Engaging the Disengaged:

A Shop Teacher’s Reflection on Project Authenticity

A Thesis

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Abstract

This autoethnographic study examines an experiment with project authenticity completed with high school students seven times over an eight-year period. These projects involved the building of full-sized homes by grades 10 through 12 students, within a standard carpentry curriculum on the site of a conventional high school within the province of Prince Edward Island. Prior construction course projects consisted of small storage barns. Prefabricating and placing four-bedroom homes to the national building code represented a significant departure from the status quo and considerable risk on many levels. This cottage course as it became known enhanced student engagement and drew a balanced demographic of students into a carpentry program that had become skewed towards the lower academic levels in terms of class composition; all levels became engaged with the construction process. The experiment came at excessive personal cost to myself and was ultimately terminated. The search for a comparable replacement course led to a series of reflections on the multitude of factors that influence student engagement and program success in a shop class setting.
**Authentic:** Not false or imitation: Real, Actual.

(Merriam Webster Dictionary, 2019)

**Authentic:** The quality of being real or true.

(Cambridge Dictionary, 2019)

In accordance with academic research ethics, all names have been changed to protect identities.
Dedication

The research and writing of this thesis has been a multi-year process punctuated by several seminal life events. Its roots can be traced to the attempted suicide of a child. This event was the culmination of a prolonged physical and mental illness which were themselves partly rooted in the school system. As a teacher of 25 years I wanted answers and naively thought I might find them through advanced study. Answers to issues this complex are rarely that simply found. The process was further propelled while nurturing my beautiful wife of twenty-five years through stage three breast cancer, and the long hours spent watching her sleeping form healing from bouts of chemotherapy and radiation treatments. It was her encouragement to continue my Master’s program during this period, combined with the months at home away from the hectic school schedule that allowed me to start this reflective process. Without her, and her exemplary dedication to education, I would not be half the teacher that I am. My mother, now 86, has always been my example and inspiration; an academic, politician, pioneering feminist, craftsperson, and ultimately an investor in one of the projects described within this study. Her support, in life and in this pursuit, have been critical. Last, but by no means least, are my talented and brilliant children. I had no reason to fear. Their resilience, intelligence, and success have inspired me. The period of my life documented in this thesis, while it represents the climax of my career, involved sacrifices by all those that I love.
Prologue

I started teaching with the desire to make a difference. As a student I hated school, and as a teacher I wanted to change the system. As a political introvert, I felt I might best effect change at a classroom level with the hope that my example might influence others. This thesis documents an unofficial eight-year experiment conducted between 2003 and 2010. I began this experiment after 16 years of teaching, through it found an approach that led to heightened student engagement in my subject area. While the benefits of this practice seemed obvious, there were also problems for me as a teacher, for my family, for the school system, and, on occasion, for the final owners of the projects. After seven iterations of these annual projects, it was mutually decided by myself and administration to take a more traditional approach to teaching the carpentry program.

The challenge for me personally became apparent within a couple of years of reverting to a traditional carpentry program; how does a teacher who has sought and found a best practice, then revert to what has proven itself through past experience to be a mediocre practice? This has been one of the driving questions that led me to embark on a Master of Education program. Specialists can feel trapped in their specialty, unable to restart down a different path. Perhaps a fresh academic degree might cause another school, if not my own, to reexamine this mid-fifties teacher with 30 years of shop experience as possibly a teacher of a completely different subject. I needed out of the shop, and I needed a fresh start.
Research Questions

Several years of undocumented reflection on the success of the seven projects preceded embarking on this thesis. This success was driven by exceptional student engagement, the evidence of which will be presented in the narrative. What caused that engagement to be higher than what could be experienced within the traditional carpentry project? A supplementary question; why did I continue the process in light of the need for ever increasing personal sacrifice? A second question is what factors led to the shutting down of this experiment after seven iterations, and did this negatively affect the possible success of the carpentry program going forward? Since the last project was completed other schools have attempted similar projects. There was at least enough enthusiasm to repeat the process several times at one of the schools, but eventually these larger projects were not continued. Through documenting the process that I experienced first-hand, I hope to provide a starting point, a framework, from which future iterations of this type of project might be sustainable.

The thesis itself takes the form of an autoethnography structured as a traditional, pre-Ibsen, five-act play. The first act, or Exposition, sets the stage for my choice of autoethnography and outlines the somewhat circuitous path that brought me to teaching high school on Prince Edward Island. Act 2, Rising Action, reviews and discusses the literature on engagement and explores some of the possible reasons for the decline of student engagement in schools in general and the high-school shop classes I dealt with in particular. It concludes with a description of how the cottage course came to be. The third
act or Climax encompasses the actual eight-year period during which the students built
the seven projects and describes the improvement in student engagement that I observed.
The fourth act, or Falling Action, recounts my attempts to revert to my original practice
and reflects on the roadblocks that made it unworkable. Finally, the Dénouement
chronicles my professional resolution.
Act One - Exposition

The nature of the narrative, and the very nature of my memories are the principal reasons for selection the autoethnographic method. The last building project that this study examines took place in 2010. The first was in 2003, and it is that first project from which I draw much of the data, as it is that project for which the difference was truly dramatic compared to previous coursework. Whenever I think back to that first project, which seems often, it is with, as Carolyn Ellis describes the researcher’s autoethnographic mental process.

[A]wide angle lens, focusing outward on social and cultural aspects of their personal experience; then, they look inward, exposing a vulnerable self that is moved by and may be moved through, refract, and resist cultural interpretations. As they zoom backward and forward, inward and outward, distinctions between the personal and cultural become blurred, sometimes beyond distinct recognition. (Ellis & Bochner, 2000, p. 739)

The reflective process that I have been going through for the last decade has been exactly as Ellis elucidates. The “vulnerable self” would be exposed, for at times in the narrative I feel with the benefit of hindsight that I was at best naive, and at worst the author of my own failure. The benefits to the students still rise to the top during these reflective moments and in my heart I know these benefits to be of paramount importance. If this unique series of projects is to be recorded, then it must be through an autoethnography, and given the limits of memory, it must be recorded and examined soon.
It may be part of a subset of my various real and perceived learning disabilities, that I prefer things that are measurable. The psychologist Piaget calls this being “Concrete Operative”. The child’s toy suddenly hidden by a blanket ceases to exist, as if by magic (Piaget, 1964). I have always viewed creative products as originating from a part of the brain specializing in abstractionism and felt that part of my grey matter to be deficient. Thus, I want any product that I produce to be based in fact as much as possible, or at least what I discern to be fact. Some autoethnographies can be loosely based on experience but largely be a creative construct (Paton, 2002). Paton, in *Qualitative Research & Evaluation Methods*, provided samples of autoethnographic writing describing a hiking trip with his son, a trip during which he took notes as if he planned it as an event to create an autoethnographic piece. Notes are a luxury I do not have. While I viewed the projects to be a long-running experiment at the time, I was too preoccupied with the onerous details of each project to think of posterity. It is only by using the autoethnographic method that anything can be recorded now.

Hughes and Pennington (2017) contend that all research in this genre needs to be contained within a theoretical framework. We all view the world through the lens of theory, even if we cannot articulate that theory. These authors believe that autoethnography falls under the umbrella of Critical Social Theory as influenced by Paulo Freire. As a Bachelor of Education student in 1986, I remember being attracted to Freire’s writing and his critique of the “banking” model of education, banking being
filling the student vessel with the accepted known-knowns\(^1\) of the dominant culture. My enthusiasm for this critique stemmed from my own short-term memory deficits which curtailed my personal success with the banking model I had endured. The carpentry curriculum which was introduced in 2006, approximately halfway through the cottage course period, was based on the Alberta apprenticeship teaching materials which in turn represent an exemplar of the banking model of education. Freire also uses the analogy of priming the pump of existing but unrecognized student knowledge (Hughes, S., & Pennington, 2017), which is something I believe I observed during these cottage courses. I maintain that this new curriculum was in part responsible for the decline in the carpentry program after the cottage course was discontinued, and thus due for critique. Without the building of a real home, the curriculum had little relevance to the smaller projects being built. Furthermore, many of the students involved in these projects were part of a minority that felt excluded from the dominant culture of the academic high school and that their participation in something real empowered them.

\(^{1}\) Known-knowns is a phrase made popular by White House aid Donald Rumsfeld in a 2002 news briefing when discussing terrorism threats as being classified as, “Known knowns, known unknowns and unknown unknowns”
The Researcher - The Accidental Shop Teacher

I was born in Prince Edward Island in 1961, the year noted Canadian demographer David Foote described as the worst to be born in to date (Foote, 1996). More Canadians were born in that year of the baby boom than any previous year, and the result was competition for just about everything. North Americans born between 1960 and 1964 became known as *Generation X* and on average would have 11.3 jobs before the age of 46, with half of those jobs happening before the age of 24 (Foote, 1996; U.S. Labour, 2012). It did not help matters that my first career choice was to be a classical trumpet player, one of the most competitive areas of musical endeavour. During this period, symphony orchestras were downsizing while the potential participant pool was on the upswing. After a decade of private lessons and immeasurable practice, it was time to take stock. When answering a question from my mother, regarding the measure of my actual talent, one of my university trumpet professors answered honestly, “Ian is good, good enough to make a living performing music, but he is not *shit hot.*” Hot was what you needed to be to win any chair in any paying symphony in North America, so after nine years of playing, two years of university music, and two of freelancing, it was time to look for another career.

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2 The term *Generation X* has been since appropriated by the media and popular culture to mean just about any disadvantaged demographic group. Lately it has been applied to the Baby Bust group, that followed the Baby Boom. Due to its small size the Bust was not disadvantaged. The 1960 -1964 group, the tail end of the Baby Boom, is the original Generation X as named by demographer David Foote in 1996 and author Douglas Copeland in 1991.
In 1983, I graduated from a 50-week diploma program in tool and die technology from George Brown College in Toronto. I chose this program because I had always enjoyed working with my hands, the college career counsellors assured me that machinists were in high demand, and the pay was good. Despite graduating at the top of my class, there was absolutely no work to be found in the Toronto area. It was a period of severe recession with no end in sight, so the only choice left was to return to my parents’ home, as a so-called Boomerang Kid (Foote, 1996). Work prospects had not improved on Prince Edward Island, so my mother suggested I enrol in the Holland College Fine Woodworking program to pass the time while I thought about what I might do for a career. I loved the program but the economic prospects were about the same as the music career I had just left so I looked for yet another path. My second lifetime passion was long-range target rifle. I qualified for my first of many national teams at the age of 15 and had played with the idea of mixing this passion with a career. Having no desire to explore the obvious military options, I researched formal education in the firearms trade. I was the first Canadian to ever get accepted to the University of Arizona into a specialized program that offered a science degree in firearms manufacturing. Despite the advanced standing I was offered, the tuition added up to over $60,000 American dollars, an impassable obstacle that led me to pursue that trade without certification. My generation’s obsession with credentials eventually led me back to a Canadian university.
Additional maturity and experience seemed to make university far easier than I remembered and I was soon a student of first class standing. Choosing a major area of study was a difficult matter that had to be addressed quickly given all my previous credits. I still did not know what I wanted to do in life. Having exhausted my own passions, I started reflecting on someone else’s. In grade seven I had a teacher who had recently returned from two years teaching in West Africa. He was the first teacher I had who actually demonstrated a passion for teaching and passion for humanity. I admired this passion. Teaching in Africa would be a worthy goal and to do that I would need to be a teacher. I would also need a subject to teach. Certain in my own mind that Africa must need lots of English teachers, I chose to major in English despite having at best a narrow passion for the subject. It was now the mid 1980s and the internet was not available to actually research this specious conclusion, so I ended up with an English degree, with minors in music and political science, and an Education degree.

My first job interview was with World University Services of Canada, and an official from the Swaziland Ministry of Education. The official took a quick look at my resumé and declared, “We really need technical teachers. You would make a great technical teacher!” That possibility had never crossed my mind. During my public education I had not been exposed to any trade opportunities and it might be safe to venture that neither had my Education professors. This might explain why they did not suggest this subject area as a potential teachable, and at the same time illustrates the seemingly immutable nature of the vocational-academic divide.
I spent three years as a volunteer woodwork, metalwork and technical drawing teacher in Swaziland. This was followed by six years and four different schools as a Design & Technology and classroom teacher with the Peel Board of Education in southern Ontario. When our son was born my wife and I resigned our teaching positions and returned to Prince Edward Island to raise our family. After a year of substitute and short-term contracts, I was hired to teach carpentry at my current school where I have remained for 20 years. Thirty years of teaching, two countries, two provinces and nine different schools, at two different levels, and three different career attempts. I may not have technically reached the 11.3 job average of Generation X, but I must have come very close.
Act Two - Rising Action

Over the past three decades I have taught both middle school and senior high school. With the former group there was almost automatic high engagement levels in shop class, to the point of my position being envied by the regular classroom teacher. As someone who taught both the regular classroom and the shop class in middle school, I can attest to the difference and understand the envy. Conversely, few of my colleagues covet my position in the senior high school shop class; it is noisy, dusty, and populated by the discontented. The student who is disengaged in his history class is just as likely to be disengaged in shop class. It is my contention that during the seven projects this study is based on the shop class engagement paradigm was dramatically altered. To better understand this, it is necessary to examine the current research on school engagement.

The Nature of Engagement

“Currently, engagement is theoretically messy”

(Fredricks, Blumenfeld, & Paris, 2004, p. 84).

Research into engagement in schools appears to have started in the mid 1980s and struggled to establish its own specific vocabulary for most of the next decade (Appleton, Christenson, & Furlong, 2008; Fredricks et al., 2004). Initial research looked into the effects of singular indicators of engagement in an attempt to find data that was quantifiably measurable. For example, it is easy to look at school attendance,
participation in sports, or extracurricular activities as individual measures of engagement since recorded data often exists for such phenomena. Fredricks et al... (2004) chose to structure their analysis by establishing three sub-categories or types of engagement; Affective, Behavioural, and Cognitive. Affective engagement is the emotional attachment a student might have for a given topic or subject, behavioural engagement is the ability and desire to follow the rules, and cognitive engagement is the point where students go beyond classroom expectations in pursuit of learning. Fredricks’ et al... review of the research, based on 165 sources, established several areas in need of further study. While much of the research shows that achievement is most positively affected when cognitive engagement was present, there has been little study of the interrelationship between affective, behavioural, and cognitive engagement, in other words the study of engagement as a multidimensional construct (p. 80). The impact of classroom context and its effect on engagement is also missing in the research and Fredricks calls for some means to measure this context, noting unique instruments are necessary to measure observed engagement in different classroom environments. For example, the tools required for measuring engagement data in a language arts classroom would not be the same as those used in an automotive shop class. Finally, Fredricks calls for a qualitative approach to studying engagement over the previously used quantitative methods, the phenomenology of engagement being too complex to be measured by quantitative methods (Fredricks, 2004 p. 84).
James Appleton, Sandra Christenson, and Michael Furlong conducted another review of engagement research in 2008. This review supported Fredricks’ findings while at the same time making a case for socioeconomic factors being part of the engagement equation. Considerable amounts of statistical data regarding differences between gender, economic class, and race indicate the importance of engagement research and its overlap with social issues. The decline of engagement has been dramatic. American high school completion rates dropped from 77.1% in 1969 to 66.1% in 2000 and high school dropout earnings declined by 34.7% between 1971 and 2002. While many of the factors influencing this decline are so multifaceted as to be resistant to change, Appleton (2008) asserted that, “Attempts to delineate more alterable influences on dropout have led to a growing interest in engagement” (p. 373). The entanglement of socioeconomic factors makes the study of engagement considerably more complex and necessitates greater clarity in the terms used to frame the research. One of the more poignant examples of this is the clarification of the terms “student engagement” versus “school engagement.”

Our position is that the use of the terms *student engagement* is preferred over *school engagement* because schools engage students as learners, and they are engaged to varying degrees. Schools have holding power for students; thus, school policies and practices can (and in some situations must) foster engaging climates, especially for disconnected youth. Also, the use of school engagement may emphasize influences of the school setting while minimizing the focus on family and community/neighbourhood influences. (Appleton, et.al, 2008, p. 380)
School is the one alterable variable, and the only one that educational researchers can hope to influence in the short term, but the influences of family and society hold equal or greater sway and, while perhaps immutable, they need to be considered when examining engagement.

While Fredricks (2004) and Appleton (2008) draw their conclusions from reviewing prior research, Willms, Friesen, and Milton in a 2009 study on student engagement for the Canadian Education Association (CEA) work directly from student data. This study uses a mixed methods approach in that it uses quantitative methods to measure attendance, behaviour, and extracurricular participation as evidence of behavioural engagement as well as surveys and interviews to assess affective and cognitive engagement. The first report of the research is in 2009 and the second in 2013. The 2009 work involved approximately 30,000 students from 10 school districts in five provinces. While the sample size is significant, given its billing as a national report, samples from larger metropolitan centres and Quebec are conspicuously absent. Almost all the same schools were followed for a subsequent 2012 three-part report that followed school based program development to improve student engagement. Significant gains of several percentage points were made with grades six through nine, but tapered off to nothing in the high school years. Even so, the improvements show that engagement can be improved by changing content and teaching methods (Milton, Dunleavy, Willms, Sefcik, Friesen, Milton, Miller, 2012). Of particular interest to my own study is this finding,
The implications of the findings from this study, when combined with findings from other studies on engagement (National Research Council, 2003), highlight students’ need for “worthwhile tasks, some autonomy in how to do them, good feedback, good colleagues to work with, opportunities to learn and improve”. Knowing how to learn, being inspired to continue learning, and learning together with others are essential in today’s world.

(Friesen, Willms, Sefcik, Friesen, Milton, Dunleavy, Miller, 2012, p.10)

The 21st century skills cited by the CEA study were what I witnessed during the seven cottage courses. These skills seemed to come automatically in conjunction with highly engaged students working on a truly authentic project.

The CEA study adapted the original Fredricks et al.(2004) terminology and made it more accessible. Affective engagement became Social engagement, “a sense of belonging and participation in the life of the school ” (p. 7). Behavioural was retitled Academic engagement, meaning “participation in the formal requirements of schooling” (p. 7). Cognitive became Intellectual engagement, “an 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). The study limits itself to the subjects of Mathematics and Language Arts which are perhaps the front line of student disengagement at the secondary level, but this does not lessen the statistical shock of noting that 70% of students studied are not intellectually engaged. The study’s findings
that social engagement, as expressed as a sense of belonging, slightly increases in the secondary years seems consistent with increased value of peer relationships amongst teens, while participation in sport and attendance continue in steady decline as sports become more elitist and young adults express their independence.

