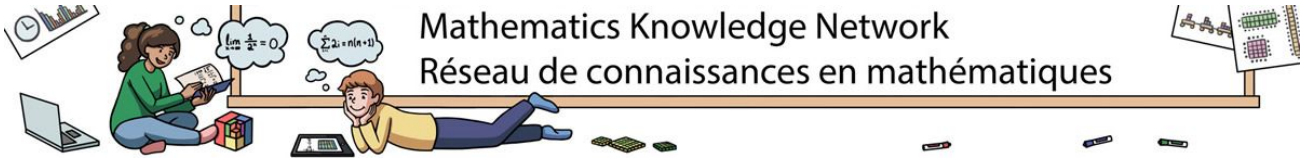


Year 1 and Fall Term 2017

Mathematics Knowledge Network - Critical Transitions CoP

(Grade 9 locally developed)

Revisioning the Three R's from the Ground Up:

Relationships, Resilience, and Resources

Technical Report

May 2018

Ann Kajander, Joseph Flessa, Kelly Sedor, Taylor Murie, Matthew Valley

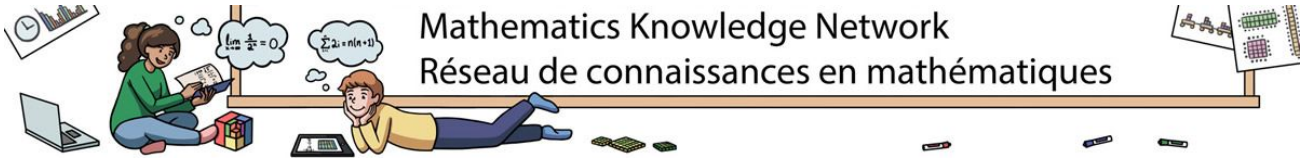
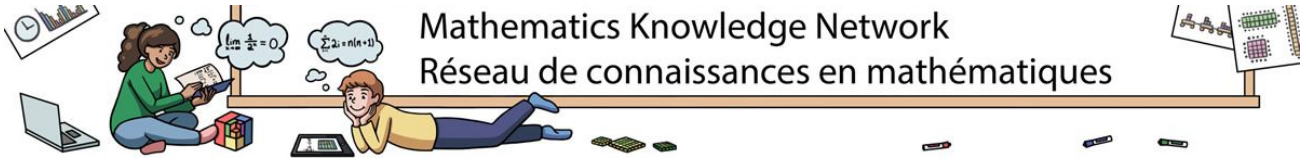


Table of Contents



Year 1 and Fall Term 2017 Technical Report

Revisioning the Three R's from the Ground Up:

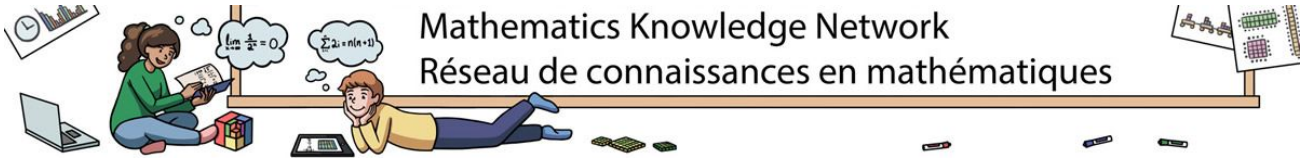
Relationships, Resilience and Resources

Mathematics Knowledge Network

Critical Transitions CoP

Ann Kajander, Joseph Flessa, Kelly Sedor, Taylor Murie, Matt Valley

This project is funded by the Mathematics Knowledge Network (MKN). The MKN is funded by the Ontario Ministry of Education. The MKN is a Knowledge Network for Applied Education Research (KNAER) Project, hosted by the Fields Institute for Research in Mathematical Sciences. The views expressed in this document belong to the authors and do not necessarily reflect the opinions of the Ministry of Education nor the Ontario government.



Introduction

Background and Rationale

Over the past two decades the province of Ontario has engaged in a high profile system reform that has attracted a great deal of attention from researchers and policymakers at home and abroad (Hargreaves & Ainscow 2015; Hargreaves & Shirley 2009). Ontario has distinguished itself during this policy moment: whereas the push in some jurisdictions has been consistent with the logic of the market, with competition, choice, vouchers, and teacher merit pay the prevailing policy ideas, here in Ontario the official emphasis is on greater public investment in the public system. These investments have shown demonstrable results, with the unprecedented expansion of early childhood education (universal prekindergarten), higher numeracy and literacy test scores at the primary level, and a better high school graduation/lower dropout rate. Since the overwhelming majority of children in Ontario go to schools in the public system, and since that system has shown concrete improvement, there's reason to think that on several traditional measures, educational opportunity has improved. Yet there remain persistent, structural inequities built into a system that isn't providing access to opportunity for all learners (Parekh, Flessa, & Smaller, 2016), and researchers have given growing attention to the problem of academic streaming (unequal academic pathways for students of different perceived abilities) at the highschool level (James & Turner, 2017; Hamlin & Cameron, 2015). At the same time, widespread popular concern about overall mathematics achievement in the province (Canadian Press, 2016; Chronicle Journal, 2017) has been headline news for the past two years. Identifying the roots of these problems, and proposing remedies to them, are challenging endeavours under any circumstances, but when

the overarching portrait of education in Ontario in both research and professional publications tends to emphasize the narrative of progress and improvement rather than the reality of ongoing opportunity gaps for a demographically identifiable set of young people, the challenge is that much greater.

Goals

In this project, we focus on the phenomenon of locally developed mathematics classes at the highschool level in Ontario, specifically in grade nine. This focus brings together several areas of concern for both researchers and practitioners, namely the promise and reality of school reform in Ontario; the practices and consequences of academic streaming; and the teaching and learning demands of mathematics in high schools. In this region, the percentage of students taking these courses is slightly higher than the provincial average, hence the issues are particularly relevant.

The project goals for Years 1 and 2 are:

1. To explore teachers' perceptions of the progress of the locally developed (previously called 'essentials') mathematics courses, specifically in grade nine, by conducting an ongoing case study of teachers in one school in Northwestern Ontario;
2. To create detailed case studies of all classroom sections of the locally developed grade 9 courses in 2017/2018 in one school
3. To design, field test and revise classroom resources, as responsive to teachers' stated needs
4. To create case studies of individual students (where ethically feasible)

5. These goals fit with the *Guiding Principles* of the Math Knowledge Network as follows:
6. Addressing educator identified needs - Goals 1, 3
7. Changing attitudes towards mathematics - Goal 3
8. Fostering inclusion - Goals 2, 4

In the sections that follow we briefly describe the history of curriculum development in mathematics, putting locally developed courses into context. Then we explain our exploratory approach to learning more about teacher perspectives on this issue.

Initial Literature

Curriculum reform in mathematics has been an ongoing endeavour in North America over the past two decades, with the province of Ontario being no exception. In the wake of the initial publication of the *Principles and Standards for School Mathematics* (NCTM, 1989), Ontario introduced a new reform-oriented elementary curriculum in 1997, followed by a secondary curriculum which was introduced on a year-by-year basis as of 1999. In grade nine, three different mathematics courses were to be offered; Academic, Applied, and Essentials, the name of which was later changed to “Locally Developed”, with the focus of this paper being the latter. However, the locally developed courses were *not* defined by the Ontario curriculum documents - rather they had separate guidelines outside of the curriculum.

The intent of the locally developed courses was to allow schools and boards some flexibility in designing curriculum for students who were several grade levels behind in that subject area. Because of this lack of standardization, no provincial grade 9 test data can be

gathered for students in such courses. As a result, the locally developed courses – and their students – tend to fall outside the boundaries of typical data driven research.

The Ontario Ministry of Education introduced locally developed courses as a means through which district school boards could design courses to meet educational needs that were not otherwise being met by provincial curriculum policy. For example, courses could be developed to accommodate the educational and or career preparation needs for students in a particular school or region. Courses could also be developed for students with special education needs who required particular course content or special preparation for further study or work (OMET, 1999a). School boards decided independently, based on their own contexts, which courses would be developed and offered in their jurisdiction.

