategies such as cooperative learning, group learning, and learning communities, the foundational structures of schools largely remain top-down, and authoritarian with organizational approaches that curb agency, motivation, and engagement. Working together in groups and teams is not new, yet a closer look at the

concept of creative collaboration that is required in project-based learning may assist us to understand the student experience and thereby derive new insight.

Student comments speak to a degree of empathy, of being able to listen and value others' perspectives, a readiness to communicate and learn from others in pursuit of a common goal, in this case a product and a presentation. Schrage (1990) proposed understanding collaboration as a process of shared creation, in which two or more individuals with complementary skills interact to create a shared understanding that neither had previously possessed or have come to on their own. Moran and John-Steiner (2004) comment:

> "Although collaboration, cooperation, social interaction and working together are used nearly interchangeable...we hold collaboration differs from the daily exchanges that take place between people... Collaboration ... involves a blending of skills, temperaments, effort and sometime personalities to realize a shared vision of something new and useful" (p. 11).

Taken together, social constructivism as theorized by Vygotsky and Cole (1978) understands people learn through social engagement, and a more nuanced understanding of creative development and capacity (Moran & John-Steiner, 2004; Kelly, 2016) allow for a deeper understanding of creative collaboration as a distinct process from the everyday working together, cooperating, and sharing as partners that is so prevalent in schools. This is an area in need of further research to fully understand the nature of what we mean when we ask students and teachers to be creative collaborators and the type of organizational change required to support this type of collaboration.

IMPLICATIONS AND CONCLUSIONS

As indicated above, this inquiry represents a response to a gap in the research literature. Early childhood, elementary, and middle school contexts predominate in the research record on integrative, project-based approaches. Research in secondary education is under-represented. Growing interest in and uptake of experiential, project-based approaches that undergird popular educational initiatives such as: 21st century teaching and learning; New Pedagogies for Deep Learning; and Global Competencies among others call for further research at the secondary level.

The research presented here demonstrates that experiential pedagogies such as whole-school, project-based learning resulted in meaningful experiences for high school students. The descriptions of those experiences, and the outcome of employing a qualitative, phenomenological lens, revealed important structures of the students' life worlds as they were immersed in a specific pedagogical approach. The shift away from traditional, didactic, teacher-centred approaches revealed fundamental thematic structures that emerged for students. It is important to inquire into student-lived experience to provide for

a fuller understanding and the lived meaning of pedagogical interventions. Findings, such as those presented here, provide the possibility of a more informed, attentive, action-sensitive professional knowledge and practice in the development of educational experiences designed to influence the learning experiences of secondary students.

NOTES

1. The 5Cs in most 21st century education publications include collaboration, critical thinking, creativity, citizenship, and communication. New Pedagogies for Deep Learning promotes 6Cs, substituting community for communication and adding character. These competencies are also similar to the Global Competencies.

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PATRICK HOWARD is the Interim Dean of the School of Education and Health and a Professor of Education at Cape Breton University. His interests are in topics related to environmental and sustainability education and the intersections of environment with health and well-being in people and communities. His new book Living Schools: Transforming Education coedited with Dr. Catherine O'Brien was published in 2020. Patrick_Howard@cbu.ca

CHRISTOPHER L. RYAN is a researcher with the Mount Allison R-PEACE Research group and PhD candidate at the University of New Brunswick. Chris works with teachers throughout the province of New Brunswick and Canada to improve assessment and evaluation practices as well as build capacity among professional learning communities. His areas of research include developing and adapting models of assessment and evaluation to help personalize education through experiential learning opportunities, examining the effective development of professional learning communities, and how districts and post-secondary institution can collaborate to enhance teacher development. He has authored several papers, chapters, and presentations on these topics. Chris.L.Ryan@unb.ca

IAN FOGARTY is a teacher at Riverview High School, Riverview, NB, Canada. Ian finished his graduate work in designing anti-cancer radiopharmaceuticals and began teaching because of the power of education to change individual people and society at large. He applies his curiosity to research how to better develop whole students including the global competencies such as communication, collaboration, critical thinking and even curiosity while also teaching chemistry and physics; deliberately leveraging technology and real-world transdisciplinary projects. There are over 76 classrooms globally based on his teaching strategies with interactive surfaces. Ian's work resulted in many international firsts for Canadian education, most recently centered around www.current generation.org which is providing a clear path for young women to enter engineering. Ian.fogarty@nbed.nb.ca

PATRICK HOWARD est le doyen par intérim de the School of Education and Health et est professeur d'éducation à l'Université du Cap-Breton. Ses intérêts portent sur des sujets liés à l'éducation, à l'environnement, à la durabilité écologique et aux intersections de l'environnement avec la santé et le bien-être des personnes et des communautés. Son nouveau livre « Living Schools: Transforming Education, » coédité avec Dr Catherine O'Brien a été publié en 2020. Patrick_Howard@cbu.ca

CHRISTOPHER L. RYAN est chercheur avec le groupe de recherche Mount Allison R-PEACE et est candidat au doctorat à l'Université du Nouveau-Brunswick. Chris Ryan travaille avec plusieurs enseignants à travers le Nouveau-Brunswick et ailleurs au Canada afin d'améliorer les pratiques d'évaluation ainsi que pour renforcer les capacités des communautés d'apprentissage professionnel. Ses domaines de recherche comprennent le développement et l'adaptation de modèles d'évaluation afin d'aider à personnaliser l'éducation par des opportunités d'apprentissage basées sur l'expérience, l'examination du développement efficace des communautés d'apprentissage professionnel et la manière dont les districts et les institutions d'enseignement postsecondaire peuvent collaborer afin d'améliorer le développement des enseignants. Il est l'auteur de plusieurs articles, chapitres et présentations sur ces sujets. Chris.L.Ryan@unb.ca

IAN FOGARTY Riverview High à Riverview, NB, Canada. District scolaire anglophone de l'Est. Ian a terminé ses études supérieures dans la conception de produits radiopharmaceutiques anticancéreux et a commencé à enseigner en raison du pouvoir que l'éducation possède sur le changement au niveau de l'individu et de la société. Il applique sa curiosité dans sa recherche sur le développement d'étudiants entiers, y compris les compétences globales telles que la communication, la collaboration, la pensée critique et même la curiosité tout en enseignant la chimie et la physique ; en tirant délibérément parti de la technologie et des projets transdisciplinaires du monde réel. Il y a mondialement plus de 76 salles de classe basées sur ses stratégies d'enseignement avec des surfaces interactives. Le travail d'Ian a donné lieu à de nombreuses premières internationales pour l'éducation au Canada, plus récemment centrées sur www.current generation.org, qui fournit une voie claire aux jeunes femmes qui veulent poursuivre l'ingénierie. Ian.fogarty@nbed.nb.ca