The Willms et al. (2009) study meticulously takes into account socioeconomic factors (SEFs) but finds a significant variance between different schools which indicates that classroom teachers may have a greater impact than SEFs (p. 21). This suggestion is at least subjectively troubling given my own experience of seeing concentrations of socioeconomic factors at individual schools within the same geographic area as well-to-do schools. For example, low-income families will gravitate to areas of low rent housing, overwhelming a local school with socioeconomic issues common to low-income families. The issues that might arise at such schools might have little to do with the qualities of the school’s faculty. At times, the wording of the study’s conclusions seem critically aimed at the classroom teacher rather than the educational system as a whole. The transition from a linear Knowledge, Skills & Attitude model (KSA) to an Attitude, Skills & Knowledge (ASK) model of classroom delivery represents a systemic change that I would suggest must be initiated at a curricular level (Willms et al., 2009 p.34). Any individual teacher who makes such a change risks the charge of not covering the outcomes that pervade our provincial curriculum documents. The authors of this study seem to believe these changes are within the classroom teacher’s purview. I would suggest that this might be evidence of a distance between the authors’ academic positions,
and that of the current classroom teacher. When I started the program which is the subject of this study, I had considerable autonomy to set curricular goals. Fifteen years later that autonomy has been vastly eroded by the march of standardized assessment and accountability. This trend has a national context, and is clearly apparent in a 2018 announcement, by the new Conservative government of Ontario, of a “snitch line” that will allow parents to anonymously report any teachers who deviate from a prescribed outdated curriculum (Jeffords & Loriggio, 2018). Of particular interest to my research is Willms’ second conclusion,

…the work students undertake also needs to be relevant, meaningful and authentic – in other words, it needs to be worthy of their time and attention. Too frequently, the work students are asked to do does not allow them to use their minds well or to experience the life and vitality of real, intellectually rigorous work. Once fragmented, schoolwork loses its intrinsic, disciplinary and intellectual meaning. In this form, the work cannot have any meaning or value to students beyond the achievement of high marks (Willms et al... 2009, p. 34).

Too often high marks are offered as evidence of high engagement when actually they are evidence only of academic rather than intellectual engagement. It is the authenticity of the work, something more under the control of the individual teacher, that has the potential to produce intellectual engagement. In the carpentry shop context, I would argue that there is a difference in the project authenticity of a shed versus a house.
Implicit in the Willms et al. 2009 study, although not at first apparent to the casual reader, is that intellectual engagement is achievable for most if not all learners. Intellectual engagement occurs when skill level is in balance with level of challenge. Willms goes into considerable detail explaining this optimal intersection of skill and challenge and its origins in Mihaly Csikszentmihalyi’s Flow theory (Willms et al... 2009).

Flow theory is perhaps the most pertinent piece of theory relative to engagement. It has relevance to why at 54 years of age and after 27 years of teaching I decided to embark on graduate studies and why I switched from a terminal course-based Master’s program to a thesis program; it helps to explain why after 35 years of competitive experience I finally rose to the top nationally in my sport, and most importantly it helps me to describe what I saw in my classroom during the cottage projects. The flow experience, the state of losing oneself in attaining a goal, is described by Csikszentmihalyi in somewhat transcendental terms,

It’s exhilarating to come closer and closer to self-discipline. You make your body go and everything hurts; then you look back in awe at the self, at what you’ve done, it just blows your mind. It leads to ecstasy, to self-fulfillment. If you win these battles enough, that battle against yourself, at least for a moment, it becomes easier to win battles in the world. (Csikszentmihalyi, 1990, p. 86)

The attainment of ecstasy and self-fulfillment is a highly addictive phenomenon and quite possibly the essence of engagement. Csikszentmihalyi explains that an assembly line
worker who finally reaches the physical limits of task speed, may then seek a higher level of challenge by taking electronics courses. The rock climber would seek higher cliffs or more challenging routes. The essence of flow is losing oneself in an activity. Think of someone who loses all track of time while reading a good book, perhaps to the point of being unresponsive to exterior stimuli urging them to pay attention to something else.

The confusion around the flow experience and engagement emerges from the question of where the intersection between challenge and skill actually generates flow. At first reading, one might conclude that the assembly line worker example sets a low bar for skill and challenge. Anyone who has done repetitive work can tell you that attaining the necessary skill just to do the job to the employer’s satisfaction often takes little time. To take it to the next level, to its physical limits, requires the worker to make the activity into a game within his own head. Their self-fulfillment has nothing to do with the job but rather besting a personal record. Reaching the physical limit of the activity requires a considerable amount of skill, even if the task is not challenging. The challenge was the self and that bar had been set high. To achieve flow requires a balancing of high skill and high challenge (Csikszentmihalyi, 1990 p. 144). The Willms et al. 2009 study produced a hybrid diagram of the flow channel which seems to have the most applicability to education.
I dwell on flow because the students I dealt with would be considered, at least academically, to be low skilled. On the other hand, is it possible to measure the skill level of a disengaged student? If a disengaged student becomes engaged, chooses to be immersed in an activity, then that is the point when skill and the ability to learn become accurately measurable.

Distinguishing between the enjoyment of an activity and true flow is most likely the source of the confusion between flow and engagement. Csikszentmihalyi (1990) looks at this with the examination of amateurs and professionals. Our society has become obsessed with achievement to the point that the amateur and their enjoyment of an activity is denigrated. Music is often put forward as a means of illustrating the dichotomy between skill and challenge. For example, in his book, *Outliers*, Malcolm Gladwell(2009) uses Mozart as an example of someone who had trained musically by association with his father and mother for approximately ten years before demonstrating himself as a prodigy at twelve years of age. Mozart did not just suddenly and
unexplainably start playing piano at that level of genius. Gladwell posits that anyone who trains for 10,000 hours can potentially demonstrate genius, and thus perform at a professional level, regardless of age. Csikszentmihalyi uses a similar example of a child piano prodigy who could get lost in the music when playing alone but freezes when in front of a critical audience, to illustrate that the subject must choose the activity to enjoy in order to experience flow. The flow experience can be achieved without being a professional, but still requires considerable skill combined with appropriate comfort level. To establish this state, you need to enjoy what you are doing. As a classically trained former musician, I can find agreement with both scholars. I played my instrument intensely for 10 years, much of that time with the benefit of professional instruction, and approximately six to eight hours of playing per day. Despite many accolades I seldom achieved a state of flow. I was, in my view, a proficient technician; I had my 10,000 hours. I enjoyed playing but the narrow expectations of the form limited that enjoyment.

**Why is Engagement Dropping?**

Matthew Crawford’s (2015) book *The World Beyond Your Head* is important to the discussion, not because it documents declining engagement but because it addresses a root cause. The academic literature structures the study of engagement and discusses ways to document its current low state, but in doing so the literature examines the education system as the sole cause of the problem and source of potential solutions. The timeline of engagement research roughly parallels my own teaching career, and during that time I feel that many elements of the educational process have improved, at least in
terms of faculty professionalism, teacher training, school facilities, and technology, while the literature suggests engagement has steadily declined, precipitously so in the last decade.

The lack of baseline engagement data prior to the mid 1980s makes this claim impossible to document, but if it is accepted that education has improved, if even only incrementally, then perhaps other causal factors are at play. Perhaps educational researchers have greater comfort addressing the reform of what they know, rather than asking more difficult societal questions. Socio-economic factors are alluded, by some researchers, as contributing to disengagement, but not directly discussed (Fredricks et al., 2004, p. 73). Arguably, some societal factors negatively affecting the classroom have improved during the latter part of the twentieth century. For example, the decline of the traditional family after the Baby Boom of the 1950’s has often been cited, at least anecdotally by teachers and my 1980’s education professors, for what ails the classroom, but that downwards slide levelled off some time ago and cannot account for the more recent engagement decline. What has changed, particularly in the last decade, is the pervasiveness of technology.

The current generation is being pressured to have every waking moment structured, optimally in a risk free and endlessly entertaining manner (Harris, 2014). There is less time for self-reflection; less time to think in this ever-increasingly socially connected world. Video game consoles and the 500-channel television started this age of
distraction, and the internet, social media, and the smart phone have brought it to its
current frenetic zenith. Crawford opens his book with an anecdote about waiting for the
debit card reader to approve his purchase and seeing advertisements displayed on the tiny
screen during the delay pending account approval. He began to wonder if the delay was
real or by design; devised to provide yet another space to sell something unsolicited.
Who of us has not been to one of these theme-oriented franchise restaurants, where no
matter where you sit, there is a flickering screen broadcasting soundless sports updates or
advertisements? Even the dental chair offers ceiling mounted distraction; unlikely though
it would be to hear, even with headphones, anything over the incessant high-pitched
whining of the drill. Crawford explains that the predator-prey part of our brain cannot
resist paying attention to a moving image; for that part of the brain, it is simply a hard-
wired survival instinct. Every movement needing to be assessed as either a source of
food, or something looking at you as food. The advertising industry has locked down the
formula for addressing this part of the human brain. There is simply no front, in this war
for our attention, that does not have a battle being waged.

The campaign for what Crawford (2015) terms the “Attentional Commons” is
intensifying, causing governments to explore interventions. In 2009 the U.S. Congress
passed the Calm Act, a piece of legislation designed to regulate the pumped-up volume of
television commercials. The average viewer can be forgiven for thinking this would be a
slam-dunk piece of law-making, but the average viewer, or average citizen, has little
power over government. The Calm Act did not pass initially\(^3\) in the U.S. Senate (Govtrack, 2009). If something as innocuous as the Calm Act cannot pass, then more invasive legislation is unlikely. Canadians, conditioned to a higher level of social regulation, have had better luck. In 2013, the Canadian Regulatory Telecommunications Commission (CRTC) successfully established television commercial volume levels (CRTC, 2014).

The only prescription currently available for these competing demands on our attention is personal self-regulation and that is a rare commodity. If government will not, or cannot, regulate the attentional commons then what hope can teachers have for engaging the disengaged, or those more accurately described as the otherwise engaged. Many of the weapons in this battle bear the adjective “hyper-palatable”. The food industry was the first to recognize the key taste ingredients of salt, sugar and fat that made processed food attractive, and to many irresistible or addictive. By manipulating these key ingredients, the processed food industry can make the least nutritious, tasteless gruel hyper-palatable. These lessons have been well learned by other industries. The gaming industry is one that has discovered just how to package their product for maximum addictiveness. Video gambling machines maximize conditioned responses from their addicted players. Internet gaming addiction was considered a condition warranting “further study” in the DSM 5 (Petry & O’Brien, 2013). There can be little discussion when you consider the image of people playing these machines in diapers,

\(^3\) The amended legislation did eventually pass at the end of 2010 (S.2847 - 111th Congress (2009-2010)
refusing to move out of the way for ambulance attendants attempting to revive a heart attack victim. Addicts cannot be persuaded to abandon their machines even when flooding has them standing thigh deep in water (Crawford, 2015, p. 175). This addiction by design is twofold in that the player is addicted, not to the belief of a payout, but rather to just being allowed to continue playing, and the government is addicted to the pseudo tax revenue. The tobacco industry was perhaps the first to recognize that taxation was a prophylactic for avoiding terminal government regulation. Government will be unlikely to ban an addictive poison if they have become dependent on the short-term tax revenues, even if the long-term cost of the addiction far outweighs that revenue.

This struggle for the attentional commons could have spillover into the classroom. What Willms et al. (2009) describes as fragmentation of schoolwork, which in turn leads to intellectual disengagement, may need to be broadened to include the increasing fragmentation of society’s ability to attend. Merely making the work authentic may no longer be enough to engender engagement; the work may now need to be hyper-authentic. I believe the cottage projects described in this study could be classified as hyper-authentic. If only we could find other educational equivalents to sugar, salt and fat, to make the classroom at least palatable to the seventy percent who have lost their taste for it. Engagement, and the multiple factors that influence it, has indeed become messy.
Shop Class and the Factory Floor - Who Takes Shop

Through official exit surveys conducted over the past decade at my school it has been determined that an average of approximately only 10% of our student body take one or more trade credits during their three years in high school. For any discussion of engagement, and to begin to understand shop class composition, it is important to know who these students are past and present. Between 1972 and 1975, Paul Willis (1979) conducted an ethnographic study within several working-class schools entitled, *Learning to Labor: How Working Class Kids get Working Class Jobs*. The principal thrust of Willis’ thesis is that working-class kids let themselves get working-class jobs. While the study is over 50 years old, there are aspects that still ring true today and with my own experience even though the settings are quite different. Willis’ study is located in the Midlands of England, in what could be considered the birthplace of the Industrial Revolution. The area, given the fictitious name of “Hammertown” is a centre for manufacturing with the majority of people working in factories exceeding 1000 employees. The residents of Hammertown are almost exclusively working class with the managerial middle class residing outside of the area. The setting of his study in the 1970’s is also important since the social ferment of the era was not limited to North America. The rebellious nature of the times was often linked to a perceived discipline crisis within the school system (Crozier, Huntington, & Watanuki, 1975). Willis’ main case study follows 12 non-conformist boys at a secondary modern school, with comparative studies of conformist and - working class boys at local grammar, secondary
modern, and comprehensive schools. Willis is trying to explore why certain groups
within the working class chose manual work as a career path, what he calls class
production, while the school system, at least on the surface, encourages class
transcendence through a meritocratic system. This non-conformist friendship group, self-
named the ‘Lads’ would be what most teachers would describe as unteachable and what
Willis terms “the school counter-culture”. Willis summarizes their characteristics as,
“Opposition to authority and rejection of the conformist” (Willis, 1979 p. 11). The
majority conformist group are called ‘Ear’oles’, or ‘Lobes’ so-called because they listen
to the teachers and let them pour ideas into their ears.

There is some confusion as to what Willis (1979) considers working class, as the
12 non-conformist boys consider entry into skilled trades to be conformist, and most end
up settling for unskilled dead end labour jobs, what Willis deems to be working class.
For the North American reader, the confusion may be exacerbated by slight differences in
culture and history. England is a product of the Guild system of organizing skilled work
that gave rise to the middle class prior to the industrial revolution. A skilled tradesperson,
one with the equivalent of a completed apprenticeship and a Canadian red seal license,
would be part of the middle class; both financially and socially. It has been my
observation that in Canada we have a much wider view of what is considered working
class. If you work with your hands, regardless of financial remuneration, you are socially
considered working class. Despite these differences and the passage of time, many of the
observations made by Willis regarding the ‘Lads’ still echo accurately forty years later,
within my own shop class. The ‘Lads’ exist in the modern shop class and can nullify the best educational efforts of any teacher, while the average student arrives to the shop with little motivation or history of academic engagement, be it with their head or their hands.

**Economics of Middle Class**

Today, a teacher with a Master’s degree makes half of what a crane operator with minimal college training can make in the Alberta tar sands (T Driscoll, personal communication, 2010). Class divisions, at least by economic measure, continue to become blurred in comparisons of traditional middle-class occupations, ‘certified’ trade jobs, and the value of work performed. Does the university graduate, working from a cubicle in the bureaucracy of government, have greater job satisfaction, and sense of agency, compared to a carpenter building a house, or a mechanic making a broken engine work? Academics have started to examine this topic, and are concluding that the degree, the traditional certificate of the middle class, may often be a ticket to a new type of working-class office job. These jobs have little satisfaction, little chance of promotion, and no more remuneration than a trade certification. In the past, many of these jobs did not require a degree (Crawford, 2009; Rose, 2004). If the university degree is the path to the new *shop floor*, is it worth the $80,000\(^4\) price? At this cost, is university even accessible to what is left of the middle class?

\(^4\) The total paid by the researcher’s family for their daughters 2019 undergraduate degree inclusive of accommodation in another maritime province.
There have been curricular attempts to address the seemingly one-sided post-secondary options. The origins of this curriculum came from government surveys conducted with graduates after high school. They felt they had received little guidance regarding current research on appropriate career paths, so curriculum was developed to address this deficiency. Recently, as part of my teaching package, I have been assigned to teach the Career, Explorations & Opportunities course, or CEO, which is now a graduation requirement and taken by all students in the first year of high school. The beginning of the course involves several surveys regarding possible paths and intents. In my most recent iteration involving almost 60 students, fully 74% intended to go to university, but less than half of them knew what course of study they would pursue. Of those pursuing a university path, 70% felt it was a family expectation to go to university. Should they graduate from university, fully one in three will end up in an unskilled job, and the average student will graduate with $27,000 of student debt (Bartlett, & LeRose 2013). The curriculum, and the teacher at least in my case, try to encourage the students to examine a variety of possible opportunities which might not involve an expensive degree. Even armed with all the statistical information the course provides, the students seem unswayed in their planned university path. As I edit this paragraph in 2019, my daughter, a recent graduate from an honours music degree program, pores over help wanted adds. She hopes to get a waitressing job to support a couple of gap years before she embarks on graduate study. She is struggling with the dawning realization that little she learned in the past four years of study can be applied to the working world.
Being working class on agricultural Prince Edward Island today is fundamentally different from being part of this class in 1970’s industrial England. The working class on the island, if we are to define it as those who engage in manual work, are mostly employed in small businesses. The dystopian industrial factory floor described by Willis (1979) never really existed in this province and likely exists only in a much-reduced form in a now globalized England. The counter-school culture exists within my school, but its composition is different from what Willis describes. The ‘lads’ of Hammertown, according to Willis, have a choice between unqualified and qualified work, but chose the easier path because they believed there was no difference, or perhaps feel they have no hope of attaining the required certification. Their response is to act out their rejection of the school system, a response they share with the counter-school culture within my school. The ‘lads’ in my shop class have no choice. The cultural penetration (Willis, 1975) is that they know they cannot complete the requirements for what in Canada would be a Red Seal trade, and the absence of unqualified occupations with a livable wage leaves them in a hopeless situation. Meanwhile, the current teaching paradigm that If you cannot work with your head, you must be able to work with your hands,\(^5\) prevails. The new ‘lads’ constitute a small cohort who can do neither and seem to be growing in number. The presence of these students, in any significant number, ultimately affects shop class composition.

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\(^5\) This statement was made by an automotive teacher during a registration meeting at my school. He was imploring the academic staff not to apply this value when considering who they should encourage to take shop classes.
Learning to Labour: P.E.I. in the 21st Century

What parent envisions their child becoming a member of the working class? The economic criteria for class distinction remain nebulous, yet the education system continues to focus on the production of the middle class, even as that class shrinks (Davis, Huston, 1992). University-educated parents who, by virtue of their education define themselves as middle class, also want their children to be university educated. This invisible guiding hand continues to separate pupils in school. Opening the engine bonnet of a modern car provides ample evidence that auto repair is not for the weak-minded. Advancements in emission controls, fuel efficiency, and vastly expanded computerization have simultaneously made automotive repair more efficient and much more technically complex. Construction tolerances and the technical complexity of carpentry have likewise been driven upwards by the demands for greater energy efficiency and healthy living environments. Yet students ‘who can’t think with their heads’ are still being channelled by teachers, guidance counsellors, and school administration to take trades courses, courses in which they have little chance of success. This pooling of students of lower skills, many of whom will be part of the counter-school culture, further influences the hand that keeps middle class kids in the academic track. As a case in point, my teenaged son was interested in carpentry during high school, but did not want to be in a room “with those idiots”, meaning the students he knew I often taught; instead he chose academic courses at advanced levels in subjects for which he had little interest. As middle-class parents we were just as guilty. We encouraged our children to participate in instrumental music, art, French immersion, and the International
Baccalaureate program. We did this so that they might reach their full potential and have all the doors remain open for them, but in part, we also did it so that our children would be with the ‘good kids’. Just as the subjects of Willis’ (1979) study chose to limit their economic and educational possibilities, so do middle class kids and their parents today. This effectively amounts to unofficial streaming. With the exception of a few trades teachers, the teaching profession is almost exclusively drawn from the university-educated middle class. They see their own path as the one to success and cannot help but encourage their pupils to follow the same road. It is my contention that this middle-class counselling paradigm has locked down the class composition of trade classes in this province.