All locally developed courses required approval by the ministry, except for religious education courses developed by Catholic district school boards. The document, *Guide to Locally Developed Courses, Grades 9 and 10: Approval Requirements and Procedures*, set out criteria for the development and approval of these courses including that, "These courses must set high expectations for students. Course content, the proposed range of teaching strategies, and assessment and evaluation procedures must be consistent with current ministry policy" (OMET, 1999a, pp. 43-44). School boards were also given latitude to design locally developed courses to meet compulsory credit requirements:

> A board may develop locally one course in English, one course in mathematics, and/or one course in science that can be counted as a compulsory credit in that discipline. Ministry approval of such locally developed courses will be valid for one year. A student may count no more than three such locally developed courses —one

> each in English, mathematics, and science—as compulsory credits. (OMET, 1999a, p. 44)

Although locally developed courses fell outside of *The Ontario Curriculum,* the ministry funded the development of sample course profiles for Locally Developed Compulsory Credit (LDCC) courses in English, mathematics, and science. These courses were often initially referred to as "Essentials" because they were named "Essential Skills" courses in the course profiles. For mathematics, the sample course profile provided a model of how a LDCC course could be developed as a bridge to courses in *The Ontario Curriculum.* It focused on providing students with the sufficient background and skill development to prepare them for Grade 11 and 12 workplace courses (Public and Catholic District School Board Writing Partnership, 1999). In September 2004 changes were made to the policy on compulsory course credits by introducing an additional three LDCC courses for Grades 9 and 10: one for each of English, mathematics, and science. This meant that students could now count two locally developed courses in mathematics as compulsory credits towards their diploma:

> Some students who enter secondary school do not have the necessary preparation to enable them to succeed in the secondary program…. These courses may review and reinforce the elementary curriculum expectations essential to the development of a stronger foundation in the knowledge and skills necessary for further study in the disciplines at the secondary level. Upon successful completion of a Grade 9 locally developed compulsory credit course, some students may proceed to a Grade 9 academic or applied course. Others may proceed to a Grade l0 locally developed

> optional credit course, which would provide a "stepping stone" from the Grade 9 locally developed compulsory credit course to the Grade 11 workplace preparation course in that discipline (OME, 2004, p. 2).

The Grade 9 LDCC course description states that three mathematics strands should be included in the grade 9 course, namely "Developing and Consolidating Money-sense, Developing and Consolidating Concepts in Measurement, Developing Concepts in Proportional Reasoning" (Ontario Ministry of Education, 2004, p. 2), also noting that the students in the course might be as much as four grade levels behind and have significant gaps in knowledge, conceptual understandings, and skills.

There are also teaching approaches recommended as follows:

- using before-learning, during-learning and after-learning tasks;
- connecting the students' existing mathematical knowledge to new concepts;
- using manipulatives and technologies (hand-held and ministry-licensed software);
- providing opportunities to organize information; and
- using visual aspects of mathematics, oral communication, reading, and writing to understand problems, organize ideas, and communicate mathematical reasoning. (Peel District School Board, 2005 p.2)

While the specific expectations in the documents do not, in and of themselves, provide classroom examples or suggest resources, the verbs included with the content of the expectations certainly allow for contextual problems to be utilized. For example, "explore and describe situations from everyday life and the workplace that require calculation or measurement of volume (e.g., the size of a package, the amount of soil to purchase, the

volume of air in a room, amount of liquid medication)" (Ontario Ministry of Education, 2004, p. 16) or "calculate rates in activities drawn from their experiences (e.g., heart rate in various situations, walking speed, rate of pay, cost/linear foot, cost/m²)" (p. 17) are typical of the suggested topic descriptions. As well there are descriptions which refer to specific numeric values such as making change from $5 or understanding parts of a dollar as, variously, a decimal, a fraction and coins.

Given that the LDCC courses fall outside of *The Ontario Curriculum*, students taking Grade 9 LDCC Mathematics are not required to write the Grade 9 Assessment for Mathematics. As a result, much of the rhetoric around the performance of Grade 9 students is misleading. Grade 9 students are often spoken of as a whole, when in reality, students in LDCC Mathematics are not included in the provincial monitoring of student achievement. An average of nine percent of students took the Grade 9 LDCC course in 2012/13 and 2013/14 (Macaulay, 2015). This is not an insignificant number, representing close to 14,000 of the approximately 150,000 Grade 9 students province-wide. Even so, this population is not accounted for in EQAO reports, and rarely if ever mentioned in ministry news releases or media news clips. For example, a recent news report in Northwestern Ontario states that the provincial test data allows the province to make decisions about mathematics, in order to improve "the outcomes of all learners" (Chronicle Journal, 2017, p. A1).

The Canadian research on streaming mostly examines the differences in outcomes between students in the academic and applied streams (see for example Hamlin & Cameron, 2015; Krahn & Taylor, 2007). The research literature is strikingly silent on the experiences and outcomes for students in the "locally developed" (or equivalent) stream, although

provincial data do suggest that the students with the most dire academic outcomes at the secondary level are those currently placed in "locally developed" courses. We turn now to the supporting literature, to further explore research around best practices.

One of the key tenets of the reform movement is that students should learn mathematics content through inquiry, rather than the passive reception of rules (Doctorow, 2002). The National Council of Teachers of Mathematics (NCTM) *Standards* align with a constructivist philosophy and are designed to ensure that in addition to mathematics content, students learn how to think mathematically through problem solving, reasoning and proving, communicating, making connections, and representing mathematical ideas (NCTM, 1989; 2000). For reformists, understanding how mathematicians work (i.e., using the mathematical processes) is as important as the mathematical content itself. This stands in stark contrast to the traditional practice in mathematics classrooms whereby algorithms or rules are taught to students (Brown & Saltman, 2005) who must then memorize and master them (Stodolsky & Grossman, 2000; Wang & Cai, 2007). Although "reformers" do not dispute the importance of computational skills and factual knowledge, they argue that traditional curricula over-emphasizes these outcomes at the expense of problem-solving and reasoning skills (Schoenfeld, 2004; Stetcher, Hamilton, Ryan, Williams, Teacher #1yn, & Alonzo, 2002; Suurtaam & Graves, 2007).

With more and more research showing that learning comes from the construction, not absorption, of ideas (Butty, 2001), the key to more successful teaching may well lie in changing the instructional approach and how it is that teachers position students to interact with content. As Willms et al. (2009) put it:

> Traditional learning activities that require students to merely remember, recall and regurgitate need to be rethought ... Learning can no longer be understood as a one-way exchange where "we teach, they learn." It is a reciprocal process that requires teachers to help students learn with understanding, and not simply acquire disconnected sets of facts and skills (p. 34, 39).

After reviewing 149 studies that examined the characteristics of effective mathematics programs, Slavin, Lake, and Groff (2010) found that changing the way that children work together can improve mathematics instruction for all students. They argued that changing what students do in the classroom every day is what will impact on their performance. Along the same lines, Willms, Friesen, and Milton (2009) contended that effective teaching practice begins with thoughtful, intentional designs for learning and attention to helping students "know their way around" the disciplines. This requires immersing students in the work that is done by mathematicians and providing them with "holistic experiences" (p. 35) that mirror the ways in which the discipline works (p. 36). Reform-based teaching practices embrace this notion of the student as "doer" of mathematics.

A significant Ontario-specific literature is beginning to emerge that highlights instructional approaches and high-leverage practices that teachers can utilize in realizing reform-based instruction. It calls for teachers to provide mathematically rich environments that are conducive to investigations emphasizing higher-order thinking and problem solving (OAME, 2011). Similarly, in *Leading Math Success* (OME, 2004b)—the report of the Expert Panel on Student Success in Ontario, effective instructional strategies are defined as those

that “emphasize the ability to think, to solve problems, and to build one’s own understanding” (p. 31).

Despite growing evidence that reform-based teaching practices are more effective than traditional ones especially for struggling students, such practices have not been consistently widespread. For example, case study research a decade ago in northwestern Ontario examined the classroom mathematics experiences of students considered to be “at risk” (Kajander and Zuke, 2007). In the mathematics classrooms studied—including grade 7, grade 8 and Grade 9 applied mathematics classrooms—few opportunities for active and engaged learning were observed. Instead the teachers used highly traditional, procedural, and teacher-directed strategies. They relied heavily on textbook tasks that were abstract and not engaging to the students. Teachers in this study were reluctant or unable to use investigations, tasks, and other student-centered or reform-based teaching methodologies.

In contrast, more recent case study research, conducted in four of Ontario’s highest performing schools on the EQAO Assessment of Grade 9 Applied Mathematics, confirmed that instructional approaches aligned with reformist ideologies were evident in these high-performing case study classrooms. These approaches included collaborative learning, using rich tasks, constructing versus transmitting knowledge, utilizing manipulatives and instructional technology, engaging in mathematics talk, providing assessment for learning, and, fostering positive attitudes and dispositions around mathematics (Macaulay, 2015). While not generalizable, such evidence is promising.

Methodology (Years 1 and 2)

This study employed a grounded theory methodology. This methodology was chosen for several reasons. A grounded theory methodology allowed the researchers to see a more accurate representation of participant perspectives. The flexibility of grounded theory also provides researchers with regular opportunities to re-evaluate and improve data analysis (Charmaz, 2006). The data collected can evolve, taking many forms, as the researchers learn more about each individual participant and their needs. Furthermore, grounded theory helps establish an optimal route for the data collection to take in the study that is exploratory in nature (Charmaz, 2006). The use of grounded theory improves the validity of the findings. Allowing the research themes and concepts to emerge from the data ensures that the researchers are not misrepresenting data, or using data to justify their own opinions and beliefs.