**The Early Days: My Teaching Start on the Island**

“Oh, at least they are interested in your subject.” This refrain can frequently be heard echoing from the other side of the academic-vocational divide. For the first decade of my teaching career I would find myself nodding in agreement, since middle school children did seem genuinely engaged with the Design & Technology curriculum that I was tasked with teaching in Ontario. The high school carpentry students I first faced when I started teaching on the Island were another matter. Most of the project work from my first class had not met the minimum standard that would allow it to go

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6 Academic-vocational divide is a term widely used internationally to describe alternatively the difference in core education provided to academic versus vocational students, and the academic backgrounds of academic versus vocational teachers. I first encountered the term in the writings of American educator Mike Rose. (Rose, 2014)

7 Design & Technology was a middle school program I taught in Ontario. It does not exist on P.E.I.
home, and many had been thrown out or destroyed by the students themselves before they could even be assessed. The students had been tasked with making a storage box using only one sheet of plywood. All the appropriate lessons and demonstrations regarding joinery choices and material orientation given, ample shop time allocated, along with frequent encouragement, had resulted in a pile of plywood worth several thousand dollars being heaved into the dumpster. In each and every case, the first challenge was the final defeat. Clearly, learning through failure, the gold standard of learning a skilled craft, had no traction with this crew.

Who were these kids? What happened to the sweet middle school kids who loved coming to class and went with me to provincial skills competitions, and asked for after school clubs to further explore the subject? A first glance around the room gave some indication; The middle school Design & Technology classroom was gender balanced, and completely inclusive of all academic levels. The high school kids facing me those mornings were a frightening looking bunch. A teaching evaluation conducted by my vice principal around that time included this matter-of-fact statement: “Out of the 18 students in Mr. Hogg’s carpentry class, six are some of the most difficult discipline cases in the school.” Examination of school records and informal discussion with my colleagues revealed that three of those students were on probation and two were under sentence from the justice system. These students, in their current space, were incapable of what Matthew Crawford refers to as individual agency. Crawford describes Individual Agency

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8 Under sentence to attend school and to serve jail time on weekends
as associated to an activity that is self-directed, rather than directed by another and it is activity directed toward some end that is affirmed as good by the actor, to be able to act on the real world in useful and meaningful ways, the experience of seeing a direct effect of your actions in the world and knowing that these actions are genuinely your own. (Crawford, 2009, p. 217). They had experience only with past failure, and their future failure, or success, was clearly intertwined with my own.

**The Genesis of the Cottage Course**

Salvation came in the form of a professional development session with a collection of carpentry teachers brought together to share their successes, failures, and challenges. One teacher, from the western end of the Island, described a similar class to the one I had just had. He quickly assessed that the majority of the students lacked the necessary attitudes, which he more or less articulated as personal learning confidence, and what I now term individual agency. They were therefore incapable of completing individual projects. He described having the students build a cedar strip canoe as a class group project. Because the project did not have individual ownership, no one had to take personal responsibility for the inevitable failures that would occur along the way to finishing the canoe; however, all students shared in the feeling of success when the project was complete. This sounded like an idea worth pursuing. We subsequently built four cedar strip canoes in the introductory carpentry courses at my school. Engagement was considerably higher than it had been with individual projects, and there were fewer incidents of individual frustration. If a strip went on wrong, it was simply removed, with
no individual having to take sole ownership of the error. The only difficulty in making
this a sustainable, ongoing project was that the 78-minute period was not long enough to
complete even one layer of the fibreglass and epoxy work required to finish the vessel. I
was left to complete this messy and
unpleasant task alone so that the canoe
could be sold to cover the cost of
materials. Cedar strip canoes are at
the high end of watercraft pricing, and
it was difficult to find buyers within
the small Island community who were
willing to pay the market value of the
project. Finding buyers, even at mere material cost, would become the common
challenge for all carpentry projects over the next 15 years.

Students who enjoyed the introductory 701 level course, which briefly became
known as the canoe course, could opt to take the 801 level construction course. Typically,
there would be two or three sections of 701 and one 801 per year with the remaining two
or three periods of my schedule being non-carpentry courses. The 801 course remained
relatively unchanged from my predecessor’s day in that students learned the basics of
framing and had the culminating project of a mini barn or two. In the real world a small
storage barn might be built over a couple of weekends by a few individuals. In the school
world this project was stretched over two months of classes and involved 15 to 20 people.
Even building two of these structures did not amount to enough experiences to keep this many students busy, challenged, and engaged. My focus was divided between teaching and managing student egress. Bored individuals would invariably migrate to the parking lot in the guise of a bathroom visit and this in turn would become an issue between myself and the office.

Attrition due to poor attendance records also took a toll on student credits. All this extra labour might imply that the projects would finish quickly and be highly detailed, but such was not the case. Quite often construction details, even entire sections, were left for the teacher to complete so that the barns could be sold and moved to their new homes, again, for the material expenses.

The worst incarnation of this course involved building five storage barns so that only three or four students would be working on one structure, my hypothesis being that the increased individual accountability would increase engagement. The reality was that two of the structures were only two-thirds complete and I was busy well into July of my summer vacation. More of the same is never a solution in education.
Act Three - Climax - The Builds

The First Experiment

It was just after school and I was reconciling my attendance records before taking them to the office. Shamus, William and another student strolled into the classroom. “Hogg, could we speak to you about some course selections?” It was April 2002, and registration was just beginning. “We were just wondering about the double credit carpentry course? My brother and some friends said they had registered for it last year, but the course never happened. Could you tell us how this all works?”

“Well, guys, it is all about numbers.” I had checked in the past and the double credit course only ever had at best 12 registrations. Double credits are difficult for the office to schedule, and unless they see at least 16 students enrolled they are unlikely to offer that course. In fact, they probably want to see 18 because by the time second semester rolls around there will often be a few students who need to reregister for a course they require to graduate, but failed in the first semester. When the office needs to reorganize the student’s timetable, it is often the double credit that gets dropped to make room for the compulsory credit. Too small a group in the shop means that some classroom teachers will be faced with overcrowded classrooms.

Shamus paused for a few seconds, a look of frustration creeping across his face.

“You see, Hogg, I know I am going into carpentry when I finish high school, and I know of several other guys who are pretty sure that they are headed there too. We have
taken all of the carpentry courses and the double credit is the only one left. Isn’t there something that could be done to make that course happen?”

The young people in front of me were examples of the type of student I really wanted in Carpentry. Two of them were academic honour students, who at the same time commanded universal respect from their peers. One would later place seventh in his graduating class aggregate, and go on to an engineering degree, paid for by his carpentry work; the other became the youngest residential contractor I have ever known.

“Tell you what, guys. If you can go out and recruit 15 students who are like you, and I mean workers, not the parking lot types, then I will go to the bank and see if I can get financing to build a cottage as the course project.”

Their eyes lit up.

“You’d actually do that, Hogg? We’d build a real house? That would be incredible!”

“Well, my wife and I have been talking about building a cottage anyway, this would just make it be sooner than later. We can just see how it goes.”

Building a real cottage was not as bizarre or outrageous as it might sound. My predecessor, Ryan, had built a cottage for a Habitat for Humanity fund-raising raffle seven years previously. Ryan had also told me that there were early morning pre-school sessions, after school sessions and even weekend sessions of building. I later heard some staff say that that was the reason the double credit class never had enough registrations in the following years. They said, “Students felt there were easier ways to get two credits
than that.” Students did not want to come to school at 7 a.m., or on weekends, or stay after school. This would later turn out to be an erroneous assumption.

“But this is exactly what we need! A chance to build a real house! It would just be really cool! Do you think we could get it done?”

“However far the class can get the project within the allotted class time, will be fine with me. I will just finish it myself during the summer. In fact, a parent gave me the idea last year at interviews. He told me he had helped to build a cottage for the principal of his high school in Ontario. They even camped out for a few days in June to put the pieces together. Told me it was what inspired him to become an engineer.”

“I think we can find the students, especially if we are going to do a project like that.”

“Remember, students like you! I don’t want to be wasting my time with the usual discipline stuff, and this is a lot of money for me to risk.”

“Ok, we’ll start talking to people and get back to you. Thanks, Hogg!”

I was unaware of the result of their efforts until the administration informed me in late May that 21 students were registered in the double credit carpentry course for the following academic year. The boys had been successful in their recruiting. I had never taught this particular course before and the office made no inquiries as to what I was going to do within a course that had not been taught in the last seven years.

My predecessor, Ryan’s last double credit course had built a two bedroom cottage to support the charity, Habitat for Humanity. I later learned that the whole project had
been a break-even affair for Habitat and that there was no desire on their part to repeat the event. A project such as this had the additional challenge of having to be completely finished to show and sell raffle tickets. This necessitated the involvement of the Holland College Construction program, several volunteer skilled professionals, and of course a considerable amount of after school and weekend student time. The organizational effort to bring together all these disparate groups and individuals must have been considerable. Ryan had an entrepreneurial skill set that enabled him to persuade others to work with him. These were skills I knew I did not possess in equal measure, so replicating Ryan’s project was not possible, and I felt might be counterproductive to the construction program in the long term. Seven years after Ryan’s cottage project, there was no way to confirm the theory about the extra work making the double credit course non-viable. I also felt that the involvement of outside professionals might have diminished the students’ sense of ownership of the project, making them feel more like labourers than a team of builders. It was my desire that this project should be student planned and lead. It was also my plan that the cottage should not need to be totally completed and therefore not involve a large extracurricular commitment from the students. Ideally, I hoped we would be able to put together a closed-in structure that could be finished at the owner’s leisure, in this case, by me on my summer vacation. At this point I was not considering how the course might be replicated in the future.
The Building Process

The process actually began as soon as I was told the course had enough students. At that time I was teaching a drafting course and several of the advanced students were ready to start a major design project using AutoCad drawing software. I simply perused a yellowed 1970’s vintage cottage design magazine, the sort of publication that gave you an artist’s pictorial view and a floor plan in the hope that you would order a full set of blueprints. I picked a few that looked like they might be workable. Based on previous experience, I knew that the sections had to be built inside the school. Projects built outside the shop door, in view of the student parking lot, were too susceptible to the kinds of distraction that led to students disappearing during the period. I needed a space that could be closely supervised and contained. Building inside would restrict any building component to a final size of 32 feet in length. That could only be achieved by disassembling and storing most of the school workbenches along with moving some of the stationary power tools. The doorway through which any section would have to exit had an opening of 12 x 12 feet. Given the need to have some clearance from side to side and some allowance for a conveyance system underneath the building, I gave the students a design restriction of eleven foot four inches for height and width. Any eaves would be a separate substructure that would be re-attached outside, and the building would be moved on 4 inch steel pipes which could be borrowed from the welding shop next door. The closed in structure would be sealed against the weather and teams of students could work on the inside rooms while others started on the next section.
The student-led design teams were the first indication of increased engagement. The real possibility that their design could actually be built resulted in far more productivity and attention to detail than I had expected. Two of these original designs would actually be built more than once during the following years. The earliest examples of teaching using a project method are not from recent time but rather the late 16th century and involved competitions at architectural academies in Italy. Students were assigned buildings to design through which the project would represent a synthesis of what they had learned in their studies (Knoll, 1997). The Italian projects were hypothetical, so assigning a project competition where the winning design would actually be built must have added additional authenticity and perhaps engagement.

The physical work started in January when I met the assembled class. Shamus and William had had been as good as their word and at least 15 other solid students were in front of me. A few of questionable motivation were also on the roll, courtesy of administrative transfers from other unworkable classes, but the majority appeared genuinely motivated by the proposed project. In any case, 16-18 students would be more than enough, given that a professional crew is typically only three to four people. The real challenge would be in planning and maintaining enough task variety to keep everyone occupied.
This type of modular construction requires far more planning and problem-solving than conventional on-site construction. Take building the floor, for example. Normally, with standard platform framing the rim and header joists are attached to the sill plate and checked for square. If the sills or foundation walls are slightly out of square there is a range of adjustments that can be made, and if that is not enough, the builder curses the subcontractor who completed the previous work, or himself, and makes continuous adjustments in the wall plates as the building progresses.

With the process we were using, a floor section, with walls attached was required to accurately fit against some future, as yet unbuilt section that was to be attached to a foundation that may or may not have already been built in another part of the province. This gave a whole new meaning to the carpenter’s proverb “Measure twice, cut once.” Until the structure gained mass, the entire floor was knocked out of square with every hammer stroke.

Add to this the natural vagaries of wood in a dry environment. We would pick the straightest lumber for the rims, but the extremely dry air of the school building would cause them to dry too quickly, warping and twisting the wood. Dry lines were kept permanently in place and constant adjustments had to be made. We would often have group brainstorming sessions to solve problems that would never occur if we were building on site. Everyone became an expert in the practical application of the Pythagorean theorem.
One such brainstorming session resulted in the students coming up with the idea of stretching a chain and come-along ratchet winch, attached across the diagonals of a 32 foot floor, to micro adjust it into perfect square, and the nailing of temporary diagonals to keep it square until the plywood could be applied. Thirty-two foot manufactured laminated beams (LVL) were clamped, on edge, to one side to keep at least one rim joist straight during the squaring process. It was with some relief and celebration that the last sheet of plywood was glued and screwed down to any set of assembled floor joists.

Planning, drawing, and modelling were crucial with this build and I really had no more experience than the students with this type of pre-fabrication building process. I had only ever really built one full-sized house before, my own, and that had been with textbook and the building code in one hand and a hammer in the other. On that occasion the economics of being a substitute teacher had dictated that I not involve other professionals, otherwise known as subcontractors. The only exception to this was the use of a licensed electrician; the electrical utility will
not turn on the power to a project unless a recognized certified electrician signs off on the installation and a provincial inspection has been completed.

Armed with the knowledge I have now, I would never recommend this level of Do It Yourself (DIY) to anyone. Prince Edward Island, at the time of this writing, has just started to adopt the National Building Code. When we started these projects, building inspections designed to enforce some sort of building code only occurred in the larger municipalities of the province. I was incredibly lucky and probably only saved by my tendency to overbuild whenever in doubt. Overbuilt houses are solid but not cost effective; however, when you are not monetizing your own labour it is easy to justify the use of extra material, just to be certain of structural integrity. This inclination to over-research and build with maximum structural strength probably served me well with this first cottage. It would have been logical and sensible to reach out to the building community and ask for assistance from companies working in prefabrication, but at this point I viewed the course as an experiment, and if the experiment were to fail, I wanted the fewest number of people to know.
Permission Verses Forgiveness or A Stake to be Hammered Down

“What is THIS?”

The principal had just entered the carpentry shop. I was in the process of maintaining a mitre saw during my planning time when she entered escorting the manager of the school board plant maintenance. They were looking for the path of a malfunctioning air duct, which had led them into the carpentry shop and within view of the double credit class project. The students and I had moved the workbenches and machinery to make room for the construction of the first 32 by 12 foot building section. Taking up half the shop floorspace, it was a formidable looking structure for the available interior space. The first third of the building weighed twelve tons and was almost ready to be rolled across the floor and out the door to the outside compound with two inches of clearance on each side. My Principal, Cynthia, had probably assumed we would be building the typical storage barns completed in past years by my single credit courses. This was not what she expected. The size of the building had clearly shocked her, and I sensed from her tone that I was in trouble.

My salvation, or at least a temporary reprieve, came from the school board building plant manager,

“This is GREAT! Wow! This is just what we should be seeing in schools! Give me a tour and tell me what you're doing here.”
His excitement built as I showed them through the two bedrooms, bathroom, and partial kitchen, explaining how it would all fit together with the subsequent sections to form a 4 bedroom, two bath, 1200 square foot cottage. The principal still looked irritated, but was holding her tongue, possibly in deference to the manager’s building know-how and obvious elation. I made a point of mentioning, for her benefit, how I had observed dramatically higher levels of student engagement, and how the course would not cost the school any material expenses, hoping these positive tidbits might stave off the anticipated administrative wrist-slapping. I waited for several days. There were no cryptic notes in my mailbox with the foreboding words “See me!” penned by the principal. I seemed to be in the clear, at least for the time being.

When I had taken the position at this school my predecessor had proffered several pieces of advice. “Get your forms into the office on time!” “Try to keep the shop cleaner than I have!” “Cynthia is very by-the-book, but will back you up if you have good documentation.” And finally, “It is easier to ask for forgiveness than for permission.” Ryan had been a very innovative teacher, and some of his most successful projects had required postdated forgiveness. In fact, the position I held had only become open because Ryan, already having two Master’s degrees, had decided to complete his Doctorate. Clearly a life-long learner, Ryan was also a very student-centred teacher. This had become clear to me in the years prior to taking over his position. Often when we met he would describe some new initiative he was involved with, and if we were at the school, he would usually be surrounded by a core of highly engaged students.
Engaged, innovative teachers are sometimes lauded by their peers, but almost as often they are criticized. There is a saying, attributed to both Chinese and Japanese cultures, “The stake that stands out, gets hammered down.” I am not certain if Ryan felt this was the case when he was teaching at the school, but it certainly appeared so to me during my first few years after his departure. Comments denigrating his students’ project quality, classroom organization and whispered statements intimating that “Ryan was certainly different!” were common among my colleagues. On the first charge, there could be some truth, but if they were capable of perfection would they be students of the craft? The second fault would be freely admitted by Ryan, but in my 25 years of observation, I have found that some of the most engaged and innovative teachers were often the least concerned with tidiness, or if concerned, they just could not find the time. The third charge of being different is actually a compliment. Disengaged, conformist teachers will always feel threatened by engaged, innovative teachers, and view them as being abnormal; a stake to be hammered down.
Engagement Observed

The first traces of spring were in the air and the snow had mostly melted from the shop’s fenced-in compound. The better part of a school day had been consumed with pushing and levering the first section along the shop floor and out into the compound on four inch steel pipes. The second section was progressing at a much faster pace due to the students’ newly minted expertise. Student leaders had emerged to guide others in various building tasks. Everyone came to class early and rarely took bathroom breaks. Most would not even take the scheduled seven-minute break between periods. Several students had asked that they be allowed to work on the project during the March break. They had personally taken on ownership for completing the project, much to my amazement. There were frequent visits from the students’ friends to check out the progress. There was obvious pride in their voices as the students described the various challenges they had encountered and solved. I floated the suggestion that a few of us go to the building lot on a weekend to set up the post foundation. I was overwhelmed by volunteers. Was this just a special group? Or was there something happening here?
The day came to move the building components out to the north shore building lot. A parent volunteered a large flatbed tractor trailer for the smaller parts and the crane company provided low-boy trailers for the heavy structures. The only complication came when the tractor trailers became stuck on the building lot. A bulldozer was summoned and we spent half a day watching it repeatedly pull the trucks out of the sand. It turned out the lot was an old sand dune structure and in places the beach sand was eight feet deep. With the assistance of an old-time local resident who knew the soil structure of the area, we were able to find a different approach for the trucks and heavy crane. We camped out for two nights with the class, an experience which was surprisingly pleasant. Another teacher came out the first night to help out with supervision.
but there were no issues. A group of students went to the beach while another group hung out with us around the campfire. The other teacher proffered a Cuban cigar to me. It seemed to be indicating the birth of something. I was exhausted and simultaneously exhilarated. The boys had worked in a coordinated fashion, the likes of which I had never before witnessed in my teaching career. The cottage sat on its foundation sealed from the elements.