The design for year 2 includes an embedded case study (Baxter & Jack, 2008) of two grade nine locally developed classes. The current report includes classroom Case 1, the September 2017 to January 2018 course, as well as the teacher interviews which took place in year 1 in June 2017, and in year 2 at the end of the first classroom case, in February 2018. Data related to the first goal was first collected in the form of semi-structured interviews with the initial three teacher participants in June 2017. These interviews were audio recorded and transcribed. Semi-structured interviews are a popular research tool among qualitative researchers as they possess a focus on participant meaning and provide opportunities for the researchers to critically reflect on data (Creswell, 2014). The interviews were conducted on site. We asked questions around teacher's views and needs, curriculum, and the students

themselves. For example, we asked the teacher-participants to describe their experiences teaching this course, to provide concrete examples from their teaching, to speculate on the origins of the challenges and what would make a difference, and so on. These interviews, each comprising about an hour in length, were transcribed and then analyzed by the three members of the research team. Each researcher conducted an analysis of the data separate from the other researchers, establishing their own codes. Once this was done, the researchers came together to discuss the codes and themes present. This was done to maintain qualitative reliability (Creswell, 2014). At team meetings we synthesized the range of codes from the three researchers into three major categories of findings: teacher capacity; curriculum resources; and students (variation, attendance, identities).

A note about what these interviews can and cannot tell us: interviews do not provide us with information about instructional effectiveness. They provide us with teachers' perceptions about the challenges and opportunities they experience in their classes; these perceptions are a necessary starting point for identifying any policy or professional development recommendations. Our exploratory case study approached data collection in a systematic way: all of the teachers responsible for Grade 9 LDCC in one high school--in a region with a larger number of locally developed courses than the provincial average--were asked to share their perspectives. We make no claims to generalizability but by showing how the participants explain the demands of LDCC, we raise questions for both policy and practice.

The second goal is being addressed via the observations (recorded as field notes) of three researchers, attending the grade 9 locally developed class one to twice weekly each. On

some days more than one researcher was present, allowing for the data to be triangulated. Data will also analysed using a grounded theory methodology, to identify emergent themes.

The third goal, resource development, is being addressed by two researchers who have been attending the class weekly or bi-weekly. Classroom tasks have and are being designed and field tested/revised on an ongoing basis (See Appendices A and B).

Lastly, student-participants in these courses will be observed and interviewed (also using semi-structured interviews - see Appendix D) where ethics permission forms have been obtained.

Results - Case Studies

Chronological Narrative

We began attending Janice's class on a weekly basis towards the end of September 2018. During the first several visits, we acclimated to the classroom and did our best to get to know the individual students. In the beginning of the term, students were somewhat shy and hesitant to interact with us. Janice was always very positive and warm with students, welcoming them to the classroom and talking to them about their lives in the moments before and after class. It was clear that even by the time we arrived in the classroom she had built a rapport with the students. From our early observations, it seemed that there were some students that were more difficult than their peers. For example, Zachary sat in the back of the classroom and was chronically disengaged.

In the early part of the term, Janice began each day with numeric drills focusing on the four primary mathematical operations (addition, subtraction, multiplication and division). The majority of the students were extremely weak in these areas, so Janice allotted time for

practice at the start of each class. When students were done, they would mark and correct their own work, and submit their sheet to be entered into a weekly draw for a prize of some manner. Many of the beginning lessons in the semester seemed to be designed to gauge and improve students' basic numeracy skills. Over time, the benefit of the drills was apparent as students relied on tools such as multiplication tables and calculators less and less. However, students had significant difficulty with dividing. After considerable time being spent practicing division throughout the term, many students still relied on multiplication tables and calculators when dividing. Additionally, many of the students struggled to identify the proper math operators on a calculator. For example, they would use phrases such as "the x button" in reference to multiplication. It was also noticeable that students had difficulties determining the appropriate operation to use in various scenarios. Determining whether multiplication or division was appropriate proved to be a difficult task for most students.

Even early in the semester, Janice varied her teaching strategies and instructional methods. Some days were spent doing more traditional tasks (lesson and practice), whereas others were more open ended and interactive. For example, the discount shopping activity, designed by the researchers, and field-tested in mid October was an interactive, open ended activity in which students used technology to pick items from Walmart's website. They were given a budget to try to maintain but were told that every department of items would be given a random discount. Students seemed very engaged picking items from the website trying to get the most for their budget. Afterwards, students had to calculate their totals after applying the necessary discounts, and accounting for HST.

Another example of a hands on task used was seen several days later when the class was in the measurement unit. Students were tasked with measuring the classroom, doors, windows, etc. Students were given meter sticks and got up and moved around the room in small groups, measuring the necessary items and recording their data. Through these hands-on tasks, it appeared that the students had little experience with accurately measuring objects and many were unsure how to proceed when the object to be measured was larger than the length of the meter stick. The number of adults in the classroom (i.e. the researchers, a Student Support Person and the teacher) made this particular activity possible as each group required individual attention. Janice also incorporated videos and visuals wherever possible to try and engage students as much as possible. One lesson began with a video about the Tim Horton's franchise and how much money any one location makes on a given day.

Midway through the semester, Janice began bringing food and drink to class. She realized that many students complained of being hungry, or were often asking to leave the classroom to go and get food so she took it upon herself to start supplying snacks on a regular basis. The snacks had an immediate impact on students. It was clear that students needed the energy, and appreciated it. This quickly became part of the daily routine in Janice's class and contributed significantly to the welcoming, supportive atmosphere that Janice strived to create and maintain throughout the year.

As the semester progressed, the beginning drills transitioned to brain teasers and word puzzles. Students enjoyed these significantly and it engaged even some of the more withdrawn students. These withdrawn students, as well as some more hyperactive students, were a constant concern for Janice throughout the semester. There were several students so

anxious to enter the classroom that they often sat outside the classroom in the hallway, and either Janice, the Student Support Person (SSP), or the researchers, would sit and work with them in the hallway.

Near the end of the semester, Janice's class began incorporating cooking into their mathematics classes, often using the foods lab and resources available in the school. Students were actively working on cooking different foods each week, and ending the class off with a shared feast. Through this work in the kitchen, it became clear that application of mathematics in the real world was problematic for some students. Some were unsure how to wash dishes, and others were unsure how to measure one cup if they only had the ½ cup measuring cup available. Spreading condiments and using beaters also proved to be challenging. These activities in the kitchen worked to improve communication skills, application of math learned in the classroom and life skills of students. While some students continued to disengage while in the kitchen, others showed an increase in engagement. It was evident that some of the students lacked basic measurement skills while others possessed them and exhibited them competently. Some students explained that they are often cooking at home for their siblings.

Students in the Class

At the time of writing of this document, only two students in the class had turned in signed ethics permission sheets. This was after repeated attempts on behalf of the researchers, classroom teacher, and other support teachers to encourage them to do so, in order that their personal experiences could be shared. This is a significant issue in this study, as the two students who we were able to interview were not representative of the group.

Over time, there was a marked improvement in the behaviour of Zachary. Janice noticed that it was difficult to keep him engaged with where he was sitting and moved him to the front of the classroom. At the front of the room, Zachary befriended Marcus and his attitude shifted dramatically. Zachary and Marcus established a bond and from that point on, Zachary was much easier to engage and to keep engaged. If Zachary was off-task, Marcus would playfully tease Zachary which usually ended the off-task behaviour. The two supported one another, pairing up when doing practice work or group activities and the two became much more active members of the classroom.

Attendance Data

Janice's class began with 15 students enrolled. Later in the semester, two students had to withdraw from the course due to mental health concerns. From the perspective of the researchers, attendance seemed to be consistently good over the course of the term. On average, anywhere from 10 to 13 of the 15 students were present on any given day. There were also days however at which the researchers were present and only several students were in attendance. Overall, attendance was commendable but did indeed fluctuate depending on the day. Students being late to class remained a constant issue. There was usually one to two students (minimum) arriving late to class daily. There were numerous instances in which students would arrive upwards of 20-30 minutes late for the 75 minute period. Janice chose not to punish or lecture students for late arrivals, adopting the mindset, "better late than never".

While attendance on the whole was surprisingly adequate, much to the surprise of the researchers given the teacher comments from the June 2017 interviews, there were still

problematic trends. Several students missed as many as 45 classes, exactly half the semester (See Janice's February 2018 interview). Of the days these students were present, they often arrived late. Conversely, there were several students who scarcely missed a class. For example, the student interviewed in interview two, Zachary, only missed 3 classes (See Janice's interview). Other students had absences in the 10-20 range. Attendance depended heavily on the particular student.

According to Janice, there were trends in the attendance data of any particular student. She believes that their absences pertained more to their personal lives than the class itself. That is, if a student missed her class, they often missed all of their other classes as well. Often times the "absent" students were in the school, but not present in the class. They could be found in the office, in the resource or student success room, in "Dave's room", or simply roaming the halls. Dave's room (pseudonym used here) was the Aboriginal Education room, in which Indigenous students could do their work or simply hang out. It was usually simply referred to as "Dave's room". (At the time of writing this report, Dave is no longer in this role).