Fig. 8  First cottage at the end of the weekend
Build#2 2004-2005- Be Careful What You Initiate

The course was not offered the following year, which surprised me a bit, although not unpleasantly. I was struggling to finish the first cottage and prepare it for the summer rental market. Renting, while not originally planned, became necessary for my young family after reviewing all the expenses of owning a second property. When there was no rush to enrol in a second double credit course, I just assumed that the first class had indeed been a special group. In retrospect I think I must have felt relieved since I really had no idea how I would replicate the program. I never even contemplated trying to solicit a client for another project.

The following year, to my surprise, the course was offered. Again, there had been no recruitment effort for students or a potential project. It was not a large group of students, and there were no natural leaders within their ranks that I could discern. It would be a long semester of half-day classes if I could not find a suitable project. While we had been successful renting our first cottage for a few weeks, I did not feel we could afford a second cottage. I began to ask around to see if there was anyone else who would want the project. I eventually found a fellow staff member who was about to retire and was considering a cottage. With the smaller group I suggested the smaller two-bedroom model which had been designed along with our first project by my drafting students. He liked the design, and the estimated $25,000 cost seemed reasonable. He was waiting for some investment to mature so could not start paying for materials for a couple of months.
Since I had known him since childhood, I felt I could trust him and suggested I could use my line of credit to get the project started; he could pay it out when his money became free. A handshake was exchanged; he began the process of looking for a suitable building lot and we started laying up the floor in the shop.

The project progressed smoothly even though the small grade twelve class seemed to have no student leaders. My grade ten introductory class appeared quite fascinated by the project and I decided to allow those interested to participate as well as the original grade twelve class, at least with the on-site component of the course. March break rolled around and a bombshell dropped. The staff member who had agreed to purchase the project claimed he could not find a building lot and asked to be let out of our informal agreement. That week the CBC came and did a Compass episode on a high school building a cottage. We were the only secondary school in eastern Canada that engaged in projects of this size and the interviewer thought this would be a good news story. The news that the project did not have a buyer, and that the teacher had funded it personally, gave the story a bit of unexpected flavour. The episode would save the project.

During the March break, I had begun the search for a lot near our first cottage. There was a new building development on Savage Harbour and I thought I could just maybe swing the financing for one of the smaller lots. The developer met me there and we discussed the project and possible lots. He had seen the CBC episode. I was unaware
of it at the time, but he was also the head of the provincial building inspectorate. The
next week we received a surprise visit from the local building inspector. It was a
particular surprise since I did not think I needed a building permit given that I was
prefabbing it in Charlottetown, and the planned destination of the cottage was yet to be
determined. The inspector correctly pointed out that the staged inspections had to occur
throughout the building process and since the building was currently in Charlottetown,
the inspections would be carried out by the provincial department located in
Charlottetown. He must have been fairly impressed with what he saw, since a few days
after his visit the inspectorate department head offered to pay for the project and place it
on one of his lots. I was off the hook.

Fig 9  Student model shows how sections will fit together

We had set up camp before the trucks arrived with the crane. The owner and I had
set the rear half of the post foundation several weeks earlier, but when the post hole
digging machine did not show up for the second weekend the owner had to hire a couple
of graduates from the college construction program to set the front foundation. All of the components were put in place on the first day but there were unexplainable fitting problems. When I woke up with the sun at five in the morning the next day to try to solve the issue, a few students were already working. Walking on the floor of the front great room in the quiet of the morning highlighted the problem. The floor was slanting down to the front. I had checked the level before the building was set on the foundation, but the posts the hired workers had set had sunk eight inches when the weight of the building was applied. No wonder we could not get our perfectly squared prefabbed walls to fit. I had to send the owner into town to rent heavy hydraulic jacks to lift the front of the building and raise the foundation beams. This took half a day. During the next week they would sink another eight inches, and I vowed this would be the last building I would build on a post foundation. We eventually managed to fit all the parts and assemble the great room roof framing but on the last day the wind was just too strong to allow students

Fig. 10  Second cottage after being finished by owner
to sheath the roof. The owner was unperturbed. He even expressed interest in participating in another project. I was left with an incomplete feeling however, questioning myself on what could have been done differently to ensure the roof had been closed in. This would not be the last time that the vagaries of the weather and subcontractors would play havoc with our plans, but we would have a better execution the next time we did this design. Experience is a great teacher, just not always a kind one.
Build 3 The Winter Build 2005

Grade 12, 800-level construction courses had always been scheduled to start in February. I had assumed this was a tradition established because it would be difficult to move and place even a small structure in the dead of winter. This had also always given me the breathing room of the fall semester to plan for the construction course and line up projects. We were in the process of placing the 2005 structure when the new course schedule was published showing the double credit 800 course starting in September. In retrospect, I should have gone to the scheduling vice-principal and explained the difficulties a winter build would cause, but something prevented me. Perhaps the fear that the course would appear to be too much trouble for administration. Organizing and placing a second cottage had left me exhausted, with just enough energy to get through final exams, report cards, and graduation. I may also not have wanted to upset the vice-principal, as I had a sense of what a herculean task it was to set the course schedule for a thousand students and seventy-five teachers. I was not feeling secure about the long-term prospects for the course. If it was too difficult to schedule they might just not offer it, leaving me teaching what exactly? It was also a rough period personally. We had been receiving prank phone calls in the middle of the night, clearly from former students. My car had been vandalized several times in my own driveway, and the side of our house had been spray paint tagged with “Fuc you pig”. The misspelling of the Anglo Saxon oath gave me pause regarding the literacy of the miscreants, but humour aside, I was feeling apprehensive. I had already committed to being part of the Canadian rifle team to Bisley,
England and would be away for over three weeks of the coming summer. My wife would be home, with our small children, and the attacks seemed to be escalating. The police had informed me that there was a teenaged gang active in the neighbourhood, siphoning gas and vandalizing cars in a search for cash. The phone calls and tagging represented a personal connection, and when the police and I compared suspect names, they were all former students. Finally, a prank call was successfully traced and the caller had the misfortune, or lack of intellect, to realize this was not an activity he should be participating in beyond his 18th birthday. The police visited all the culprits’ homes with the suggestion that I was going to consider criminal charges over the summer and let them know of my decision in the fall. All activities subsequently stopped in our neighbourhood. Looking back, I think I might be able to forgive myself for not having that discussion about schedules with administration. There was just too much going on. While forgiveness might be justified, this lack of forethought would create a panic in September.

The CBC episode had led to a few casual inquiries by potential clients regarding possible cottage builds in some vague future, but by the fall of 2005 no one had committed. I had been lucky with the last cottage when the client backed out, but I was not prepared to finance a third project on pure speculation that a client would appear. I was reluctant to advertise for a client and I really did not think one could be found for a project that would be placed on a lot in January. Soliciting a client, in my mind, implied we could guarantee a level of completion, and by seeking a client we would somehow be
more beholden to them. I knew I could only guarantee what actually could be completed at the school and even that was a bold assumption on my part. The previous build had introduced the variable of wind into the equation of what could be completed on site. Winter weather is the least predictable. I would have to be able to assure a client that the structure would be closed in when we left the site. An option would be to leave the building sitting for a semester at the school and move it in the spring but it would be in the way of other courses and would be a liability issue. If we were to build a cottage with this course, then foundation work would have to be completed almost immediately, or we would be dealing with frozen ground.

I felt certain of the value of this new course. The increased engagement was quantifiable by the number of students who registered for more carpentry courses so that they could be part of multiple builds. Having experienced students in this third project would allow me to further differentiate learning and leadership responsibility. For the first time in my seven years of teaching at the school, students were discussing with me the possibility of a career in construction. Lack of a client, a winter placement, and such a short turnaround time since the last build, just left me at a loss as to how I could deliver what these students expected. Salvation would come from an unexpected source.

My mother had followed both earlier builds and had noticed a positive change in my own attitude towards teaching. Working with engaged students makes for an engaged teacher. With both builds she had baked food for the students and delivered it out to the
site. The atmosphere was like a building bee and perhaps this tugged at her rural Manitoba farm roots. The enthusiasm of these teenaged builders was certainly very infectious. It had been my mother’s example that had led me to start working with my hands. After a decade as the chair of the provincial Health Services Commission, and several years of lecturing at the University of Prince Edward Island, she had decided to take a two-year Fine Woodworking program at Holland college. The projects she brought home had astonished me at the time. Later, in 1983, when I returned home in utter despair as a refugee from my music career, it was her encouragement that led me to take the same woodworking program she had completed. The confidence and sense of perfectionism I gained from working with my hands for a year caused me to reevaluate my academic abilities and reembark on my university education. Presently it was late 2005 and the economy was booming, cottages were selling and an investment in waterfront vacation property seemed sound. Her suggestion was that she would fund the purchase of a building lot, if I would cover the material costs of the cottage. We would sell the cottage when it was completed and share the proceeds. Bank valuations of the first two properties made this look like an attractive investment, and she had confidence in my ability to solve the challenge of a January placement. My parents had money they could invest, and my bank was, as always, willing to let me leverage the equity from our first cottage property. The students would have their cottage to build.

A suitable, albeit expensive, water-view lot was purchased, a new two-storey design was drawn up to take advantage of the view, and field trips took place to build the
insulated concrete form (ICF) foundation. These forms, which look like foam Lego blocks that get filled with rebar reinforced concrete, would prevent any repeat of the previous sinking post problem. Representatives from the form manufacturer actually volunteered to work with the students on the day of the pour, excited by the prospect of exposing their product to twenty potential future contractors. A few volunteer students and I spent a Saturday laying up and pouring the footings, followed by a Friday field trip by the entire class to form up and pour the walls. I had looked into having a subcontractor do the work, but the quote was three times what the material actually cost. On the previous project we had been prevented by weather from finishing the roof. To prevent this from happening again, the largest section of roof was built the following weekend, on the ground beside the foundation. Snow started falling as we packed up on that last day.
This was by far the most complex design attempted so far. The planning involved in prefabbing two storeys is exponentially more difficult than a single storey structure. All these detail drawings were still being rendered by hand on velum, requiring many late nights and weekends poring over and revising scale drawings of the components. No mistakes could be tolerated.

My mother made this a little more complex by insisting that a second bathroom be added to the upper storey which had originally been meant to be a loft-style bedroom—you have to keep your investors happy. Complexity was also increased by incorporating so-called Smart Framing techniques that I had read about in a Fine Home Building article, the premise being if the National Building code was actually followed and framing members were placed on 24 inch centres rather than the traditional 16 inch, insulation values could be increased by 25% while building costs were decreased by 20%
(Lstiburek, 2005). The increased complexity resulted from all framing components, floor joists, wall studs, and rafters, having to be carefully aligned with each other, or stacked.

In 2005, I was not aware of the seriousness of the looming climate crisis. Al Gore’s (2006) documentary *Inconvenient Truth* would not air until the following year, but I was aware of peak oil, a point at which all known oil reserves would start to decline in a time of ever-increasing demand, resulting in catastrophic increases in energy prices. I felt it was as important to teach students how houses *should* be built as it was to teach them how to traditionally build them. This project, with its highly insulated basement, seemed a logical point to start this process.

The weather would again play a role in disrupting our construction schedule while highlighting evidence of student engagement. The crane and trucks were all booked for the course end, when the province experienced an extremely warm January thaw. Road
restrictions were put in place and heavy equipment could not travel on the highways. I gathered the students together. They suggested that they would be willing to do the move in the next semester, despite the course being over, and all but two thought they could be there. We were two weeks into the second semester by the time the ground was frozen again. It was miserable work. The temperature never rose above -10 celsius and the wind never stopped blowing. All of the students showed up for the bus every day. No one called in sick.

Fig. 14 Complex and very cold final assembly. Everyone showed up even though the course was over and the marks were final.
The fourth build was our most successful and environmentally sound project. A teacher at my wife’s school had heard about our program and had a shorefront cottage property he had already planned to develop. He met with me during the summer and approved a design which we had built before. The program was scheduled for the spring semester so as to prevent the difficulties of the previous project. The owner set up accounts at a building supplier so that I did not have to risk any of my own money. It seemed that the program was finally getting the momentum to be sustainable. The owner was also an environmentalist and wanted the project to reflect the latest environmental techniques which would allow the advancement of the improved framing techniques explored the previous year. He even wanted to adopt a composting toilet system that he had seen in my own home so that the project would have a minimal impact on its environment. The introduction of computer assisted design software further increased accuracy, decreased waste, and alleviated the
time-consuming velum and pencil drawings of the previous builds. The walls of this structure were estimated to exceed R40, more than three times conventional national building code standards.

The owner had a co-worker at his school whose spouse ran a crane company that was more than willing to move and set up the building, including loaning us expensive rollers that greatly helped moving the sections within the school. The ICF foundation was constructed and poured by the students in less than a day and the trucks arrived faster than we could place the cottage sections. The crane operator commented that these building sections were going together tighter than the professional pre-fabricated products they were used to placing. The same principal who had originally asked, “What is THIS?!?” arrived on the second evening with homemade cookies for the students. She was amazed to see the students still working as the sun was setting despite my cajoling them to call it quits. Every task we set out to do was completed before we finally boarded the bus on the third day. This was the perfect build. The local newspaper gave it front page coverage, and three-quarters of the students had applied for postsecondary carpentry programs. The principal
would even describe her observations to the public during our graduation ceremonies. In hindsight, this would turn out to be the apex of the program. My luck was about to run out, and the storm clouds of a global economic crash were gathering.

Fig. 17  *Students pause for a class photo at the site*
2008 Canada Games

Despite the economy, word of mouth and media coverage had created a steady interest from potential clients. Most were eliminated or withdrew when the design constraints of our facility and timetable were explained to them. A few others actually thought it was all financed by the school board and that all that was required of them was to step in at the time of delivery. One even thought the materials would be subsidized by the school to his benefit! At least the increased public interest gave me some comfort. I would not have to finance the next project, and the future of the experiment seemed secure for at least the near term. I selected a local softball association that had organized a building supplier to donate all the materials for a Canada Summer Games structure within the school community. It was an uninsulated two-storey building that was to serve as a canteen and media centre for the upcoming games. Since it was to be located in a suburban area that was close to the school we did not camp out and this may have led to a lack of excitement among the students. The program was still enjoying a certain momentum within the school. I was teaching five of my six potential periods in the shop, and we were still placing a large percentage of our students in postsecondary programs. I was, however, starting to detect a change in the students which at first I attributed to the project’s lack of challenge. Not being a cottage, the building lacked drywall, insulation, plumbing, or significant electrical. Having a second storey represented complexity in that it was completely built at the school with the second story being lifted off for separate transport. While this represented complexities for me as the designer it was of
little interest to the students. They seemed rather complacent. There was a drop in the enthusiasm noted in other years. The numbers of students who volunteered to help with on-site preparation had diminished and it seemed that they just expected to build a full-sized project while at the same time being completely unaware of the commitment it required on my part to organize these projects. On the day the upper section was moved and placed on top of the first story, I was alone. It was a perfect move and the project met all the goals we had set. It just felt very strange to be the only one to experience the final moment.
The 2009 project started well. The client was a geologist with Island ties working in the western oil fields. He had a building lot overlooking the sand dunes and waterscapes of National Park lands. The design started out as a duplicate of the successful 2007 build complete with almost all the environmental features. I never met the man until after the project; all correspondence was through e-mail. After building at the school began, the project began to experience mission creep. The main change was to the front of the building that looked out onto the magnificent view. The large Great room usually had a flat front of windows. The client wanted it to push out from the building like a ship’s prow. It sounded distinctive and would take better advantage of the view but was a departure from the tried and true. The change would make the foundation more complicated and the roof structure would require more on-site work involving difficult angles. I was feeling confident and agreed to the changes. Overconfidence and bad luck make for impossible situations.
The move date approached and the rain never stopped. It was May and road restrictions were still in place, stalling construction province-wide. We were running out of time to get the ICF foundation in place, and I was forced to ask a local contractor to complete this part of the job. He could wait for a dry weather window and move quickly, whereas the wheels of the school system took longer to achieve traction. I simply could not mobilize the students on short notice. As it was, the contractor was only just able to get the foundation in place prior to our scheduled move. The cost for the foundation went from an estimated $8,000 to $24,000.

The weather cleared just before the scheduled move and we followed the first two trucks and crane to the site. The first day went well although the night was cold and wet. In the morning the trucks failed to materialize with the next sections of the cottage and we waited for the entire day. It turned out the trucking company was overbooked and short of drivers, perhaps due to the poor start to the building season and the final break in the weather. They never did give me a reason. The rest of the components showed up the next day but resulted in us running out of time to complete even the framing of the more complicated roof. I had always informed clients that they had to have a contractor ready to take over if weather stopped us from completely closing in the structure. This would be the second time I would have to make that call. It took a team of three professionals a week to close in that structure which indicated to me that I had indeed been overreaching. Weather and subcontractors were out of my control but this build was going to cost the client much more than he had anticipated. This would not be without repercussions.
A couple of weeks later, I was called down to the office. Cynthia and the client were sitting in her office when I was ushered in to take a seat. The client accused me of deceiving him about what the students actually could get done and seemed to be looking for compensation for his extra expenses. In his defence, he had been in Alberta during the building placement and may have not been properly aware of the conditions on that given weekend. In my defence Cynthia cited all the weekends and evenings she had noticed my truck in the school parking lot, knowing that I was working on his project, and stated categorically that if there were any shortfalls it was not due to a lack of effort. I had explained the problems to him in an email and proceeded to reiterate them. I had the feeling it was news to him. I also restated the conditions that I had laid out for him at the beginning of the project, regarding back up contractors and the vagaries of weather. I even offered to print out the emails and his replies. He remained dissatisfied. Cynthia let him know that there were no provisions for compensation in such projects and that she felt confident that if expectations were not met it was the fault of communication and through no fault of mine. The meeting left me bitter. As we were leaving, I suggested we could collect the cabinetry we had built for the kitchen, intimating that it might not be up to his standards. He had not yet paid for the cabinet materials and was happy not to have to pay for yet another disappointment. I quickly arranged for its collection before he could get a close look at the work. The cabinets were actually beautifully made, but I was damned if I was going to let this ungrateful man have $10,000 worth of cabinetry and pay only $3,000. I had already had an inquiry from Habitat for Humanity regarding a kitchen and having seen the floor plan I knew I could adapt these to their project. It
would take a week of my summer vacation to make them work but so be it; Habitat was
good for the material cost and the beneficiary would be far more deserving, and grateful.
Ramona, a colleague of mine, was checking in on a couple of students in my woodworking class. After viewing the work that few students were doing she casually made conversation with me while the students worked.

“So, what are you teaching next semester?”

“I have a crafts class and a double credit construction.”

“Oh, I really like the crafts class! It’s so much fun! What sort of work does the double credit course do?”

“We usually build a 1000 to 1200 square-foot cottage, but I am not sure what we will do this year since we don’t have a client.”

In truth there had been inquiries from a couple of potential clients, but I had put them off. I did not want a repeat of the previous year and I was not sure how to prevent it unless I knew the client. I knew they had to be a local, and willing to be personally involved.

“How does that work? Does the school pay for the materials?”

“No, the school is not really involved at all. The client sets up an account at the building supplier with me as a signer and we build the cottage in sections here at the school. Come the end of May we spend a few days at the site setting up the sections. The goal is to provide a closed-in structure that the client can finish. It is usually considered 50% complete according to bank evaluations, and that 50% is free of labour cost.”
“That sounds great! I would be into that. I actually have some land.”

“Well now, there is risk involved. Once we couldn’t finish the roof because of high winds, and last year the weather messed us up so the guy had to hire a contractor to close in the main room. He was not happy. In fact, I don’t know if I really want to do another one, although I don’t know what we are going to do instead.”

Ramona kept bringing it up over the next few days and it started to look like a possibility. I agreed to drive out and look at the land.

My defences were being worn down. The land looked fine. There was a home on the property where she lived with her mother, so there would be water and bathrooms available. I suppose the real motivation was for her to have an independent living space while still being able to care for her ageing parent. Ramona was fine with the smaller design we had built before and I figured out a way to change the roofline so that it could be prebuilt on the ground and lifted into place by the crane thus making the completion less dependent on good weather. That might prevent a repetition of the problems encountered when we first built this model, and the technique had worked before with the third cottage. It was a smaller building, so there was a better chance of completing more of it prior to the move. She wanted it on a post foundation, which was not acceptable to me, but she readily agreed to using a new steel post system that created level, unshifting support. There was the possibility that the building might be moved in the future, and this system could be disassembled and used again. A steel roof was also in the design, which might speed up the process over the standard less environmentally friendly asphalt.
Just enough overall difference to keep me interested. What else could I do with this class?

It was time to start the course and I asked Ramona if she had set up the account at the building supplier. She told me there was a temporary problem with her getting contractor pricing, but that she had more than enough credit on the Visa card to cover the cost. Would it be all right if I placed the order using my account and she would go in and pay it before it was shipped to the school? She had been assured that it would all be sorted out shortly. I agreed as we needed to get started. The same thing happened with the next order and Ramona asked me if we could just use this system for the entire project. She was using an Air Miles points Visa card and had calculated that she would amass quite a number of miles on the estimate of $30,000 in materials. She would make sure the account was paid in full before the end of each month. Apparently, if she had her own account she could not pay off the balance with a Visa card and still maintain contractor level pricing. I should have seen the lack of logic in this, an error I would come to regret.

The school part of the build proceeded smoothly and the students were far more excited than the previous two build groups. There were lots of volunteers for the on-site pre-building even though the location was an hours drive away. Perhaps the two former classes had just been representative of yearly cohort variability, and not a real drop in project engagement. I had a red seal qualified student teacher which greatly helped with
task supervision. There were very few issues and I was beginning to feel the program was sustainable after all. The problems would only surface when we brought the building to the site.

The prebuilt roof moved, as if in slow motion, in the gust of wind. The student riggers struggled to control it with the lines. I had 18 students and a practicum teacher underneath the roof trying to guide it into place. Liam, my student teacher, was another reason I went along with this project. A Red Seal certified carpenter with several years’ experience and had also completed all the academic qualifications for the Bachelor of Education program, he had a foot firmly planted in both academic and vocational worlds. The roof drifted off course once again.

“Put that phone away or I’ll come over there and shove it where the sun don’t shine!”

Liam was bellowing at a student who was texting with one hand while balancing himself by placing his other on the ledge where we wanted the roof to come to rest. Had the roof found its position, it would have cut his hand cleanly off. What was that kid thinking? I was at the other end of the line of students feeling very out of control. At least the CBC
cameras had left the site a few hours ago and Liam’s outburst, regardless of how appropriate it was for the situation, would not be the subject of the local evening news.

The crane operator had told me the roof structure weighed approximately 12 tons according to the scale in his cab. I glanced over to one of the layered canvas straps suspending the structure over our heads. It looked to be cut though almost halfway! If it gave way, I might make the evening National news, for all the wrong reasons. If it were to go horribly wrong, I would be the second time a shop teacher to receive country wide coverage.

Earlier in the year Erik Leighton, an Ottawa high school welding student, was killed when a peppermint oil barrel exploded. The students, under the direct supervision of the teacher, were using an angle grinder to cut into the closed barrel to make a barbecue project. Leighton was killed while several students and the teacher were seriously injured. The teacher simply did not equate peppermint oil with explosive possibilities. All shop programs were closed down in Ontario while a risk assessment of various projects was undertaken (Cameron, 2012). The ripple effect of this incident was spreading across the country.

I could not possibly know everything. At what point was that strap considered unacceptable by industry? It looked unsafe to me. Surely the crane operators would not use a defective piece of equipment? Or maybe they would! They had moved the building without properly planning the route. The load had sheared off a traffic light
during transport, damaging the building. They told me they had insurance for that sort of
thing. Everybody makes mistakes. I just could not afford to make mistakes with minors.
No matter how much I planned, I could not foresee all possibilities. I had been incredibly
lucky so far. Six buildings, six set ups, and five camp outs, with no accidents more
serious than what a bandaid would fix. On this, the seventh build, my gut was telling me
something different. The strap held, but this had to be our last project.

An hour later my decision was reinforced. A student, nicknamed “Little Will” by
his peers, was carrying a roll of adhesive asphalt up a ladder. Will was a rugby player
and a gentle giant of a 17-year-old, carrying well over 300 pounds on a six foot six frame.
Halfway up, the ladder completely folded in on itself. No injuries fortunately, other than
Will’s pride from the ensuing peal of peer laughter. When I examined the ladder I
calculated that Will and the roll
of building paper weighed
almost twice the ladder’s
capacity. It had never occurred
to me that some people just
cannot use ladders, ever. I
simply could not know it all,
and it was time to quit before
this caught up with me.

![Fig. 20 The now traditional class photo reveals student team building.](image-url)
A week after the move I was at my building supplier picking up a few items for
Liam. He had finished his practicum with my school and had accepted wage work for
Ramona, finishing the cottage. The cashier spoke quietly to her supervisor on the phone,

“Could I have an F5 for Ian Hogg.”

An F5 is an authorization for going over your account credit limit. I reflected back to my
last few trips to the store and realized they all involved an F5.

“Excuse me, could you tell me how much is on my account?”

“Sure, $21,000.”

I tried to hide my consternation. Ramona must be more than two months behind on
paying down the balance. The interest rates on accounts here are 28%! What was she
thinking? A feeling of panic began to well up within me. The cottage had been moved
onto her property, and I had not thought to check that the balance was paid off prior to the
move. I no longer had any leverage for getting the account paid other than using the
courts. I just trusted her.

Evidence of financial problems start to pile up. I saw Liam a week later and he
told me he was no longer working for her. He started to have the feeling he was not
going to get paid. He did not know about the account at this point and I had intended to
warn him. As it turned out, his intuition was better than mine. I started getting calls from
sub-contractors who had not been paid. I felt panic. Twenty-one thousand would
bankrupt me. I had two mortgages and a line of credit resulting from the building of my
own home and financing two of these cottage projects. I owed $350,000 and had absolutely no more credit to cover her indiscretion, or my stupidity.

After confronting Ramona, she managed to make a few payments before the end of the school year but there was still $8,000 outstanding. The accounts department at the building supplier was sympathetic and offered flexibility. Apparently there never was an issue with paying accounts with a Visa card, it was just that she failed the credit bureau check necessary for an account. The crane and trucking company had not been paid anything, and it would be three years before that account was settled via the legal system. The excavation contractor had similar trouble. In early July, I was called into a meeting with the school board superintendent, my principal, and Ramona.

In the meeting, Ramona made the assertion that the cottage was not as complete as we had suggested it would be when it was moved, and moreover, it was damaged during the move and the carpenter she had hired was costing more than she had budgeted. She had no intention of paying the remaining $8,000. In turn, I explained to the superintendent that the cottage had been superficially damaged by the transport company and that they carried insurance for that contingency. The cottage had been closed in against the weather while we were at the site which is the best that we ever hope to manage with these projects. After a project is delivered, it ceases to be the responsibility of the school, the students, or myself. Ramona had signed documents to that effect. I had logged over 80 unpaid hours at the site prior to the building being moved. The last
two months of school had consisted of 12- to 14-hour days, seven days a week. This was no different from any of the previous builds; I had just kept track this time. I finished by stating I was quite prepared to go to court. I was exhausted. I normally avoid any form of confrontation, but I was feeling hatred for the woman across the room. I really had no idea how I was going to appease the accounts manager while I went through the court system. The superintendent quickly resolved my anxiety.

“Ian, you are not on the hook for any of this. We will pay off the account. We do not want any of this to find its way to court.”

After some more discussion, Ramona excused herself from the meeting. Undoubtedly, she felt victorious about not having to pay the $8000. I was still seething. Part of me wanted that day in court. I thanked the superintendent for bailing me out.

“Ian, you would never be on the hook for that. You did seven of these projects and this is the first cost to the school system? Seems like a bargain to me!”

As Cynthia and I are leaving she commented on how stressful this must have been for me.

“Ian, this is the last one, right?”

“Without a doubt, Cynthia. I am finished.”

As I was driving home, I thought of the student being interviewed by the CBC during this last site build. He was lying on his back, fastening soffit material to the prebuilt roof before it would be lifted into place. He was so enthusiastic in his responses to the CBC
reporter’s questions. He spoke about how the experience had given him the confidence to pursue his desire to work in the trade.

“If you are going to go to school you might as well learn something real. I’m loving it!” said one of the students. “This is what I plan on doing after high school, so it’s been a great experience. You learn a lot of things.”

(CBC May 10th, 2010)

The seven projects had generated more student engagement and passion than I had ever observed in my teaching career. The projects were real and it was the project authenticity (Willms, 2009) that generated the engagement. Witnessing that engagement, combined with the technical challenges, engaged me as a teacher. My engagement blinded me to the extraordinary commitment I was making, and perhaps to the personal risks I was taking. It would be difficult in the future to make it this real, and I would not be the only loser.
Act Four - Falling Action and Reflection

The purpose of this research started out simply enough; to examine a unique construction teaching practice that resulted in exceptionally high levels of engagement, and through that process explore the nature of student engagement within the conventional carpentry program. There have been many years since to reflect on this eight-year period. Much of that time has been spent musing on what could have been done differently at the time to make the program sustainable, while simultaneously exploring what sort of project could be put in place that would maintain what had become a vibrant program. Success blinds one to the root factors of a problem. It is failure that teaches, and reflection on that failure that illuminates the specific challenges. The following sections examine the factors, other than project authenticity, that affect shop student engagement. All of those factors fall under the larger umbrella of class composition and the influences of the dominant culture. They also document my attempts to find authentic projects and engagement solutions that might fit a conventional carpentry program.

Project Method, Class Size, and the Return of the Lads

Teachers in other departments might argue that at least the traditional shop class involves hands-on learning, and this engenders more engagement than they are likely to see in their academic classrooms; the shop teacher is still using project-based learning after all. Building sheds stimulates less engagement than building houses, but it must be
better than teaching 32 students academic social studies in a classroom filled with desks in rows? To fully understand the issue of shop class engagement requires an examination of the other pressures within the walls of the shop. The cottage projects attracted more academic students into the mix and without that draw the class composition reverted to a higher percentage of what Willis (1979) would have referred to as the “Lads”. The presence of the Lads as a significant peer group in turn influenced students’ choices of shop class as an elective. Peers, parents, and faculty have a role in influencing student enrolments in such classes and it is the last group, faculty, which necessitates a discussion on the academic-vocational divide. I consider the academic-vocational divide to be a primary factor because it effects successful class composition. A second equally important factor is student-teacher ratio. With the popularity of the cottage projects my classes ballooned both in number of sections and individual enrolment. It was the project authenticity, which led to increased engagement and improved class composition, that allowed the increased student-teacher ratio to be workable. Without the first two conditions, project authenticity and positive class composition, the third situation, over-sized classes, became untenable. The third factor, safety, is directly correlated to class size, but can also stand on its own with regards to engagement. Students who even subliminally feel unsafe are in a state of anxiety, a state in which engagement is impossible.
The Researcher’s Disengaged Childhood Revisited - Who takes shop?

“Oh just because they can’t think with their heads, doesn’t mean they think with their hands”

(a frustrated automotive teacher’s exhortation to his staff at a registration meeting)

The guidance counsellor looks across the table at my mother. “Ian, ah, probably, hmm… isn’t really university material.” It was the end of grade five. My mother does not remember the exact wording of the conversation, but I would imagine the educator was very uncomfortable. My parents were quite intimidating for a small town in 1971. My father was a dentist and a school trustee, and my mother was a former hospital nutritionist. Two of my siblings had just passed through the same school and had been top students. Regardless, the educator in question had plenty of data to support her assertion. My parents had insisted on an educational psychological assessment which was quite a novel process for Prince Edward Island the early 1970’s. My parents wanted to know why my math was so weak, but the testing indicated it was an issue with reading, and that I was “Mildly dyslexic”. My IQ was “high average” but I had a “tendency to daydream” and had “short-term memory deficits”. Attention deficit disorder was not added to the DSM until 2000 (American Psychiatric Association, 2000), otherwise they would have been more accurate in their terminology. I was blissfully unaware of my future prospects and appreciated the adult attention, other than the social ridicule and isolation I experienced by being shuffled off to a special education class at another school during lunch. I was grateful for finally having a reason for my failures. I had hated xciv
school since kindergarten and would continue to hate it, more or less, until graduation. If
the opportunity had presented itself, I probably would have dropped out, as would
approximately half of my 1967 grade one cohort⁹ (Smitheram, Milne, & Dasgupta, 1982
p. 260). I was blessed with hardworking parents who never gave up and sat with me at
the dining room table, night after night, helping with math, editing and forcing me to
revise my prose, and making me memorize and recite the poetry of Robert Service. This
would continue to the end of high school, and with writing, well into my mid-twenties.
By then technology had advanced enough to allow me to fully incorporate my thoughts
into my writing and enjoy intellectual independence.

You never recover from a learning disability; you merely learn how to cope, and
possibly on the upside, you may really learn how to learn. Forty-five years later, there is
little trace of the dyslexia, other than an ongoing challenge with spelling; however,
attention and memory only worsen. My unaffected same-age peers claim the same in this
latter regard. The love of learning has been the greatest take away from the formative
first 25 years. I have perhaps become addicted to challenges and the brief euphoria that
occurs upon their completion. One supervisor I had in the early part of my teaching
career described me as someone who, “thrived on adversity.” I am not certain that this
would be true had learning not been so initially challenging.

⁹ In 1976 only 39% of Islanders over 15 had completed grade 12 (Smitheram et al... 1982). I
graduated in 1979.
I had found school to be an intellectually disengaging experience. I was considered “not university material”, yet there were no alternatives paths present in the 1970’s public school system other than university or college. There were no shop classes to explore other forms of intelligence. Partnerships would be attempted with college vocational schools in the 1980’s and finally shops would be added in the 1990’s to Island high schools as older buildings were renovated. In the 1970’s however, if you were not bound for university, you might question why you were staying in high school. I should have taken shop, but there was no shop class to take. My search for personal intellectual engagement would have to be extracurricular.

In the 1970’s there were few supports in place for students with learning disabilities, and it was my parents who took full responsibility for my educational progress. Today a large portion of Prince Edward Island’s educational budget is allocated to resource teachers, educational assistants, inclusive education and most recently, an increased number of educational psychologists. Classroom teachers are required to track and record program adaptations or modifications and do whatever might be considered by the experts to be reasonable to allow these students to be successful (personal communication with administration, 2017).

All attempts are made to make the learning-disabled student feel included, equal and normal, but is the current level of inclusion a natural process? Does challenge build, or diminish, resiliency? During my student experience in the public school system, I felt xcvi
anything but normal, or equal, or included, but through the effort of my parents, and my own hard work, I eventually appeared normal, if not above average, to my peers. Two things I did at this time helped with this perception. I actively sought something I could excel at in the eyes of others. I was not particularly musical but being from a middle-class family I sensed that this was a socially laudable activity. My siblings had chosen art, and other than taking piano lessons, they had not shown much interest in music. This left the musical avenue open and free of comparative shadow. It was not long before I realized that if I applied my overdeveloped work ethic to music, I could easily outstrip my more casual peers. By the end of grade nine, I had decided to make it my career, and by grade ten I was playing with ensembles at the local university and the provincial symphony. This rapid progression led me to believe music could be my university option, where before there had been none.

The second area for which I sought recognition was sport. Like many young people, I tried out for various teams during school. My family was not sport-oriented but the society we lived in was (and is) and being part of a team seemed a logical path to social acceptance. My birth cohort, 1961, was the largest in Canadian history, so there were lots of other kids trying out for those limited team positions and I was not endowed with exceptional physique. Even individual sports had a waiting list. One sport that did not have such a queue, principally because it was an adult sport, was competitive shooting. Today, given the increasing frequency of school shootings, it is hard to imagine schools not only promoting this but also maintaining a collection of firearms. My junior
high school, and others of its size in the province, actually had a rifle range in their basements. That, and the school’s promotion of the Army Cadet Core, were artifacts of the Cold War still raging in the mid 1970’s. These social cues combined with my father’s pre-World War II participation in competitive shooting, led me to consider this to be an acceptable area of endeavour. Taking every available training opportunity over the next two years put me on a National team before I turned 16, an event which landed my photograph on the front page of the local newspaper. This achievement, coupled with my advancing abilities as a classical musician, and all the accompanying publicity for both, allowed me to feel I had conquered that educator’s 1971 prediction. I had learned that dogged practice and long hours could create the appearance of mastery beyond one’s years. I was no longer stupid, at least in the eyes of others.

My success was the exception to the rule, and that educator’s prediction would probably be correct most of the time. Most in my position, without the benefits of my privileged social class and educated parental support, would flounder and drop out of school. Many of those, at least those in possession of intelligence other than school intelligence, would eventually go on to success in the trades. Had trade classes been available in the province during the 1970’s, I probably would have been pushed towards them, and they could have changed my career path. In those days, if you survived till high school with something resembling my set of deficits, you probably had a different sort of intelligence which could be brought to a trade with mutual benefits. I believe that my teenaged self to have been the perfect trades candidate, but would I be encouraged to
take shop today? I believe the answer would be no. I would almost certainly be pressured by the dominant culture to pursue a university path.

**University Boom and Shop Class Composition**

Today, at least, we have trade classes, but are having an ever-increasing problem attracting students, or rather the right students, to these classes. All the supports that have evolved since my public school experience are designed to support students within the academic program of study, and if ultimately successful, prepare them for university entrance. If we look at the province’s school retention rate (the number of students who finish grade 12), the provincial school system seems to be doing the best job in the nation. Alberta on the other hand, the province with the highest skilled trade demand, has the lowest retention rate\(^\text{10}\) (Statistics Canada, 2015). The Island's provincial university has also benefited. In 1979 U.P.E.I. had approximately 1200 students; today, even though the province’s population has not significantly increased, this same university has upwards of 4900 students\(^\text{11}\). Even allowing for the 29% of the university’s enrolment now coming from international students, the ratio of 12.4 Island students per 1000 Island residents in 1979 (Smitheram et al., 1982) has nearly doubled to approximately 23 per 1000 today. The local college has also benefited from equally increased enrolment; however, only some of those students are seeking entry to the skilled trades. There does not seem to be a shortage of university graduates but there is still a shortage of skilled

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\(^\text{10}\) Retention rate also known as completion rate of students who finish grade 12

\(^\text{11}\) The university enrolment rate was 12.4/1000 people and less in 1979 when I entered university (Smitheram et al., 1982)
trade persons (Bartlett, LeRose, & MacDonald, 2013). Far more students are choosing postsecondary study, but proportionately fewer are choosing a trade path.