Surprisingly, Janice noted that sometimes students missed all of their classes in a day *except* for her mathematics class (February 2018 interview). Known reasons for student absences included: illness, personal matters, appointments around the school, suspension, student's participation in sports and extracurriculars around the school, mental health concerns, and more. There were more unexplained absences than not for several of the more chronically absent students, however it depended on the particular student. Some students would leave class mid lesson/ activity, and be gone for the remainder for the period, so while

they may have had better attendance on paper, it hardly reflected their true attendance in the course.

Student Interviews

Zachary.

Zachary was interviewed once at the end of the fall 2017 semester, with the semi-structured interview lasting approximately 25 minutes (see Appendix D for full transcript). The interview was broken down into three sections: attitude towards mathematics, understanding of mathematics and success in mathematics.

The description to follow begins with Observations from the researchers' field notes, taken during the fall 2017 semester classroom visits.

Observations.

At the beginning of the semester, Zachary could be described as chronically disengaged. He sat at the back of the room, was constantly playing games on his phone or drawing and was rarely engaged in the activities taking place in the classroom. As the semester progressed, Janice moved Zachary to the front of the room, where he sat close to Marcus. Zachary and Marcus became fast friends, and worked together on assignments, tasks and activities in the classroom. Marcus was constantly very engaged in the activities in the classroom, and this had a positive effect on Zachary. Zachary began engaging in the content, and spending less and less time on his phone and more and more time on math. By the end of the semester, Zachary was laughing and consistently engaging in the math content both on his own, and when working with Marcus. Zachary also had near perfect attendance for the entire semester.

Attitude towards mathematics.

Zachary was quick to indicate that Janice's efforts to bring food and drink into the classroom did not go unnoticed. This was something that Zachary mentioned throughout his interview as a motivator to come to class. Zachary also noted that he feels he pays attention in class due to his friendship with Marcus. Zachary also mentioned that he wouldn't change anything about his math class, and that he likes Janice (although he cannot recall her name - he referred to her throughout as "the teacher"). He also said that he enjoyed the culminating activity as it was easy and fun, and indicated that he felt "practiced". Interestingly, Zachary reported that he does not find the content of the course relevant in real life, although this is one of the goals of the LDCC (Ontario Ministry of Education, 2004). The only topic that he finds relevant and applicable in the real world is money and taxes. He can see the value in measurement and area, but Zachary does not feel that he will go into those fields, so he does not see them as relevant.

Understanding of mathematics.

Throughout the interview, Zachary indicated that he finds the course content easy, and he had trouble identifying a concept that was difficult:

> [W]ork is always like different right, like always coming up with something new sometimes but like money and umm like just the stuff that we're doing in the culminating things, they're fun and easy to do. But, I don't know what I'd say like would be hard (Interview 1: Zachary).

The concept of the course content being easy came up numerous times throughout the interview. Zachary discussed that he enjoyed both seatwork and more hands on activities.

Zachary also indicated that he uses various strategies when he is unsure of how to approach a question, like working in a group or comparing the question to other work he has done. He indicated that working in a group also helps keep him on track as his group's members were quite engaged in the task, and they would bug him if he got off topic. He also mentioned that they would work together to solve the questions, as can be seen in the quote:

> Umm...I haven't really found anything difficult, cause if we're working together too, if it's like the three of us, like one of us will get it and ahead right and we'll say it and then just – we'll both work with each other (Interview 1: Zachary)

Zachary also discussed the importance of the people he was working with consistently. He mentioned that he was not sure if he would work well with other individuals, or those he did not necessarily like.

Success in mathematics.

Zachary indicated that he believes he is successful in math as his mark is reflective of him passing. He also said he believes that there is no way he could be more successful in the course, either by doing well on the culminating activity or the exam. He had negative thoughts towards the exam as he did not want to work alone. He also mentioned that he identified students in the higher level classes as being successful in math. His thought of success was focused on grades for the most part. He did report his feeling that an unsuccessful student might look like him. On the other hand, Zachary also mentioned that he considers himself successful in all of his classes except for art, which was surprising to the researchers as they have observed him drawing all semester, and he had previously indicated

that he liked art. Zachary considered his art class to be impossible, as can be seen in the following quote.

> Well, like yeah and it's just like – that class is like impossible. Like, it's hard to do. And if I wasn't so slow at doing the work at the beginning of the year like I probably would be okay right now, but I was slow, and I probably won't pass this class [art]. (Interview 1: Zachary).

Zachary mentioned that he did not do homework after school unless it was something he was very interested in, like sketching. He mentioned that he might have been better off in his art class had he done homework at the beginning of the year.

Zachary also did not have a certain goal for a grade he would like to achieve in his classes, he felt that he just wanted to pass.

Additional pertinent information.

Zachary was very interested in talking to us about the class that he is failing - art. He talked about his struggles with keeping up with the work - he felt that his drawings took time to be perfected, time that he was not provided. This meant that he did not turn in assignments, as he did not want marks deduction, and was therefore failing.

Zachary also had no interest in pursuing post secondary education. This can be shown in the quote:

> Like, I think school maybe could just be a waste of time, cause there's a lot of things that you don't need school for. Like, getting a job or something. But, I don't know it is important too cause what if you can't get one of those jobs and then you need school (Interview 1: Zachary).

Zachary asked us about our homework in university and discussed his sister's journey in nursing school. He does not seem to value school or doing work in order to pursue a certain career. He seems to see the value for some people, but does not see that path or value for himself.

Student Interviews

Marcus.

Marcus was interviewed once at the end of the fall 2017 semester, with the semi-structured interview lasting approximately 18 minutes (see Appendix D for full transcript). The interview was broken down into three sections: attitude towards mathematics, understanding of mathematics and success in mathematics.

The description to follow begins with Observations from the researchers' field notes, taken during the fall 2017 semester classroom visits.

Observations.

Marcus was consistently one of the most active students in the classroom. He was almost always engaged in the lesson, and would frequently work to get his friends engaged in the lesson as well. Academically, Marcus had one of the highest marks in the class, and he often demonstrated a thorough understanding of course concepts. Marcus became friends with Zachary early on in the semester when Janice noticed that Zachary was chronically disengaged. When Zachary was moved up to the front of the classroom, he began talking to Marcus, and they became fast friends. Marcus had a positive impact on Zachary, and he began to engage in math class. Marcus always had a positive attitude when he walked into the classroom, and when he was absent, the class as noticeably quieter and less engaged.

Attitude towards mathematics.

Marcus always demonstrated a positive attitude towards mathematics. When we inquired about this during the interview, Marcus attributed this to his teacher, Mrs. M, and he described math class as "fun" (Interview 2: Marcus). He did not feel stressed in math class, and indicated that he enjoyed learning new concepts (Interview 2: Marcus). Marcus also mentioned that he believes the concepts he learned in class are relevant to real life, and that there was nothing he didn't enjoy in math class. The only concept he indicated that he did not enjoy was volume. Marcus indicated that motivation for coming to class was so that he could pass, and also to please his parents (Interview 2: Marcus). In general, Marcus had a very positive attitude towards mathematics. He indicated that he did not enjoy math in elementary school, but that he enjoys it now, and he attributed that to Mrs. M.

Understanding of mathematics.

Marcus indicated that he finds mathematics easy, with the exception of volume. He mentioned that he often knows how to complete a question, and he indicated various strategies when he did not know how to proceed in a question. He also found tax easiest, which is a theme that also came up in Zachary's interview (Interview 1: Zachary; Interview 2: Marcus). He indicated that he uses strategies now that he did not use before (in elementary school). When asked why, this was his response: " Nothing (laughing). In elementary math, I didn't – I wasn't the greatest, and I didn't I guess try that much" (Interview 2: Marcus). It seemed that he had found new motivation due to his teacher and her teaching methods.

Success in mathematics.

Marcus believed that being successful at math had to do with handing in work and knowing that you completed the tasks correctly (Interview 2: Marcus). He believed that students who weren't successful were off task during lessons and would describe himself as this student in elementary school (Interview 2: Marcus). He also believed that he could be more successful if he got ahead on the remaining work and did well on his final examination (Interview 2: Marcus). He also indicated that he enjoys group work and hands on activities but not necessarily all of the time, and he enjoyed other pedagogical methods (Interview 2: Marcus). He also believed that his teachers believed he could succeed and that she held him to high standards (Interview 2: Marcus). He indicated many times that his teacher was one of the reasons he enjoyed the class and applied himself during lessons and activities.

Additional pertinent information.

It is important to note that we (the researchers) were only able to interview and record observations on Marcus and Zachary as no other students returned permission forms. Zachary and Marcus were two of the most motivated and highest achieving (academically) students in the class. This means that our data set is quite skewed as we could not reach students who may have been considered "at-risk" and might have a different point of view on how to make school - in particular math class - better for them. Although both Zachary and Marcus make positive comments about their teacher, they are anomalies in the classroom, therefore skewing our sample greatly.

Informal Teacher Discussions

A meeting of the research team was held with the mathematics department head and Transitions course teacher, in December 2017.

There was a feeling of general success of the baking activity. Many students have never baked. It promotes caring and sharing. (On average) there was increase in engagement and participation. Students liked being attached to individual graduate students - especially the Aboriginal students and students at risk. However, the handover to "next teacher" negates all the work done in building relationships.