What does a four-year university degree qualify the graduate for? I never regretted my five years of undergraduate study, explorative though much of it was, and spread over eight years interspersed with trade college diplomas. By the end of it, I had transformed from a person who felt he was hiding his ignorance, into someone who was actually recognized for intelligence. Do the students entering first year recognize that postsecondary education can now entail a multi degree process towards the coveted niche of the middle class? Or that one in three university graduates will find themselves in a minimum wage job? (Bartlett, LeRose, & MacDonald, 2013; Li, Gervais, & Duval, 2006). We seem to be sending more students to university, and the same small inadequate number directly to the skilled trades. The emphasis on getting into university has been at the expense of the trade path and directly influences the class composition of the shop class to its detriment. It becomes a vicious circle; students are drawn in high school to university preparatory credits leaving the trade courses academically imbalanced. The imbalanced trade courses, now with a higher proportion of the Lads, discourages academic students from enrolling.

Matthew Crawford (2009), in Shop Class as Soul Craft, addresses many of the influences and questions around the postsecondary boom. He attributes much of the
university rush to the public perception of the future being some sort of knowledge economy:

Parents don’t want their children to be plumbers. Yet that filthy plumber under the sink might be charging somebody eighty dollars an hour. This fact ought, at least to induce an experience of cognitive dissonance in the parent who regards his child as smart and wants him to become a knowledge worker. If he accepts the basic premise of a knowledge economy that someone being paid a lot of money must know something, he may begin to wonder what is really going on under that sink and entertain a suspicion against the widely accepted dichotomy of knowledge work versus manual work. (Crawford, 2009, p. 31)

The problem with the knowledge economy is that with the advent of even infantile artificial intelligence, knowledge work can be broken down into chunks of code much in the same way that Fredrick Winslow Taylor broke down complex trade skills into their components and thus helped Henry Ford invent the assembly line. The deskilling of knowledge work will happen at an exponentially faster rate compared to the transition of the carriage maker to the assembly line worker. Even if it does not come to that, the globalized world has created a highly competitive market for the so-called knowledge worker.

Occupations based on universal, propositional knowledge are more prestigious, but they are also the kind that face competition from the whole world as book learning becomes more widely disseminated in the global economy. Practical
know-how, on the other hand, is always tied to the experience of a particular person. It can’t be downloaded, it can only be lived. (Crawford, 2009, p. 198)

Crawford makes more than just an economic argument for the skills over knowledge work. He effectively and evocatively argues that working with one’s hands offers greater intellectual engagement and meaning than all but the highest level of knowledge work. A 2015 survey conducted in the United Kingdom revealed that 37 percent of adults thought their job made no meaningful contribution to the world and another 13 percent were unsure. Most of these jobs fell into the knowledge sector (Dahlgreen, 2015). If half of a workforce is at best unsure of their work’s value, and more than a third feel it is meaningless, then perhaps greater emphasis should be placed on guiding students towards employment which has essential and concrete value.

The satisfactions of manifesting oneself concretely in the world through manual competence have been known to make a man [sic] quiet and easy. They seem to relieve him of the felt need to offer chattering interpretations of himself to vindicate his worth. He can simply point: the building stands, the car now runs, the lights are on. Boasting is what a boy does, because he has no real effect in the world. But the tradesman must reckon with infallible judgement of reality, where one’s shortcomings cannot be interpreted away. His well-founded pride is far from the gratuitous “self-esteem” that educators would impart to students, as though by magic. (Crawford, 2009, p. 25)
The “cognitive dissonance” that Crawford feels should be ringing in the ears of parents needs to be articulated to the ears of educators. The plumber making $80 an hour at least meets the fiscal definition of the middle class, with the added benefit of potentially being intellectually engaged in the work. Disengaged students are becoming disengaged adults with possible implications for the stability of our society. One of the barriers to delivering this message is called the academic-vocational divide.
School faculty, with few exceptions, are comprised of people who have at least two university degrees, and increasingly, three. Since university enrolment is almost exclusively made up of members of the middle and professional class (Archer, Hutchings, & Ross, 2005), it follows that school faculties are most likely dominated by those with middle-class backgrounds. The exception occurs at high schools with a vocational wing. If the school is offering programs in the certified trades such as automotive, welding, carpentry and electrical, then the principal is at liberty to hire a teacher who has completed an apprenticeship or Red Seal certification, and a minimum of a one-year college adult education certificate. Alternatively, a teacher may have the traditional academic background of a Bachelor of Education degree and a trade experience that leaves the principal feeling confident the candidate can teach the content. Most trade teachers are from the first group and trace their origins to the working class (Rose, 2005). Principals may prefer teachers from the second group because they make alternative teaching assignments easier, and perhaps they relate better to their class background. There is a wall between these two faculty that is composed of more than the physical cinder block of the shop. That wall comprises of class, culture, education, and real-world skill. Even when the education, class, and culture are the same, the wall still exists for many faculty and even administrators who freely admit to never having set foot
in the school shop\textsuperscript{12}. It is my contention that this almost exclusively academic, middle-
class faculty have little understanding of what it takes to work in a modern skilled trade,
and which type of student might excel in that environment. Consider, for example, an
incident that took place in 2017, some 15 years after the registration meeting during
which the automotive teacher implored the faculty to disabuse themselves of the notion
that those who cannot think with their head must be able to think with their hands. The
vice-principal was completing her part of the registration meeting, discussing all the
various prerequisites for the following year’s course offerings. The automotive teacher
who originated the head versus hands statement was present behind me. I was suddenly
roused from my half-listening state when I heard the following; “You know we have a
lot of options for the advanced student, the top end, advanced chemistry, biology,
calculus, and the International Baccalaureate program… but there are few options for the
bottom end, and I encourage you to direct them to the trades courses.” Here was a
member of my administration directing that we register “bottom end” students into trade
courses, the unsaid inference being that higher functioning students would never be
engaged in a vocational activity. After reflection, and in her defence, she may have
meant students who just did not quite qualify for the advanced courses, the middle of
what is being presented as a two-part spectrum, a slightly different definition than my
own for “bottom-end students”. If indeed she meant academic students of average
ability, then I would be in full agreement as to their suitability for the trades.

\textsuperscript{12}A vice principal once told me she would not pass through the shop door for fear she might
witness someone losing a finger. I have never had a student lose a finger in over 30 years of
teaching.
However, the bottom end from my perspective is closer in composition to what Willis described in *Learning to Labor* as a counter-cultural group named “The Lads”, a subculture that is dedicated to asserting their agency by “having a laugh” and disrupting the classroom (Willis, 1979). This group at my school was self-named “The Boyz,” a term eerily reminiscent of the Willis nomenclature. The presence of one or two Boyz within a class is only a minor challenge, but if you are unfortunate to have three or four, your class is severely compromised. Trade courses attract a higher than average number of the Boyz.

I fumed for a few minutes in my seat, turned around and whispered something to the automotive teacher behind me, something about “heads versus hands”. He had the glazed look in his eyes acquired after more than 20 years of these meetings and seemed to not recognize the reference. Regrettably I raised my hand to speak out. I spoke about the growing complexity of the trades, about my research into the vocational-academic divide, about how almost everyone in this room had a middle class upbringing, about Bourdieu’s (1990) theory of social reproduction in education, and how we needed to raise the academic standard of those who typically register for trades courses. This was not a place for the “bottom end”. There was an immediate reaction. “We don’t do that!” “That’s not true!” No recognition that they, at least on a subliminal level, might guide those that can do, towards university, and those who cannot, towards the trades. The vice principal however immediately retracted that the “bottom end” was not what she meant. cvi
but did not elucidate what she actually did mean. The event clarified for me that the vocational-academic divide was not some imaginary line in the sand, but rather an impenetrable wall; a wall not visible to most.

A month later I was sitting at my desk marking exams. The phone rang. It was a representative from the Carpenter’s Union office.

“I don’t know if you are aware of it, Ian, but there is a bit of a building boom going on in the province, and we desperately need apprentices. In fact, we need to fill 15 positions. Do you have anyone at the school that you think might be interested?”

The union had never called before. It was my impression, albeit not based on research, that the union only considered applicants with at least the college trade credential and some experience. Were they now taking on youth apprentices? In the past, you could not take on an apprenticeship until after grade 12 and your eighteenth birthday. Youth apprenticeship on Prince Edward Island was created after the expansion of high school trade courses in the 1990’s. It allowed students to start an apprenticeship after their sixteenth birthday, credited them apprenticeship hours for high school trade courses successfully completed and credited hours worked during summer jobs (Trades Strategy 2005). This became known as the Accelerated Secondary Apprenticeship Program, or ASAP. Job experience prior to high school graduation was typically acquired through family contacts within the trades. I had been contacted by individual residential contractors, in times of high demand, looking for suitable workers for the summer, but they would pay only a couple of dollars more than minimum wage. The
union asking for names was quite a different matter. The union official told me that many of the positions started at $20 an hour, $9 more than the current minimum wage.

Unionized employers offer benefits, and almost certainly a more structured safer working environment with staged wage advancement. Union contractors get the commercial and government work, which is longer term than residential work, and allows apprentices to get the variety of experience required to pass the upper levels of the Red Seal examination process. This was a unique opportunity.

I went through the names of students who had completed carpentry courses and who were still attending school. It was a small list. Declining enrolment province-wide, combined with recent changes in graduation requirements, had helped to significantly reduced our registrations in elective courses like carpentry. In fact, for the past three years, we had only had one section of introductory carpentry each year. Looking at the previous two sections generated only five suitable names. It occurred to me that in a school of 960 students there might be students, that I was not aware of, who might have the experience or inclination for this opportunity.

I went to my new principal and explained this last-minute opportunity.

“Jonathan, this is quite the unique opportunity. The last exam is tomorrow; perhaps you could make an announcement just before the exam starts. It would have more authority coming from you and you could just direct them to me to get the relevant details.”
“Yes, well… I could maybe do that.”

“Well, I mean, directing them to me might reflect well on the carpentry program.”

We had been having problems filling carpentry sections for the coming year. I guess I was trying to take the opportunity to plant seeds in the current student body; if they associated well-paid jobs with the subject, then they might just consider taking carpentry. I had a disquieting feeling as I left the meeting. Why was the principal not more excited?

The next morning I am driving to work and that initial unease of the previous day lead me to suspect that the principal might not make the announcement. Not because he feels it is inappropriate, but because this sort of opportunity just may not register with him. He is new to the principal’s role, and his previous experience had been entirely academic. Social reproduction means you direct students, consciously or unconsciously, to mirror your own perceived success. Activities that seem to you as impressive, that you would like to have had when you were their age, are what appear as opportunities. An activity outside of your experience may not be seen as beneficial. I am thinking this because it might well be what I would do myself. We cannot help but personalize what happens around us. Both my children are very academic, and I am not certain I would encourage my sixteen-year-old son or daughter to entertain such an opportunity. Construction is one of the most dangerous occupations, and the national youth accident rate has been increasing while the overall accident rate has declined. One in eleven young men will be seriously injured in their first job (MacIntyre, 2000; Chapeski &
Breslin, 2003). My gifted, academic kids have other opportunities that are less
dangerous. Should I remind the principal to make the announcement? Or should I wait
and see? Would this represent further evidence for my research into the academic-
vocational divide?

I arrive at the school still undecided. Reflecting, I think of one of the five
students on my list and find myself penning an asterisk beside his name. I have met his
father, who has worked sporadically in construction, mixed with a bit of farming, mixed
with a bit of cash woodcutting. I remember his son looking at him with admiration, when
together they were delivering firewood to my home. The son is a hard worker, and an
able, conscientious student in my carpentry class. His family is perhaps on the economic
margins of society and his future looks no brighter. This is truly an opportunity for that
student.

I decide to look up the location of the five students, where they would be writing
that last, final exam. I set out to find them, to suggest they come and see me after the
exam; they should have the choice. They at least have the safety training I provided in
that one course. Those unknown students, who may or may not be out there? I am just
not certain I want to be responsible for them, as I cannot speak to even their minimal
safety competence. Perhaps the principal is having the same thoughts, perhaps he just got
too busy, for the arranged announcement never comes. In my heart however, I believe if
I had gone to him with 15 summer positions available to assist with research at the
university, the outcome would have been quite different. That would have been seen as an obvious opportunity, by both of us. In fact, a week later this actually happens. A program at the university, for at-risk high school students, that pays them minimum wage to experience the facilities and program opportunities available at the campus, has two last-minute openings. The principal takes the time to make an announcement at our final staff meeting asking us if we know of any possible candidates for this excellent opportunity. No mention is made of the carpentry union positions.
Class size, safety, and their effects on engagement

During the eight-year period when we were building homes, the carpentry program experienced considerable growth. For a time, five of the six possible credits I could teach in a year were in carpentry. At the same time, the number of individual students within each section of my introductory 701 carpentry credit, the prerequisite to the double credit courses, also increased. I was decidedly uncomfortable when class sizes exceeded twenty, and at one point they exceeded twenty-five. High numbers are especially disconcerting when one considers that the 701 course is almost exclusively grade ten boys, 15 to 16 years of age. The increase was in part due to a demographic bulge in the population, but I felt it was also a symptom of the program’s success. The increased engagement noted in the double credit courses had spilled over into the intro course. The intro students had no guarantee of participation in a cottage build but they knew this was their pathway to that experience. Higher engagement made the larger classes workable, although not without difficulty or complaint. The enhanced engagement levels also engendered greater positive rapport between students and teacher, which seemed to rub off on to the now outnumbered members of the Boyz group. A rising tide lifts all boats. In the years following the final cottage project, and as the student body began to internalize that the double credit courses no longer had that sort of authentic content, class sizes in the 701 credit still remained high. As registration subsequently declined, the number of sections dropped rather than the number of students within each section. I had become a victim of my own success. Administration just

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assigned me additional courses in different teaching departments, rather than allow more introductory carpentry classes with smaller student numbers. The lack of an authentic project reduced engagement throughout the entire program. The large class size, previously manageable, exacerbated the engagement decline exponentially.

The key to creating engagement is to achieve the balance of skill and challenge and perhaps establish flow. Too high a challenge creates anxiety and with anxiety flow stops. I would argue that overcrowding also adds to that state of anxiety and makes it even more difficult for students to engage in the subject. No discussion of engagement within a shop class can be complete without a thorough discussion of safety, and safety is intrinsically tied to class size.

When I first started making inquiries about appropriate class size a representative of Holland College administration told me that their shop student to instructor ratio does not exceed 12:1 (R. MacDonald, personal communication, 2010). The college uses the same curricular materials as the high schools, but with older students. The new secondary curriculum recommends a maximum class size of 20 but this is implemented at each school’s discretion. Some schools, as a result, have allowed introductory Grade 10 shop classes to have enrolments in excess of 20. Even classes of 20 severely limit the possibility of individual projects, making the larger group project, or assembly line-style production projects, the necessity.
The British Columbia (B.C.) Technology Education Association published an extensively researched guide that limits the total number of students and educational assistants to 20. Classes are to be further reduced if special needs students are included. Physical space also limits class size: the B.C. guide limits Carpentry and Automotive shops to between 20.9 and 25.6 square meters per student (Boscariol, Gibbs, Giesbresht, Kearney, Munshaw, & Puves, 2011). Older high school shops in P.E.I. were originally designed and equipped to accommodate 16 students, although, in some cases there may be enough floor space for the recommended twenty. When I use the B.C. guide on my own shop floor, I can accommodate 12.5 persons in the room. My curriculum advisor from the Department of Education gave me a complicated formula for calculating minimum teaching space that actually included the thickness of the shop walls and locked storage space. Formulas such as these are ridiculous. They assume that one teacher, one set of eyes, can supervise and ensure the safety of an unlimited number of teenagers, so long as each young person has a certain area of shop floor allocated to them, even if students cannot be physically present in a large portion of that space.

I set my line in the sand at 20 students. I had no illusion that I could effectively teach a quality program to that number, but that was the maximum number that I could survive teaching, and without there being an undue risk of student digit amputation. At that number, and certainly beyond it, I would describe teaching as being like a bird in a room full of cats. My eyes were constantly flitting around the room looking for potential hazards and potential negative events to prevent. I am under constant, unrelenting stress.
trying to anticipate the unanticipated. Accidents are not an if, but a when. All of the senses are employed, not just sight. I listen for the ramping up of horsepower from the table saw to indicate the possibility of binding between the workpiece and the blade, the consequence being the kickback of an uncontrolled piece of material. Clicking on a bandsaw indicates that a blade may be about to break, an aircraft-like sound from a mitre saw indicates a damaged, warped blade, a sudden drop in revolutions from the thickness planner indicates an improper depth of cut, and possible kickback. A burning smell indicates the wrong blade choice or the need for maintenance. The list, with increased experience, becomes endless. Each sensory input necessitates the need for an action, either immediately, or in the immediate future.

Noise level goes up with each student added to the space, and because of their dependent nature, they ask a lot of questions. Hearing protection for the teacher becomes difficult if he is to remain aware of the audio sensory inputs and communicate with individual students. As I write this, in the quiet of my home, I am acutely aware of the strong buzzing sound in my ears: the tinnitus of a career of shop teaching. The stress of all these factors, with 20 or more students, is unrelenting. Never mind trying to teach.

Excessive class size was not always the case. I have been teaching for 30 years, and I am proud of the fact that none of my students have ever required anything beyond the application of a few stitches from an injury, almost always dealt by a hand tool. However, for the earlier part of my career, my shop classes never exceeded numbers in
the mid-teens. It was not until the Baby Boom Echo generation (Foote, 1997) hit the high schools that shop classes started to hit and exceed the 20-student mark. Even after the Echo passed, and student enrolment declined provincially, our school enrolment remained strong as rural depopulation continued in the province. The Echo and my administration’s attempt to deal with it made my 701 introductory shop classes hit the 25 student mark on several occasions, and it was then that I sought the advice of other shop teachers.

A now retired shop teacher, at another Island high school, told me that when the registered number went over certain level, he would write a letter indicating that in his experienced professional opinion, he could not ensure the safety of that many students in that sort of teaching environment. He then insisted that the letter be added to his employment file. The implied threat was that the liability for an accident would fall more heavily on the administration who had placed that many students in the class despite the teacher’s warning. All parties are covered by the school board in such proceedings, but there are consequences, official and unofficial, nevertheless. I baulked at writing such a letter, as my inclination is to always try to avoid conflict. When I received my next class of 25, I relented and wrote the letter. The following year I had classes under 20, although that may have just been a coincidence since in later years they went over 20 again, frequently.
Students with a known history of behavioural issues must be given extra weight when determining class size. While these students may thrive in a project-based environment, frequently the unstructured nature of the shop overwhelms them, leading to unsafe behaviours and the need for extra supervision. A selective hiring process is used for jobs in the industry, yet there is no screening system in place for class composition of shop courses, no weighting system for special needs students, and certainly no hard caps on class size. Class size matters as in my experience there is a direct correlation with engagement. Shop class size matters more because it goes beyond merely engaging, to the point where nothing can really be imparted due to the spectre of student safety putting the teacher into survival mode.

A shop class is quite a different situation than the academic classroom. The *sage on the stage* method of teaching is rarely employed with these classes. If a student is uncertain on how to proceed with an operation, even after a group demonstration, you really have no choice but to individualize instruction, even to the point of a hand-on-hand level of intervention. This is particularly true of the introductory level student who often lack any level of self-confidence. One negative experience can tarnish the entire view of the subject, and their subsequent effort to learn. Too many students creates a waiting list for the teacher’s attention, a queue for key machinery, and a petri dish for distraction. To maintain engagement, class sizes must be kept between 12 and 16 students. More than this number makes the shop into an educational tailings pond for the school’s disengaged rather than a place of learning. Every student added beyond this range exponentially
increases the risk of injury while decreasing, at the same rate, the chance of any positive educational experience.

Documentation on student teacher ratio and shop classes is at best scarce, and mostly of a suggestive regulatory and localized nature. This necessitates a broader examination of class size research. A personal motivation for examining this research arises from my experience, circa 2012, at a provincial union area association day. A superintendent from the school board was addressing the gathering of approximately 500 teachers. This person came to the province with a Doctorate of Education and considerable out-of-province experience in assessment. During the question period that followed, a point was raised regarding large class size. The administrator answered, something to the effect, “The research says that there is little positive correlation between class size and achievement”. There was an audible intake of breath, but no one challenged the expert. If the research said this, then it must be true. At this point in my career I had been struggling with large shop classes for some time. How could “the research” conclude to be untrue, with any validity, what I, and I believe most teachers, know to be true; that smaller classes are better?

Achievement is but one indicator of engagement, but it is one of the indicators that is easiest to quantitatively measure. The effects of class size on achievement have been exclusively conducted relative to the academic class setting. The largest and most cited study took place in Tennessee in the mid 1980s and is known as STAR (Student
Teacher Achievement Ratio) study. Thousands of Tennessee children were randomly assigned to small or large classrooms. A small classroom was between 13-17 and a large one was 20 - 25 students (Chetty, Friedman, Hilger, Saez, Schanzenbach, & Yagan, 2011). The study followed the students’ achievement over four years and concluded that there were significant gains by the smaller classes over the larger ones. This ignited a two-decade push at state and federal levels to reduce class sizes, an initiative with considerable fiscal consequences given that teacher salaries account for approximately 85% of education budgets (Hanushek, 1999). Papers started to be written criticizing the scientific methods used in the STAR study and challenging its findings (Hanushek, 1999; Hoxby, 2000). Twenty-five years later the original STAR data continues to inspire study. Chetty et al... published a study that examined socioeconomic indicators of the original participants then aged 27, finding significant gains by those who had been in smaller classes, far in excess of the original standardized test score gains. All of the papers cited were published in peer reviewed economic journals and one in a public policy journal. It was most likely the more critical studies that the superintendent was citing. All of these studies, including the original STAR study, are trying to apply quantitative methods of measurement to what teachers, parents, administrators, and even students know as an anecdotal fact; small classes are better.

Malcolm Gladwell (2013), in *David and Goliath*, reviewed the above studies and observed that the original class sizes examined in the STAR study were all within the optimal range for student teacher ratio; the largest class only had 24 students. The
original flaw of the study, according to Gladwell, was in not representing a more extreme class size differential. His assertion was that very small classes, under 13, would probably lack sufficient positive class dynamic, while classes over 25 would overwhelm the teacher with excessive workload. Numbers between 13 and 25, the ideal range, would likely see little difference in achievement within the range (Gladwell, 2013). The post-STAR critiques of smaller class size which question their benefits, all come from authors with backgrounds in public policy or economics, which I would assert presents a conservative monetary bias. As I read them, and waded through their esoteric mathematical equations, I was reminded of a recent article in the New York Times Magazine which offered this definition of economists in relation to climate issues, “Economics, the science of assigning value to human behaviour, prices the future at a discount; the farther out you project, the cheaper the consequences” (Rich, 2018). Teachers, by the very nature of who they work with, are in the business of influencing the future. Smaller classes, and smaller shop classes will cost, however, if we let economists dictate educational values, then the future will certainly be discounted, and society diminished.
The Search for Cottage Substitutes - More Experimentation

All female course pilot - an attempt to engineer class composition

One of the curricula I had been originally hired to teach, other than carpentry, was Grade 11 entrepreneurship. During one of these courses a group of girls were struggling with finding a topic for their research project. Conferencing with them, I suggested they could look into a topic I had been considering but did not have the time to follow up, namely, the potential interest within the student body for an all-female carpentry course. Very few girls ever attempted the course, perhaps due to societal considerations or perhaps because of the current class make-up in carpentry courses. We separated the sexes for physical education so why not carpentry?

Anecdotal evidence gathered by the local Trade HERizons, a provincial organization dedicated to facilitating the entry of women into male-dominated trades, indicated that contractors actually preferred female employees, citing better fine motor skills, attention to detail, willingness to follow instruction, reliability, and even taking care of company tools. In addition, carpentry pays better than most entry level jobs available to women. The barriers to job entry seemed to be similar to those stopping girls from signing up for my carpentry courses; namely, too many boys, or boyz, in the course. My entrepreneurship group devised survey tools and administered them to selected classes within our school, and our major feeder middle school. Their results indicated that almost 70% of respondents would consider registering for such a course. At the time this seemed a bit implausible to me. Perhaps a case of telling the teacher what they...
thought he wanted to hear. I filed the result under the needs to be replicated section of my to-do list.

Several years later, struggling with the declining enrolment of the post-cottage project period, the idea was resurrected by my curriculum consultant at the Department of Education. He asked me if I had ever considered an all-girls carpentry course; if I would consider it, he told me the department would back the project. Armed with the original data from my former students, and the support of the department, I floated the idea to my principal, who in turn was supportive. As planning for the pilot progressed, I could sense that the idea had traction with the bureaucracy. Trade HERizons wanted me to be a part of their organization, wanted to help with the pilot course, and officials close to the minister of education met with me, and wanted to know what I needed to make the course a success. I of course gave them a wish list, nothing of which actually materialized, but I was buoyed up by the fact that they had even asked. They were already planning a visit, with press in tow, to see the students in action; this they did come through on. Perhaps the press attention made the girls feel special for a moment. In retrospect, I should have asked to be freed of the restraints of the content-focused, apprenticeship-based curriculum, and replace it with something more explorative. In addition, I should have asked for an authentic project for the girls to participate in, instead of just thinking eliminating the boys would solve all the problems for the girls.
In the end, with a bit of promotion by the guidance staff, we had 16 registered students and administration scheduled the section. The 16 became 9 in September. The girls in the class told me that the fathers of the dropped students had not been happy with them taking carpentry. I found this a bit surprising but perhaps in keeping with what I knew of our patriarchal hegemony, an example of Crawford’s (2013) parental “cognitive dissonance” that allowed these girls’ parents to accept their daughter taking part in the low wage retail sector, but excluding them from the high wage trade sector because they saw it as “dirty” (Crawford, 2013). While the remaining nine students seemed to enjoy the course, it just did not achieve the momentum to survive into a second iteration. For me, it felt more like another example of government planning never really getting beyond the initial photo opportunity. Government planning is locked into the four year election cycle and its ministers must feel compelled to at least appear that they are doing something, even if they know very little about the actual issue.

Fig. 21 Guardian newspaper photo opportunity
I continued to search for other projects that could replace the cottages. After the last cottage, we still had double credit courses being run, but without a large building for the students to build. To support the curriculum we needed framing activities but were restricted to building projects limited in size similar to a storage shed. In an attempt to keep the engagement level up, I would add other projects to rotate the student groups through. The canoes had worked as a group project in the past, so other types of watercraft were considered to add variety. My own children had taken several seasons of summer sailing camps and loved sailing. Could some sort of sailboat be built by the students? Being situated in a province surrounded by warm ocean water, boats seemed to be a good cultural fit. Having watched my teenaged children quickly advance in downhill skiing to slopes I would never consider traversing, I felt a mere single sail dingy would not suffice. A design of an F-18 racing catamaran was selected. The students enjoyed building the hulls and the initial $5000 did not seem like too much of a personal financial investment. Experimentation in project authenticity was still the prerogative, and at the personal risk, of the individual teacher. It was the cost of the rig Fig. 22 Experimenting with building a racing catamaran cost me much more than buying a new one
that broke this project. By the time I actually sent this craft on its maiden voyage, I had spent considerably more money than it would have cost to acquire a new, professionally built craft of similar specifications. This was not a project to promote to others or to replicate. Smaller watercraft such as row boats and paddle boards were also attempted with similar although less dramatic results; imported materials ended up costing more than a cheap plastic knock-off product from the local Canadian Tire store with similar function, if not as aesthetically pleasing.

There is no research and development fund for conducting research on project suitability. Shop teachers depend on the community to come forward with needs they are prepared to fund, that also suit the curriculum. This is becoming an increasingly difficult process exacerbated by our increasingly globalized economy where the lowest price trumps the quality of traditional craft. Unfortunately, conducting research on the type of project that might engage students has often been at my personal expense.
The Absence of Flow

The scattered nature of these multi project courses was interfering with the students’ sense of project ownership and with what I have come to know and have described earlier as *Flow* (Csikszentmihalyi, 1990). Students in the cottage projects often seemed to achieve flow during class. They were capable of understanding how all activities, regardless of size, added to the whole. They would often lose track of time, skip the scheduled break, even lunch due to being focused on just completing this one task. None of these behaviours were evident in the multi-project double credit shop class. With declining provincial enrolment, six years after the last cottage project we were reduced to offering single credit grade 12 level carpentry courses. In a 78-minute period there might be 10-15 minutes dedicated to setting up and classroom administration, and 10-15 minutes at the end of the period to clean up. This leaves perhaps 45 minutes of work time during the period to get anything done. As a craftsperson I would not even bother to enter my shop to do an hour of work, as I know there would be no sense of accomplishment, nothing completed, and no chance of achieving flow. Flow is the state of total engagement, flow is where progress happens, and it is addictive. In a 78-minute period there is no chance of achieving flow and thus student engagement tends to be at best superficial.

For a teacher, seeing a class deeply engaged is also addictive. I had had seven years where a considerable amount of my teaching load dealt with deeply engaged
students and I had come to expect it—I needed it. During the last six years of teaching carpentry, any sort of fix for my addiction had become hard to come by, and I felt as if I was professionally spinning. For the first time in my career I began to look wistfully at my retirement date.
Act Five - Dénouement

Bad News - Good News

The principal entered the shop just as I was preparing to leave. It had been several years since the last cottage had been built and we had just completed the student registrations for the following 2014 academic year. We had had a double-credit carpentry course each year since the last cottage, during which I had tried different project content, but the enrolment had been dropping and there had been no evidence of advanced engagement witnessed with the larger cottage projects.

“Ian, I have some bad news. There are not enough students registered next year to offer a double credit carpentry class. In fact, there are only enough for two sections of the grade ten 701 course.”

I think the principal respected me as an innovative teacher and that is probably why she came down to my classroom rather than just putting a note in my mailbox.

“Well, you know what? That’s OK with me. I think I’m feeling somewhat done with carpentry.”

She looked a bit surprised at this; she had witnessed my passion for carpentry during the cottage courses,

“Well, is there anything you can see taking its place? We need to fill out your schedule.”
“I did put in for that new Global Issues Social Studies course last year, that has always been an important area of interest for me, so I suppose something in the Social Studies area would be appropriate.”

I also listed a few areas that I had taught before, or could teach, along with courses I absolutely did not want to teach again. She seemed relieved that I did not seem disappointed about the carpentry. Teaching something else was always an option open to me since I was both academically and vocationally certified.

I would, over the next few years teach several Grade 10 and 11 Social Studies courses, and while I enjoyed the content, I found the students to be poorly informed, unwilling to participate, and often challenged in expressing anything verbally or in writing. There was a general lack of engagement. Even my considerable knowledge and passion for the issues being studied failed to change the scene in any great way. This was perhaps a visceral example of Sefcik’s research asserting that 70% of Canadian students are not intellectually engaged in school (Sefcik, 2013). An academic curriculum dealing with current events using 15-year-old print resources and limited opportunity to utilize authentic project-based learning makes it challenging to engage students. The challenges facing the four bare cinderblock walls of the academic classroom illustrate the intellectual fragmentation cited by Willms in 2009. The work had “little meaning beyond the achievement of high marks” (Willms et al... 2009, p. 34). The fragmentation I was observing in the Geography classroom was in direct contrast to the flow I had observed in the carpentry shop. What Willms wanted to see was illustrated by the students building
cottages. It was going to be difficult to get my engagement fix in the social studies classroom.

An unsolicited course that was added to my package at the same time as the requested social studies was Applied Science. I had never even heard of this course, but administration thought it might be a good fit. The teacher who had been teaching it had decided to reduce his contract to part-time so he could involve himself more with his young family. It was described to me, by him, as an easy course to teach. The curriculum was rather loosely put together and designed as an open credit, a way for students to easily knock off a second science credit if they did not see university as part of their future. What I actually observed however, was almost total engagement! All I had to do was come up with interesting challenges that could be accomplished with the prescriptive VEX Robotics kits. The VEX kits reminded me of my childhood Meccano kits, albeit technologically upgraded, and blended with something like the Lego Dacta kits I had used earlier with the design and technology program in Ontario. While the rigour of the science concepts being explored was a bit dubious, the learning that was happening within the group dynamic was impressive. As a teacher I felt guilty as I went around the room, very few students were asking me questions as they were finding the discovery form of learning so enjoyable. My only question was why were there not more sections of this course? The answer was in the course code. Applied science 701, and carpentry 701, had at least one thing in common; the open credit designation. Serious
academic students shun open credit courses as at best, “for fun” courses. Courses that do not open doors.

Applied Science led to teaching Robotics 801, a course that introduced a GUI (Graphical User Interface) version of the C programming language to control the students’ designs autonomously. The engagement level in this Grade 12 course was even higher than Applied Science, although again, it was still difficult to get enough students to register. While the content was engineering based, and a solid preparation for a student considering engineering, the open credit course designation made it a difficult sell to the academic students who felt they had too little flexibility with electives. As part of my own professional development, and born of the need to find a less expensive, open source alternative to the electronic parts of the VEX kits. I started exploring Raspberry Pi microcomputers, Arduino micro-controllers, and the vast supply of inexpensive electronic components emanating from China. By introducing, as an extension to the regular programming, open source coding platforms such as Python and the C language I was attracting certain types of students with an interest in computer programming, electronics, and engineering. In this there were echoes of the cottage course; by offering authentic project work, a course could attract students from all levels, and the balanced class composition seemed to result in increased engagement. By the second iteration of this extension most students were opting to use the open source languages rather than the easier but terminal programming language provided with the curriculum support materials. Upon completing the only Robotics credit offered, some students actually
wanted to take the course a second time, without credit, to continue their learning. The principal suggested an independent studies credit could be approved for them that could run parallel to the regular robotics class. The independent studies project work inspired the regular robotics students to attempt ever more challenging work. A couple of engineers, who saw some of the more advanced projects, commented that what the students were doing was consistent with third- and fourth-year university engineering projects, a reflection no doubt of the open-ended nature of the project work. If terminal expectations are not initially set out for students, then soon will be doing things beyond their teacher’s personal limitations. This course felt like it could provide the engagement fix I was looking for. Engaged students are an addictive substance for teachers and for me that engagement would be necessary to maintain my energy in the latter part of a teaching career.

The only roadblock to increased uptake of the Robotics course appears to be the course number. Almost all of the students who register for this credit are academic, while the course designation makes it open to all levels of students. A general-level student with an interest and perhaps some experience in computer coding could be successful in the course. Indeed, there have been examples of students with inconsistent academic records, excelling in robotics, because they had an extracurricular interest in programming. Without that interest, the typical general student would find the work very challenging. Most of the academic students opting for robotics either have a personal connection with me from previous courses or a serious interest in doing something
authentic with computer programming. The sections of this course remain undersubscribed simply because academic students avoid courses with open credit designations.

The course number designation, and its tendency to stream students, is a problem shared with the carpentry program. With carpentry, the problem is perhaps unsolvable given the complex and subconscious nature of the academic-vocational divide; there is no university path for carpentry. With robotics it is a problem that could be solved with the stroke of a pen at the ministerial level. Robotics is not a trade, and thus its inclusion by the department of education under the career and trades banner with their frequent open course designations is questionable. While not a trade, robotics is clearly an area for future career expansion. A recent economic study by Oxford University predicted that almost half of current jobs would be automated within 20 years (Frey & Osborne, 2017). Such predictions make for salacious headlines but are by no means an outlier. Even cursory research reveals a plethora of articles and debates as to the ramifications of these coming social and economic changes. Clearly a curricular area to be focused on in the near future, and perhaps a growth area for future course offerings that could take the place of the dwindling number carpentry sections being offered.

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13 In 2018 the robotics course was moved from the Career Explorations to the Science area of curriculum supervision at the Department of Education, although the course number remains the same.
Carpentry abandoned

I gaze around the shop with a heavy heart. I had spent 20 years teaching and building up this facility and a huge part of my sense of self, my identity, is tied to the space. The principal told me there were only 22 students registered for carpentry next year; enough for only one section of the 701 introductory course. I was now considered more of a social studies teacher than a trades teacher. Only a half dozen students had registered for the 801 level course, not enough to justify running a section. It was a similar situation 12 months ago, and we decided to waive the prerequisite for the upper level course so that Grade 12 students who had signed up for the introductory course could be placed in the upper level course. This decision played loosely with the foundation of my safety training program that was primarily taught through the 701 course and this put me ill-at-ease. I felt I could make it work that one time as I knew most of the students involved, but what about future classes? Administration were still insisting on a 22-student cap in the introductory class, a number I had told them for years was just too many; another class of students queueing for machines, getting distracted, and, with the occasional exceptions, not accomplishing much of anything. The year before I had told the principal that I was ambivalent about teaching carpentry in the future if we could not keep the introductory course under 20 students. I had always argued it was a safety issue, this being the only aspect of class size I felt administration might value, but not having any major accidents in the twenty years under my watch had made my administration complacent on that count. Had an accident occurred in an over-
subscribed class, I suspect the investigation and probable court action would have put an end to the issue. Again, another example of being a victim of my own success, although for me, it was principally an engagement issue. All of the research and reflection I had conducted over the past three years was pointing to class size as a major factor preventing the engagement that would make the carpentry program successful. Without an authentic project to drive student engagement, the large classes had become intolerable. It was a factor that was singular to my school. All of the schools outside of the city had experienced dramatic enrolment declines while ours remained stable, in part due to continued rural depopulation. Budgets were slashed and resources allocated so as to keep the smaller rural schools open. No shop classes had been closed, but most ran with fewer sections with lower student ratios. Many of the shop teachers involved were not qualified to teach subjects on the academic side of the divide. As tenured staff, their positions were somewhat protected so their class sizes dropped while mine remained high.