Researcher summary.

(unnamed student #1), a student whose behaviour, mood, and attitude fluctuated sporadically, had asked if he could bring his girlfriend into the class for the day to help decorate cookies. It is important to note that this was (unnamed student #1)'s second girlfriend of the semester, the first being another student in Janice's class. Due to (unnamed student #1)'s recent lack of attendance, it was exciting to see him show an interest in math class. So, Janice, Amanda, and myself [student researcher] all agreed that it was acceptable as long as they ran it by the other student's teacher first. They went and received permission from Rhonda, who is a graduation coach specifically for Indigenous students. Rhonda works alongside Dan in the Aboriginal Achievement Room. Since some of the students, especially the Indigenous ones, spend a lot of time in Dave and Rhonda's room, they often forget that Dave and Rhonda are not their teachers. After a few minutes of (unnamed student #1) and the other students working together on their cookies, (unnamed student #1)'s girlfriend's actual teacher came in and began to yell at (unnamed student #1). He exclaimed that he did not give

permission for the student ((unnamed student #1)'s girlfriend) to be out of class. The teacher continued on by calling (unnamed student #1) a liar and said he was a troubled boy that is, yet again, in big trouble. This was shocking to the researchers because it was as if he was targeting (unnamed student #1), who wasn't even his student. The classroom teacher (Amanda) didn't respond, but was clearly visibly upset by her colleague's outburst. It completely diminished all of the trust and care that we worked so hard to build with (unnamed student #1). His behaviour and attitude were notably different for the remainder of the semester.

Other than this incident, the teacher reported, the cookie activity was so popular that some grade 9 applied students attended on the condition they did their other math work at home. As to the applied course, three students did drop the course, mainly due to attendance, but the GLS teacher (Amanda) said they could have been moved there had she known sooner. As general comments, she mentioned need to think holistically, and not "try to get everything of the curriculum in". Janice also said that the relationship with the graduate students is really important because these kids really like routine.

Janice's Interview

Janice was interviewed once in a formal setting at the end of the semester, in February 2018. The interview lasted approximately 47 minutes. See full transcript in Appendix E. In order to discuss the interview, it is beneficial to divide findings into several key themes that encompass many of the ideas discussed.

Course content and resources.

Janice was very dedicated in her planning for the Locally Developed class. She used a variety of activities and teaching strategies to try and reach the majority of her students. She was also very capable in her understanding and teaching of mathematical content. However, due to the high risk nature of many of the students, this was often not sufficient to reach every student. The researchers were often asked and or took it upon ourselves to help students around the classroom on a regular basis. Students who struggled with content benefited greatly from one on one interaction and so we tried to assist whenever possible. Janice expressed a deep appreciation for our help and also expressed a dire need for this type of support for Locally Developed classrooms in the future

> For sure, having more people in the room helping the kids because I physically can't get around to meet everyone's needs . Especially when you want to do things like activities. Even in the lab. Thank goodness you guys were there because it was basically one per station and I still felt like we were flying around… . In my grade 10's, kids who sat there would [and] not say a peep were talking and laughing. Having those extra people to work with them is huge. And I know that is not a real situation… I don't think we can. But maybe we could pull in people to volunteer

> and—from the faculty or whatever to help support these classes instead of going into an academic classroom. They do the literacy support pulling kids, why not have the numeracy support from there as well. (Interview 2: Janice)

Many students who rarely ask for help when needed and if they did and nobody was available to help, they would disengage entirely. Janice's classroom had a large population with fairly good attendance. Even with a Student Support Person (SSP) in the classroom daily, and the three of us in the classroom, it was sometimes a struggle to support all the students equitably during a given activity.

Janice has clear goals of what she believes works best for Locally Developed students in terms of teaching style: "I think that just because of the nature of the students that we have and with attendance, I think I would change it to more project based learning which would be more relevant and connected to what their everyday life task is" (Interview 2: Janice). This was evident in her teaching as Janice often incorporated hands on elements, or interactive components to her lessons. However, Janice described the need for material support so that these types of activities are more feasible. When asked why every lesson can't be as interactive and hands on, Janice had this to say:

> Manpower for sure because you need to make sure—trying to facilitate some of that is difficult, financial restraints. You can't be cooking every day with them because we don't have unlimited amounts of money. It would be fabulous to go out on field trips with them but having those resources available, we don't have. Things are limited (Interview 2: Janice)

As mentioned above, part way through the semester Janice began bringing in food and drink for the students because they were not eating at home. All of this food was purchased with Janice's own money. In Janice's class, there was a clear need for a variety of resources.

Besides desiring a more hands on approach to learning, Janice more or less agreed with the Locally Developed curriculum: "I think they're manageable for the students which is important. A lot of them are life skills, especially like the money-sense unit and even the simple area. Most of it I think is applicable if that's as far as they're going in their math. They just need those numeracy skills to get through their high school career or just for life skills" (Interview 2: Janice). Janice continued to say that some things could probably be omitted, but the course content is largely relevant and achievable for Locally Developed students.

Janice also had some interesting insights in regards to the level of support Locally Developed courses receive from a board stand point. Locally Developed students do not write the EQAO testing. When asked if this results in a discrepancy in the amount of attention devoted to each stream, Janice said,

> For sure. When they're applied or academic—9 Applied is one of the big ones right now,[Applied] is the focus so there's tons of—the RMS strategy… We have huge PD on all of that. It's focusing on the 9 Applied, by all means. And the Academic, yes, for sure. There is nothing—I don't think there's anything for Locally Developed. Which is obviously a problem especially with the pass rate and the type of kids. These are the ones we're flagging as the most at risk. (Interview 2: Janice)

The lack of EQAO testing seems to result in students being underrepresented as well as under-supported when compared to students from Academic or Applied streams. Janice

expressed explicit interest in professional development so that she may better meet the needs of her students, but there seems to be none available.

Overall, Janice described a clear need for support in various forms. Most predominantly, she wished there could be more people in the classroom to help the students. It is unclear how this would be achieved, logistically speaking. Regardless, whether they be volunteers, university students, trained teachers, or support persons, their presence would be beneficial in the classroom. The benefits are especially noticeable in contexts such as field trips or large scale activities such as the food lab exercise at the end of the term.

Students' lives in and outside of the course.

One of the more prevalent themes that came up multiple times throughout the interview was the notion of how a student's personal life influenced their life within the classroom. In the classroom, students came from various backgrounds. Some, such as Zachary, came from a supportive home life in which his parents were involved in his education. Others came from remote communities and were living with extended family members or in a boarding home (Interview 2: Janice).

Unfortunately, some came from very unstable home lives, which usually had a direct impact on their education:

> [A] student [was] having problems within the home with the father and some abuse, Dilico being involved and having a parent being removed from the home was another scenario. One of the girls felt like she had no friends was bullied lots, was getting into physical altercations and then she um—was a little bit just struggling to find her place, to fit in. Drugs, some of the students were doing drugs, which was pulling them

> away. I think a lot of it was the homes. The homes were not—maybe it was a large family. Maybe there was 14 of them living in the same roof, which would be challenging… (Interview 2: Janice)

At the time of Janice's interview, a student was in the process of being criminally charged due to an altercation with another student that resulted in the latter student being hospitalized. There were also students present that based on their place of birth, did not speak fluent English, which resulted in significant difficulties in their ability to learn.

An unfortunate consequence of these tumultuous home lives was that some of the students in Janice's class, simply did not have the willpower to care about the classroom and their learning: "When they're coming… and like I said they're coming to class and math is the last—it's not an important part. What really matters? If you're coming from a home where you just—you have no food or maybe you slept on the floor and you didn't have a fresh change of clothes. We take for granted what we have, what we're given" (Interview 2: Janice). This raises important questions about the role a teacher plays in supporting highly at risk students such as these, how can the teacher combat all the external factors negatively impacting students' education? What can be done to help these students?

Whether through these extenuating circumstances, or simply students' educational backgrounds, there existed a dramatic range in levels of student understanding within the classroom. Some students were able to digest course content relatively easily and develop and demonstrate a clear understanding of mathematical concepts. Others struggled with basic literacy and numeracy:

> There's some kids who don't know how to read. There's some kids who are great. The could probably be in an academic or applied class for literacy. It's such a wide gap as well. I think it's the same with literacy and numeracy, if they've missed a couple years of schooling along the way and they've been bouncing from elementary to elementary… by the time they get—looking and testing them on where they are with numeracy and literacy, it's almost too late because they're moving on to the next school (Interview 2: Janice).

Janice continues to describe that according to one particular student's record, they had attended 14 different elementary schools before coming to her Grade 9 classroom. Janice struggled with what can be done to support these students and similarly, students with very poor attendance.