There were other factors to consider. When I discussed the issue with the curriculum consultant, he indicated that the problem was the program at our feeder school, and that that problem was specific to our school. I knew few of my students, or even my own children, had enjoyed their middle school program, but I was having trouble ascribing much value to that cause. I had tried all that was possible with the content of my program, so if it was not the size of those introductory classes, then it might be me. Perhaps the clientele I was teaching would respond better to someone who had more of a working-class background, someone who had actually spent significant
time as a wage earner in the trade? With such a teacher the administration would not be able to keep the carpentry class size high and simply ask the teacher to pick up an academic class to teach. It was the only variable that was left, other than class size, that was also within our control. The principal asked me if I would be all right with his advertising the position to teach that one class. He could not guarantee that anyone would apply, or that I would not be asked to teach sections in the future. I agreed. I would pick up more sections of Social Studies in the interim to fill the gap and hope to recruit more sections of Robotics. It was time to step fully over the immutable academic - vocational divide.
Epilogue

It is my belief that the incredible student engagement that I observed during the cottage builds was due to the hyper-authenticity of the course project. It was as real as it could get. The authenticity of the project attracted a wider spectrum of students which balanced what had previously been a difficult classroom composition. The enhanced engagement, and the length of the class, allowed flow to be achieved, and contributed to a positive feedback loop of engagement. Working with engaged students became addictive for me as a teacher and led to my overlooking personal financial risk and committing more of my time and energy than what I would now deem healthy. Had institutional supports evolved during the period of the courses it might have been possible to continue. Instead, there seems to be a slowly increasing focus on institutional liability which is smothering classroom-based innovation. The growth of accountability in education, a movement which has spawned general and specific curriculum outcomes, progress monitoring, and standardized high stakes testing, has had the counter effect of stifling creativity and risk taking experimentation by teachers. While the hyper-authenticity of the projects created a balanced learning environment, and heightened engagement, without that authenticity the old forces of traditional institutional vocational blindness, and societal preferences for university degrees, caused the carpentry program to revert to the disengaged level of participation observed prior to the cottage course implementation. Ultimately, the projects perhaps contributed to the demise of the carpentry program at my school in that student expectations were certainly unmet by subsequent traditional projects, and I found I could no longer work within that traditional program. The wide
angle lens referred to by Carolyn Ellis, the one that could, “[expose] a vulnerable self that is moved by and may be moved through, refract, and resist cultural interpretations.” (Ellis & Bochner, 2000, p. 739) should have been a warning to me. The process of research and deep reflection has left me desolate. Given the glacial pace of change that I have observed over the last 32 years, and what I personally sense to be a growing disenchantment with the motivations of our educational leadership, I now realize that I will have little impact given the limited time I have left in this profession. The autoethnographic process has allowed me to commit my truth to paper, but has not resulted in cathartic closure.

It is still my belief that construction projects of this scale are required to engender engagement in the construction trades. When we were building these projects, well over half of the students chose a career in the construction trades immediately after high school. Neither before, nor since, has the program enjoyed that success rate. Politicians still verbalize a commitment to increasing participation in skilled trades education, but struggle to articulate a plan that even recognizes the root causes of the problem. Canada continues to have a chronic shortage of skilled trades persons (Komarnicki, 2012). In 2018, a tornado ripped through the suburbs of Ottawa destroying entire neighbourhoods. Six months later, snow was drifting into apartment buildings with broken windows for the lack of skilled persons to repair the damage (CBC, 2018). Climate catastrophe mitigation is going to create an incredible demand for people with these skills. There are six jobs in the renewable energy sector for every job in fossil fuels extraction and energy
production. Most of those new jobs are in the skilled trades. Recently, American employment in solar alone surpassed the entire fossil fuel industry (McCarthy, 2017). Where are these workers going to come from? As a society we need to examine and rectify the impediments that discourage our children from considering an exploration of the trades. While some of those impediments are so systemic they would take generations to change, all of them are at least partially addressed by increasing engagement through the authenticity of the project, a solution within our power to implement.
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Appendix

One P.E.I. high school is offering its female students a glimpse of a non-traditional career path – By Linda Browne

If she were a carpentry student at Charlottetown Rural High School (CRHS) several years ago, Monique MacLeod would probably feel like the odd one out, but today, she’s just one of the girls; literally.

Monique is one of 10 girls who have just completed Carpentry 701A - Introduction to Carpentry Technology (a prerequisite for the school’s other carpentry courses). CRHS began offering an all-female version of the course this past fall in an effort to get more woman interested in pursuing a career in the skilled trades, hoping they would trickle into the local workforce and increase the number of skilled tradespeople in Prince Edward Island.

According to the overview report of the 2007 National Apprenticeship Survey, “Only one in 10 apprentices across the three apprentice groups (program completers, long-time continuers and discontinuers) was female, reflecting the fact that women are under-represented in apprenticeship programs.” This is something that Ian Hogg, career and technical education teacher at CRHS, hopes will change. He says in the past, just one or two girls a year would sign up for his introductory carpentry course.

“In fact, I’ve been teaching here over 11 years and I’ve got more girls in this class than I’ve ever taught in carpentry over the past 11 years,” he says.

Last spring, 18 girls initially registered for the course, but some opted out before the course started. While Hogg says 10 students is a fairly small class, he’s staying optimistic – 16 to 18 students is more the mark.

“If that tends to be a trend, lots of people are registered and then lots of people drop out, then that’s not the way we really want to run things. So that’s a bit of a risk, but I suspect we’ll offer this course again and see what the numbers are like.”

Monique, 16, says while she doesn’t mind working side by side with the boys, being in an all-female class does have its advantages.

“I think it’s nicer to have just a female atmosphere, because I know some of the girls, and if the boys were in here too, they’d feel a little bit intimidated,” she says. “I think everyone’s pretty happy. We work well together. We all get along. All of us became friends.”
A Positive Experience
Hogg, who has a 13-year-old daughter, says in his area, young women just a year or two out of high school are hard pressed to find a well paying job. He says the all-female carpentry course isn’t about taking something away from the boys, but rather opening up more opportunities for women.

“I had a student come back to me last year... and he was working in carpentry... he was making $30 an hour, a year and a half out of high school, still an apprentice. And that’s unheard of here,” he says.

“He’s obviously quite a bright fellow and everything, so (the) thought crossed my mind, why can’t my daughter have that opportunity, if she were to choose to have it? Women represent 47 per cent of the total workforce, and they represent only two or three per cent of the skilled trades. We sort of think of the workforce jobs that are out there, the skilled trades are usually some of the better-paid ones. And they’re (women) only making up three per cent of that total number. That’s a lot of jobs that seem to be closed down to them, or they’re just not looking into,” says Hogg.

“Only one in 10 apprentices across the three apprentice groups (program completers, long-time continuers and discontinuers) was female, reflecting the fact that women are underrepresented in apprenticeship programs.”

CRHS work with the Eastern School District of P.E.I. and the Department of Education and Early Childhood Development to get the all-female carpentry course up and running. According to a news release issued by the department, “Career and Technical Education programs have historically been designed to meet the needs of male learners. There are also very few female CTE teachers or role models for girls, and females are under-represented in industry.” This is something that Hogg knows all too well.

“I do a little bit of work in carpentry and it used to be you’d never see a woman on a construction site at all, a residential construction site. It just wouldn’t happen,” he says. “In the last five years, I’ve seen three. That’s just my observation. I still think it’s pretty small.”

Hogg has been working with Women’s Network P.E.I. – which offers the TradeHERizons program, supporting women who are interested in exploring non-traditional careers in trades and technology – to ensure that his students have other women to look up to.

“They were quite excited by this program that we were running and had me sit on one of their advisory boards. And so they provided us with some guest speakers to come in to talk to...
the girls. That’s the only thing different that we do is we try to bring in women who are working in the trade areas or working in male dominated areas to speak to the girls,” he says.

By gearing the class towards a small group of girls, the hope is that girls will get a positive experience in Career and Technical Education. The Department of Education and Early Childhood Development hopes to eventually offer this program at other Island high schools, “which would ultimately lead to an increase in the number of girls who enrol in high school carpentry courses.”

Hogg says an all-female class lets his students feel more at ease with being more hands on and trying new things. “I know when I had girls in the classes before, what would happen is we’d be framing up a floor, there’d be three people, two guys and a girl, or four people, and the girl would never touch anything. The boys would just step forward and do it for her,” he says.

“So this way, they can’t really get away. They have to use the tools and they can hopefully develop a comfort level. That way they’d get going to another course and wouldn’t let themselves be pushed around.”

From what he can tell, Hogg says the majority of his students are enjoying the class, and some are considering taking their carpentry training to the next level. “There’s a few who are asking me about some of the advanced credits and are considering taking some of the more advanced credits in carpentry. But it’s a wait and see sort of thing.”

As for Monique, she says while a career in carpentry may not be in the cards for her, she hasn’t written off the trades completely. “I’m not quite sure what I want to do in the future but I think a trades course would be fun,” she says.

“It’d be always something new and interesting.”
High school pilots all-female carpentry class

Program at Charlottetown Rural aimed at addressing shortage of female students learning skilled trades

A group of female students at Charlottetown Rural High School are participating in a program aimed at increasing the number of females learning skilled trades such as carpentry, says Education and Early Childhood Development Minister Doug Currie.

He said the all-female carpentry class is a pilot project designed to address the shortage of female students choosing to engage in career and technical education programs.

“We need to support schools and teachers to find ways to try and encourage more students to consider pursuing a career in skilled trades,” the Education minister said.

The Department of Education and Early Childhood Development is working with the Eastern School District and Charlottetown Rural High School to pilot an all-female offering of the newly implemented Carpentry 701A – Introduction to Carpentry.

This course is the prerequisite for the next five carpentry courses at the high school level.

The new career and technical education curriculum is open to all learners across the Prince Edward Island school system. It is designed to provide a positive experience in career and technical education.

Career and technical education programs have historically been designed to meet the needs of male learners.

There are also few female CTE teachers or role models for girls, and females are under-represented in industry, the minister said. The objective of the course is to expose as many students as possible to the opportunities available in the skilled trades through career and technical education (CTE) programs.

The Department of Education and Early Childhood Development is also committed to developing relationships with other stakeholders to increase the number of skilled tradespeople in Prince Edward Island.

By piloting this class to a small group of girls, Currie says the Department of Education and Early Childhood Development hopes to provide a positive experience in career and technical education.

The goal is to eventually offer this program at other Island high schools which would ultimately lead to an increase in the number of girls who enrol in high school carpentry courses.

“Females are one of the largest untapped demographics in the skilled trades,” said Ian Hogg, career and technical education teacher at Charlottetown Rural.

“Research indicates that when female students are part of a mixed, skilled-trade class and the instructor asks the student to engage in hands-on activity, girls tend to take a step back and the boys step up,” Currie said. The department is looking forward to hearing feedback from students and instructors participating in the pilot program.

For further information, contact the career and technical education specialist at the Department of Education and Early Childhood Development at 902-338-4130 or visit the website at www.gov.pe.ca/eed/CareerEducation.
To parents of students in the “All Female” Carpentry program,

As you may be aware your daughter is part of a pilot trades program at Charlottetown Rural High School. Several organizations have an interest in this pilot being successful and expanding to other Island schools. These groups include the Department of Education, Eastern School District, Women’s Network, TradeHERizons, Skills Canada and the PEI Interministerial Women’s Secretariat.

For courses to be offered in future years requires enough students registering next April. For this to happen there needs to be awareness in the community that the opportunity exists. Awareness requires publicity. To this end there may be times during the course when the media is present.

If you have objections to your daughter being part of this media coverage then please sign and return the attached Eastern School District form. If you don’t have any objections then no further action is required.

Sincerely,

Ian Hogg
Carpentry Instructor
C.R.H.S.
Learning through trial and error

Charlottetown Rural high school carpentry students building environmentally friendly cottage at Point Prim as part of their course

BY TINA BOURGEAU
THE GUARDIAN

POINT PRIM — Who says work can’t be fun?

Just ask the carpentry class from Charlottetown Rural high school.

They’re building an environmentally friendly cottage along the shore here as part of their course instruction while camping out at the beach with hotdogs, barbecued steaks and lobster to boot.

But it’s a case of trial and error for these teenage-choir champions who are learning how things are done both right and wrong. And there’s no lack of mathematical learning as well — like the Pythagorean theorem.

But this is no ordinary cottage, it has some unique features to reduce environmental impact.

"You’ll have to tear off that shingles and even it to the header," adds carpentry instructor Ian Hogg to a couple of students up in the roof truss.

Their expressions falter and out come the nail pullers to undo what has taken them the last half-hour to install.

"That’s the part we don’t like," admits Nick White from beneath a yellow hard hat that has lashed off falling tools more than once. "But once you realize you’ve done it wrong, you’ll never do it wrong again.

While 13 other students were hammering away, running electrical wire and insulating a brand new cottage built Friday as part of their carpentry and building course that goes far beyond classroom walls.

The cottage was built in compartments at the Rural shops over the winter and then delivered to the Point Prim site for assembly. Hogg and his crew have spent the last few weeks putting the pieces together in a hands-on experience that inspires the majority of students in the class to work out a trade.

There’s been a few experimental outings done in the past, but this is the first where a private owner made the approach and is paying all materials costs.

"The labour is free of course as the guys learn their stuff, but we will build them for the experience as long as someone banks the process," said the instructor.

And building a cottage these days is not cheap, it can tally up to well over $5000 a square foot (not including the lot) and even more depending on how fancy you go.

But when Hogg’s Hammerheads are set loose, the bills come in under $40 a square.

"We’re talking base structure here and no hardwood floors," laughs Hogg. "But believe me, it’s solid and weather proof and ready to be lived in or enhanced.

The crew is hopeful that more interest will surface and they welcome other cottages to build in the years ahead.

"It’s really a great way to learn," offers Grade 12 student Brandon Ramay, who will graduate this year and plans a full-time career in construction.

"It’s great work, outdoors and fun, and you’re always doing something different.

And there are a few different items in this Point Prim cottage: Triple the insulation quality despite the normal 6-inch walls, a low-use electrical system and a compostable toilet that requires no water.

"No smell, no fuss and no flush," says Hogg, enthusiastic about the project.

"I have one as well at my cottage and they work great."

It’s a $2,000 item compared to a $4,000 septic system that requires special permits and enormous installation work.

The compostable toilet drains into a six-foot container unit in the base ment and drains off on regular intervals.

"One day these things will replace the flush toilet and thank goodness," says Hogg. "It’s hard to believe we use the amount of water we do to flush away our own waste that can be recycled."

The young builders are learning the entire concept of home construction and finding new ways to accommodate all the creature comforts.

And Hogg insists there is no lack of math either. They learned quite a bit about the Pythagorean theorem just the other day.

It seems the geometry of the three sides of a triangle is particularly critical when trying to install a commercial roof truss in a building that might be a few inches out.

"It was a bummer," laughs Hogg. "But we learned how to fix it and not do it again."

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Nathan Goffart, right, hangs his hat in despair after being drenched of a minute in the roof sheathing. Joined by Nick White, left, and Brandon Ramay, the high school students are finding some learning is trial and error. Guardian photo by Steve Sharratt
Island students put the 'home' in homework

CBC News - Posted: May 29, 2010 5:23 PM AT | Last Updated: May 29, 2010

Students at one Prince Edward Island high school are turning to hammers and screwdrivers to put the finishing touches on a class assignment.

Carpentry students from Charlottetown Rural High School have been building a two-bedroom home since February.

They built the 900-square-foot cottage in sections in their classroom. Last week, the pieces were trucked to the home's new location to be assembled.

"I'm loving it," said Josh Misener, one of the students. "This is what I plan on doing after high school, so it's been a great experience. You learn a lot of things."

Teachers involved in the project say they have learned from the experience as well.

"You take on a different role," said Peter Connaughton, a student teacher who is also a licensed carpenter.

"You're guiding 13 kids who really are just trying to learn what they're doing, instead of working with a bunch of guys who usually have a good idea of what they're doing."

Connaughton, who is completing a degree in education, said the experience has helped him gain a better understanding of dealing with young people.

Another instructor said the project is essential because young people do not get exposure to trades the way they once did.

"Your suburban student doesn't come to the classroom with the same skills or background or values as you would have from an agricultural or fishing background family," said Ian Hogg. "So the needs of these students are different."

The students and instructors spent the weekend in tents at the construction site to finish the job.

Once completed, the house will belong to a school staff member, who paid for the construction materials and transportation costs.

Students will get two high school credits for their efforts.
A real big shot

Islander Ian Hogg takes aim at worlds after winning national rifle championship

By MURIEL VERNER WEIR

Stratford's Ian Hogg is the first Islander to win the Canadian full-bore rifle championship, held annually in Ottawa.

The 50-year-old marksman returned from the nation's capital this week, a champion full of confidence and aiming to win the 2011 world championships this October.

While Hogg was edged out for the tournament's top aggregate prize by American Kent Reeve, he did come home with three titles - the Gaswski long-range aggregate, the Canadian masters title and the Canadian target rifle championship.

Islander Mitchell MacLeod also competed at the event, finishing 40th in Canadian target rifle aggregate scores.

After a week-long neck-and-neck battle, Hogg finished three points behind Reeve for the MacDonald Stewart aggregate.

Though watching the top prize slip away, Hogg said being named top Canadian was a highlight in a career full of provincial awards.

'It's not an affirmation of all the work I put in over the last couple of years,' said Hogg, a carpentry teacher at Charlottetown Rural High School.

Two years ago, after years of winning the same provincial tournaments, Hogg nearly quit shooting in order to spend more time with his wife and two children.

At that time, he had already won 10 silver Governor General medals for top championship came earlier as his physical peak is behind him, Hogg said he feels more at peace now than ever before in his career.

He is aiming to win the entire tournament.

'Before last week, it was a dream,' he said. 'Now, it's within striking distance.'

'Winning has to be in your comfort zone if you hope to be a top athlete. Competitors cannot simply show up to events hoping to win. It doesn't happen.'

Hogg knew each individual medal he made at the national tournament in Ottawa and away from the event feeling he still had room to grow.

He is shooting for a more take-home individual performance at the Palms, held every four years.

'That's my goal,' Hogg says. 'I'm also hoping to bring home a gold medal with the Islander rifle team.'

Ian Hogg shows off his gold medal after winning the national long-range aggregate competition in Ottawa recently. (Submitted photo)
Ian Hogg to shoot in Bisley matches

OTTAWA — Ian Hogg, a member of 2258 Colonel Grey Senior High School Cadet Corps, has been selected to represent the Royal Canadian Army Cadets at the annual shooting matches at Bisley, England. He resides at Yea Hill.

He is one of 17 cadets who shot well at last summer’s qualification courses at Connaught Ranges, Ottawa, and who impressed the selection board during trials at Victoria, British Columbia this spring.

TO ASSEMBLE

The group will assemble in Ottawa on June 20th for range practice and administration prior to boarding a Canadian Forces aircraft June 29 for England. The conducting staff are Lt.-Col. Vince Lalley, Vernon, British Columbia, Major Dick Hampton, Ottawa, and Captain Bill Fowser, HQ Pacific Region, Victoria, British Columbia.

Once in England, the shooters will do their final practicing before they commence competitive shooting against their peers from the Commonwealth. The big test is against the British Cadet team for the Alexander Graham Bell trophy, which the British have won for the last three years in succession.

During their stay in England, they will be given the opportunity to visit places of historic and cultural interest in London, Windsor and environs. A highlight of their stay will be to meet Queen Elizabeth and the Duke of Edinburgh, during a visit to the British Cadet Training Centre at Primley Park, Prince Philip is the Colonel-in-Chief of the Royal Canadian Army Cadets.

En route home, the group will stop over at Lahr, Germany, as guests of the Canadian Forces in Europe for a series of tours in the Black Forest area. The shooters return to Canada on July 31, where they will shoot against other Canadian cadets and the British Abbeys Rifle Team at Connaught Ranges during the first week of August. They will return home by August 15.

HOGG BECOMES MEMBER

Royal Canadian Army Cadet Ian Hogg, 16, north of Hebor and Mrs. William Hogg of that address, P.C.I., show the colours, Major Horstard Hampton, Q.C.O., what it has to become one of the members of Canada’s prestigious Bisley Rifle Team. Present at Victoria, Lt.-Col. Fowser, along with 20 other army cadets representing Royal Canadian Cadet Corps, were invited. The group will represent Canada at Commonwealth junior matches at Bisley, England, this summer.