For those students performing drastically under grade level in terms of literacy and numeracy Janice was unable to definitively comment on whether or not students should be passed along:

> Just reflecting on my own kids, I know one of mine would be devastated if they were held back academically just because how sensitive they are. I could see that for sure—there's enough issues with the bullying and never mind, "Oh now you're in this class". But I also do see the benefit, if you are not there anymore, if you're not at that point academically, we're just going to keep pushing you through, and you're going to fall further and further behind? (Interview 2: Janice)

Students are often passed along in elementary school to remain with their peers or other social reasons despite having deficits in their literacy and numeracy skills. Janice expressed

hope that there should be some manner of support systems in place to help these students before these gaps are exacerbated in high school, commenting that there are summer courses students can take to improve their literacy, but she was unaware of any such programs for numeracy.

Caring for students (and relationships).

Upon first visiting Janice's classroom, it was clear that she truly cared for her students. She often engaged them in discussions about their personal lives, their interests, their hobbies, their families, their moods, and their struggles. Janice also made frequent use of the resources around the school including counsellors, administrative staff, the graduation coach, and more to learn as much about the students as she could. During many of our conversations before and after class, we would ask her about a particular student and she would be aware of the student's history, and have somewhat of an idea as to what was going on in their life outside of the classroom. Janice had a solid understanding of how vulnerable some of these students could be, and so sought to establish a supportive classroom environment for them. At times, this conflicted with her duties as a teacher, but Janice prioritized the student's well being over curriculum when needed:

> They're exhausted, putting their head down and then there's me, "Okay let's try some math". Sometimes you have to look at the most important thing: "Okay you need to have that time, you're safe here. You feel comfortable enough to fall asleep, maybe that's okay. You need that time right now". Or, "You just need to get something to eat and you know what, you're talking with someone, maybe getting counselling" which

> is helping them. If they're just coming here I think that's great. It may not be curriculum but it's helping them as a person (Interview 2: Janice)

As discussed above, many of Janice's students come from tumultuous or unstable home lives, and so making students feel safe and wanted, was always a priority for her. This nurturing and caring environment helped her establish a bond with many of the students within her classroom. Janice quickly realized how difficult it may be for students to prioritize their learning based on what her individual students were going through and often had to compromise: "Well… realizing that in the end, the math is important but sometimes if it's just getting them into the building, into the room and making them feel like it's a good place… just trying to know that I care about them and I'll help them in any way I can. I can't change a lot of it but I can be a positive supportive person while they're here at school" (Interview 2: Janice). This supportive environment seemed to have a noticeable impact on the students throughout the year, as seen in the student interviews. When discussing student engagement, the notion of relationship building and its importance was discussed:

> [Relationships are] very important, I think that's half of it. If the kids know that you truly care about them and you want their best interest then the kids will be more willing to do things for you, they'll feel comfortable with you. [Student's name] he—same thing. He would really need someone beside him working. He came in today just to relax, say hi, and hang out. I think it's important. You don't realize what impact you're having on them at the time and sometimes you're like "I don't feel like I'm doing anything". But sometimes after the fact… when you have conversations

> with them after and they come up to you or—because it's hard to really reflect while you're in the moment if you have made a difference (Interview 2: Janice)

The benefit of these relationships manifested in different ways, such as the student discussed above, who was involved in a legal conflict, but still made the effort to come into Janice's classroom during the exam break to salvage their credit. Janice not only emphasized the impact of her relationships with the students, but also their relationships with one another, and their relationships with the rest of the school community. Improving students' interactions with the rest of the school was a goal of Janice's culminating in her class combining with Amanda's for several classes in the week before Christmas break in which students worked in the foods lab. The relationships students forged with one another had a dramatic impact on some, allowing them to open up and even thrive. For example, Zachary befriending Marcus: "[Zachary] is a prime example. At the beginning of the year, trying to engage him in any task there was none. But then finding what works for [him]. Changing his location was the first step but he was not happy where he was sitting initially but when he befriended somebody and built that relationship right? It shows you what's important, those relationships, made all the difference" (Interview 2: Janice).

References

Baxter, P. & Jack, S. (2008). Qualitative case study methodology: Study design and implementation for novice researchers. *The Qualitative Report, 13*(4), 544-559.

Brown, E. R., & Saltman, K. J. (Eds.). (2005). *The critical middle school reader.* New York, NY: Routledge.

Butty, J. L. M. (2001). Teacher instruction, student attitudes and mathematics performance among 10th and 12th grade Black and Hispanic students. *Journal of Negro Education, 70*(1/2), 19–37.

Canadian Press (2016). Only 50% of Grade 6 students met the province's math standard. August 31, 2016. Posted http://www.cbc.ca/news/canada/toronto/eqao-math-results-1.3743666

Chronicle Journal (2017). Northwest schools below Ontario's low math average. September 22, 2017.

City, E. A., Elmore, R. F., Fiarman, S. E., Teitel, L. (2009). *Instructional rounds in education: A network approach to improving teaching and learning*. Cambridge, MA: Harvard Education Press.

Cohen, M., March, J. & Olsen, J. (1972). A garbage can model of organizational choice. *Administrative Science Quarterly*, Vol. 17, No. 1, pp. 1-25.

Corcoran, T., & Silander, M. (2009). Instruction in high schools: The evidence and the challenge. *The Future of Children, 19*(1), 157–183.

Craven, S. (2003). The state of mathematics education in Ontario: Where we came from and where we are. Paper presented at the meeting of the Canadian School Mathematics Forum, Montreal.

Cuban, L. (2001). *How can I fix it? Finding solutions and managing dilemmas: An educator's road map* . New York: Teachers College Press.

Doctorow, R. (2002). *Mathematics education: A summary of research, theories, and practice*. Toronto, ON: Thomson Nelson.

Education Quality and Accountability Office. (2009). *Framework: Grade 9 assessment of mathematics.* Toronto, ON: Queen's Printer for Ontario.

Education Quality and Accountability Office. (2012, May 31). Want Grade 9 students to do better on the EQAO math test? Retrieved July 20, 2016 from http://www.eqao.com/en/about_eqao/media_room/news_releases/Pages/counting-grade-9-test-in-course-mark.aspx

Finley, M. (1984). Teachers and tracking in a comprehensive high school. *Sociology of education*, Vol. 57 (October), pp. 233-243.

Haimes, D. (1999). Teachers' strategies for implementation of de-streaming in secondary mathematics. *Mathematics Education Research Journal, 11*(2), 59–69.

Hamlin, D. and Cameron, D. (2015). *Applied or Academic: High Impact Decisions for Ontario Students*. People for Education. Toronto: April 13, 2015.

Hargreaves, A. & Ainscow, M. (2015). The top and bottom of leadership and change. *Phi Delta Kappan*, Vol. 97, No. 3, pp. 42-48.

Hargreaves, A. & Shirley, D. (2009) *The Fourth Way: The inspiring future for*

educational change. Thousand Oaks, CA: Corwin Press.

Hurley, N. P. (2004). Once bitten, twice shy: Teachers' attitudes towards educational change in Canada. In P. Poppleton & J. Williamson, (Eds.) *New realities of secondary teachers' work lives* (pp. 57-75). Oxford, UK: Symposium Books.

James, C.E., & Turner, T. (2017). *Toward race equity in education: The schooling of Black students in the Greater Toronto Area.* Toronto: York University.

Jarvis, D. (2016). Messy but meaningful: exploring the transition to reform-based pedagogy with teachers of mathematics and coordinators in Ontario, Canada. *Teacher Development, 20*(1), pp 18-39.

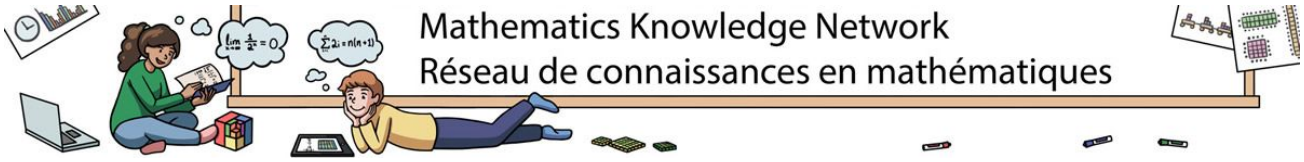
Kajander, A., & Zuke, C. (2007). *Factors contributing to success for intermediate students of mathematics: The needs of the teachers and the characteristics and needs of students at-risk.* Thunder Bay, ON: Northern Ontario Educational Leaders.

Kajander, A., Zuke, C. & Walton, G. (2008). Teaching unheard voices: Students at risk in mathematics. Canadian Journal of Education, 31(4), pp. 1039-1064.

King, A. J. C. (2001). *Double cohort study: Phase 1 report for the Ontario Ministry of Education.* Kingston, ON: Queen's University, Social Program Education Group.

King, A. J. C. (2002). *Double cohort study: Phase 2 report for the Ontario Ministry of Education.* Kingston, ON: Queen's University, Social Program Education Group.

King, A. J. C. (2003). *Double cohort study: Phase 3 report for the Ontario Ministry of Education.* Kingston, ON: Queen's University, Social Program Education Group.



Krahn, Krahn, H. & Taylor , A. (2007). " 'Streaming' in the 10th grade in four Canadian provinces in 2000." Ottawa: Statistics Canada. Available: http://www.statcan.gc.ca/pub/81-004-x/2007002/9994-eng.htm

Macaulay, A. (2015). Effective practices in grade 9 applied mathematics. (Unpublished doctoral dissertation). University of Toronto, Toronto. Retrieved from, https://tspace.library.utoronto.ca/handle/1807/71461

McDougall, D. (2004). *PRIME school mathematics improvement: Leadership handbook.* Toronto, ON: Nelson.

National Council of Teachers of Mathematics. (1989). *Curriculum and evaluation standards for school mathematics.* Reston, VA: NCTM.

National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics.* Reston, VA: NCTM.

Ontario Association of Mathematics Education. (2011). *Guiding Principles: A Vision for Learning Mathematics.* Retrieved April 10, 2011, from http://www.oame.on.ca/main/index1.php?lang=en&code=principles

Ontario Ministry of Education. (2000). *The Ontario Curriculum: Mathematics, Grades 11 and 12.* Toronto, ON; Queen's Printer for Ontario.

Ontario Ministry of Education. (2004). *Guide to locally developed courses, Grades 9 to 12. Development and approval procedures.* Toronto, ON: Queen's Printer for Ontario.

Ontario. Ministry of Education. (2004b). *Leading math success: Mathematical literacy, Grades 7–12. The report of the expert panel on student success in Ontario.* Toronto, ON: Queen's Printer for Ontario.

Ontario Ministry of Education. (2005). *The Ontario Curriculum: Mathematics, Grades 9 and 10 (revised).* Toronto, ON: Queen's Printer for Ontario.

Ontario Ministry of Education and Training. (1999a). *Ontario Secondary Schools, Grades 9 to 12. Program and diploma requirements, 1999.* Toronto, ON: Queen's Printer for Ontario.

Ontario Ministry of Education and Training. (1999b). *The Ontario Curriculum: Mathematics, Grades 9 and 10.* Toronto, ON: Queen's Printer for Ontario.

Parekh, G., Flessa, J., & Smaller, H. (2016). The Toronto District School Board: A global city school system's structures, processes, and student outcomes. *London Review of Education*, Vol. 14, No. 3, pp. 65-84.

Peel District School Board. (2005). Locally developed compulsory credit courses, Grade 9 and 10: Mathematics. Retrieved July 29, 2016, from http://www.edugains.ca/resources/CurriculumDocuments/LDCC_Math_9_10.pdf

Public and Catholic District School Board Writing Partnership. (1999). *Course profile (for a locally developed course): Essential mathematics, Grade 9.* Toronto, ON: Queen's Printer for Ontario.

Public and Catholic District School Board Writing Partnership. (2005). *Locally developed compulsory credit course. Course Profile: Mathematics. Grade 9 MAT1L.* Toronto, ON: Queen's Printer for Ontario.

Rothstein, R. (2008). Whose problem is poverty? *Educational Leadership*, Vol. 65, No. 7. Pp. 8-13.

Roulet, G., Cooke, G., & Lim, L. (1999). Something old, something new: A look at the new Ontario Grade 9 mathematics curriculum. Retrieved December 28, 2013 from the Ontario Association of Mathematics Education website: http://www.oame.on.ca/inserv.html

Schoenfeld, A. H. (2004). The math wars. *Educational Policy (18)*1, 253–286.

Slavin, R. E., Lake, C., & Groff, C. (2010). *Educator's guide: What works in teaching math?* Retrieved April 19, 2011, from John Hopkins University School of Education's Center for Data-Driven Reform in Education, Best Evidence Encyclopedia Web site: http://www.bestevidence.org/word/math_Jan_05_2010_ guide.pdf

Stetcher, B., Hamilton, L., Ryan, G., Le, V. N., Williams, V., Teacher #1yn, A., & Alonzo, A. (2002). *Measuring reform-oriented instructional practices in mathematics and science.* Paper presented at American Educational Research Association Meeting, New Orleans, LA.

Stodolosky, S. S., & Grossman, P. L. (2000). Changing students, changing teaching. *Teachers College Record, 102*(1), 125–172.

Suurtamm, C., & Graves, B. (2007). *Curriculum implementation intermediate math: Research report executive summary.* Ottawa, ON: University of Ottawa, Faculty of Education.

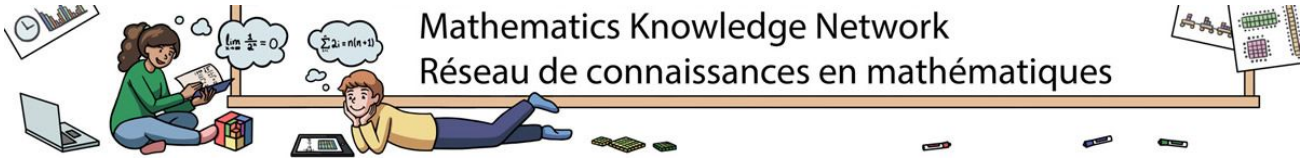
Suurtamm, C., Lawson, A., & Koch, M. (2008). The challenge of maintaining the integrity of reform mathematics in large-scale assessment. *Studies in Educational Evaluation, 34,* 31–43.

The Toronto Star. (2008, September 17). Grade 9 math scores on the rise. Retrieved July 29, 2016, from https://www.thestar.com/life/parent/2008/09/17/grade_9_math_scores_on_the_rise.html

Wang, T., & Cai, J. (2007b). United States teachers' views of effective mathematics teaching and learning. *ZDM Mathematics Education, 39,* 315–327.

Willms, J. D., Friesen, S., & Milton, P. (2009). *What did you do in school today: Transforming classrooms through social, academic and intellectual engagement?* Toronto, ON: Canadian Education Association.

Yin, R.K. (2014). *Case study research design and methods* (5th ed.). Thousand Oaks, CA: Sage.


Mathematics Knowledge Network
Réseau de connaissances en mathématiques

Appendix

Appendix A: Field Tested Resources

Giant Rubber Duck

2018.03.01 - Lesson Plan (Teacher Copy)
Grade 9 Locally Developed Math
MAT1L

Setting the stage: Students will engage in a "3 Act Math task" style activity for this lesson on the "giant rubber duck" that travelled around Ontario for Canada 150. They may work in small groups (2-3 students), but each student will need to record their own responses on the worksheet.

Minds On:

1. Show Image 1 (the giant rubber duck next to the CN tower)
2. Ask students what questions come to mind when looking at this picture. They may come up with some of the following questions on their own:
    1. Why is there a rubber duck next to the CN tower?
    2. Is this real?
    3. Why is the rubber duck so large?

Some background info on the giant rubber duck *(for teacher only):*

For the celebration of Canada 150, a giant rubber duck travelled from Toronto to Brockville as a tourist attraction throughout the summer. This attraction was popular throughout the summer of 2017.

1. To provide some answers to the student questions, you can show the students this video: https://www.youtube.com/watch?v=7evSoRGR0jo

After the class has watched this video,

1. Show Video 1 (ends with the rubber duck to scale)
2. Ask students to make a prediction on how many rubber ducks it would take to reach the same height as the CN tower
3. Record predictions on the board

Action:

1. Hand out worksheet to be completed and have students fill in predictions from part 1
2. Show students Image 2 (shows one rubber duck's height next to the CN tower)
3. Using this information, have them determine how many rubber ducks it would take to reach the same height as the CN tower

Consolidation:

1. Show students Video 2, which shows the answer to the question!
2. Reflect with students on the accuracy of their predictions
3. If there is still time left in the period, move onto the rubber duck sequel task

Rubber Duck Sequel Task

Minds on:

1. Show Image 3
2. Ask students to predict how many people it would take to outweigh the rubber duck
3. Record predictions on the board

Action:

1. Show students Image 4, which has the measurements required to perform this task, and ask students to complete the calculation
2. They will need to decide what "size" person to use, whether that be the average weight of a student or an adult. You can provide this information if asked or if there if confusion, or you could have them research this using their devices. If asked, you can use either 54 kgs (student, averaged between both males and females) or 82 kg (adult, averaged between both males and females).

Consolidation:

1. Once most students have completed this work, have students share their answers with one another and compare. The correct answers (based on the above numbers) are 166 adults and 252 students.

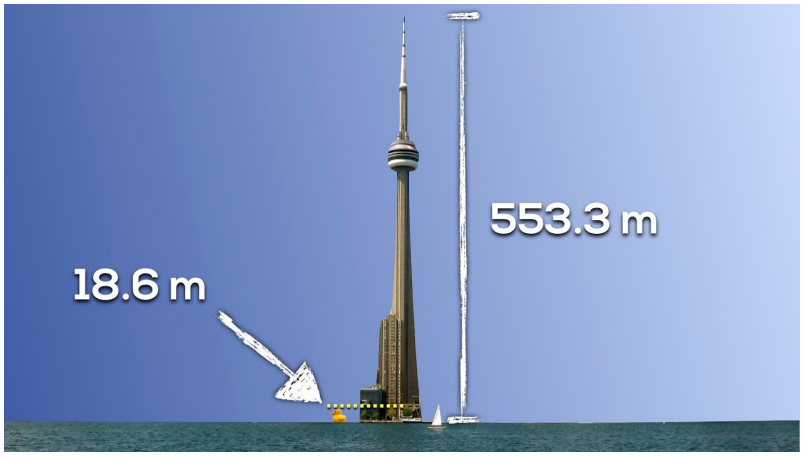
The Giant Rubber Duck Task!

Complete each of the questions listed below based on the images and videos displayed in class.

1. Based on the video, make a prediction on how many giant rubber ducks it would take to reach the height of the CN tower.

Prediction: _____

1. Calculate how many giant rubber ducks it would take to reach the height of the CN tower (see image below).



Space for Calculation:

Answer: _____

2. After watching the conclusion video, how close were your predicted and calculated values to the actual answer?

_____
_____
_____
_____

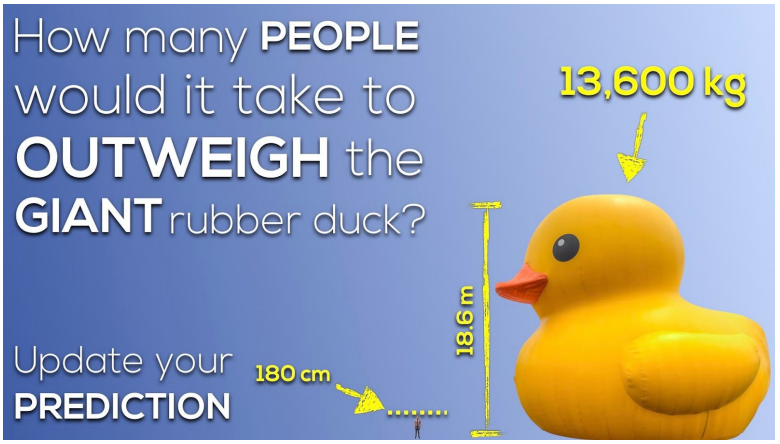
The Giant Rubber Duck Task: Part 2!

Complete each of the questions listed below based on the images and videos displayed in class.

1. Based on the image shown, make a prediction on how many people it would take to outweigh one giant rubber duck.

Prediction: _____

1. Calculate how many people it would take to outweigh one giant rubber duck (see image below).



Space for Calculation:

Answer: _____

2. Compare your predictions and calculations with a friend. Do you have the same answers of different answers?

_____
_____
_____

3. After hearing the teacher calculated answer, how close were your predicted and calculated values to the actual answer?

_____

_____

_____

- Flyer shopping activity
    - Conceptual, not yet field tested
- Blue whale ratio lesson
    - Tested on another level of learners, needs to be tested in LDCC
- Driveway paving learning & assessment tasks
    - Tested on another level of learners, needs to be tested in LDCC

Appendix B: Draft Resources

Shopping/Flyer Activity

Minds On:

- What kinds of things do you like to shop for?
- What about at the grocery store? We will be looking at the retailer Walmart (Safeway) for this lesson.

Action:

- Go to walmart.ca (take a look at this Safeway flyer). (Imagine you are having some friends over for a movie night in). You have $500 ($200) to spend at this retailer (before tax). You will need to look through the website and select at least one item from the following categories:
    - Clothing/Shoes/Accessories (Produce)
    - Groceries (Housewares/Cleaning)
    - Sporting goods (Frozen foods)
    - Arts & Crafts (Bakery)
    - Home (Dairy)
    - Electronics (Snacks (chips, crackers))
    - Health & Beauty (Deli)
- After about 10 minutes of searching, you learn that Walmart (Safeway) is having a sale divided up by department! Teacher link: http://www.superteachertools.us/spinner/spinner.php?title=Grocery+Store+Discount&directions=Click+the+wheel+below+to+spin%3A&colorscheme=color1&labels=10%2C20%2C30%2C40%2C50%2C60%2C70%2C80%2C90
- Make adjustments to account to be as close to (but not over!) the $500 ($200) limit. Discounts will range from 10%-90%.
- Fill in the table with the discounts
- Calculate your new total with the discounts! Are you under or over the $500 ($200)?
- Now we need to add tax on! Add 13% tax to the following categories: Housewares/cleaning, Frozen foods, bakery, dairy, snacks and deli. Your produce is fresh and is not taxed. Now, are you over the limit or under? What can you remove from your list?

Consolidation:

- At the end of the activity, how close to $200 are you?
- What did you spend the most money on and why?
- What did you spend the least on and why?
- What strategies did you use to plan your spending?
- Were you surprised that tax is only on some items? Did you forget about tax? Did it change your perspective on what to shop for?
- Do you feel more confident in your shopping abilities?

Department	**Discount**
Produce	
Housewares/Cleaning	
Frozen foods	
Bakery	
Dairy	
Snacks (chips, crackers))	
Deli	

Shopping Activity Worksheet

1. Take a look at the Safeway flyer provided to you. *Imagine you are having some friends over for a movie night in*. You have $200 to spend at this retailer (before tax). You will need to look through the website and select at least two items from each of the following categories:

    a. Produce
    b. Housewares/Cleaning
    c. Frozen foods
    d. Bakery
    e. Dairy
    f. Snacks (chips, crackers, etc.)
    g. Deli

Use the space below to fill in your shopping list:

Item	Cost	Discount	Cost After Discount	Cost After Tax
TOTAL:	TOTAL:	TOTAL:	TOTAL:	TOTAL:

Consolidation Questions

1. After discounts and taxes, how close to $200 are you?

2. Before discounts and taxes, what was your total?

3. What did you spend the most money on and why?

4. What did you spend the least on and why?

5. What strategies did you use to plan your spending?

6. Were you surprised that tax is only on some items? Did you forget about tax?

7. Did tax change your perspective on what to shop for?

8. Do you feel more confident in your shopping abilities?

Driveway Paving Task

Grade 9 - Learning Task

A local landscaping contractor (M. Valley & Sons) has recently contacted your paving company. They would like a price to pave a driveway/entrance way for a customer (Lakehead University) that they are currently employed by. The head estimator at M. Valley & Sons has informed you that they have done all the prep work (removal of pre-existing asphalt, installed and compacted new granular base material, etc). What they need is a price for is to pave only and they need it by the end of the day because LU is putting pressure on them to complete the job before school starts. The boss of your paving company needs you to do the following:

- Measure the driveway (roadway, at current width, from stop sign by the walkway up to the turn off for the parking lot)
- Create a to-scale sketch of the area to be paved
- A short summary of how you decide to measure the space and why you chose this method
- Calculate and record the following:
    - Area to be paved
    - Volume of asphalt needed to complete the job
    - Weight of asphalt needed

Notes

-
- Your drawing should include enough detail so that someone who hasn't visited the job site can easily understand the project and what needs to be done.
- Assume an average depth of 70mm of asphalt will be used
- Assume approximate asphalt density of 2.5 tonnes/m^3
- Use the attached blank page for calculations, etc
- Use attached grid paper for to-scale drawing
- You are encouraged to use any and all forms of technology to "figure out" information that you feel is needed
- Attach a copy of your calculations/justifications for areas, volumes, etc.

The Truth About Roll Up the Rim

Minds on:

- Show image of roll up the rim cups
- Ask students what they notice and wonder about the image
- Ask students to make a prediction about how many cups are winners?
    - Justify why they made their predictions (i.e. based on own experience, based on odds they have read about, etc.)

Action:

- Provide students with the odds provided by Tim Hortons
- Ask students to update their predictions
- Ask students to create the following ratios:
    - Winners : Losers
    - Winners : Total
    - Total : Losers

Consolidation

- Show students the results!
- Ask them to compare their predictions to the results
- Ask students to create ratios for the true results:
    - Winners : Losers
    - Winners : Total
    - Total : Losers
- Ask students - what are the odds of winning a prize in roll up the rim based on the results?
    - How does this compare to Tim Hortons' calculations?
    - Would this prevent you from playing roll up the rim?
    - Ask students: Each medium coffee costs $2. If you purchase 18 coffees, how much does it cost and approximately how many of your cups are going to be winners based on the results and TIm Hortons' calculations? Is it worth it?

The Truth About Roll Up the Rim Worksheet

1. After looking at the images in class, make a prediction on how many winning cups there are:

   Prediction:_____

2. After seeing the information provided by Tim Hortons, update your prediction:

   Updated prediction:_____

3. How does your prediction compare to the final results?

4. Create ratios for the true results:

   a. Winners : Losers _____

   b. Winners : Total _____

   c. Total : Losers _____

5. What are the odds of winning a prize based on the true results?

6. How does the odds of winning based on the true results compare to those provided by Tim Hortons?

7. Each medium coffee costs $2. If you purchase 18 coffees, how much does it cost and approximately how many of your cups are going to be winners based on the true results and TIm Hortons' calculations? Is it worth it?

8. Each medium coffee costs $2. How many coffees would you need to purchase (at one time) to ensure that you will have a winning cup based on the true results and Tim Hortons' calculations?

Appendix C: Year 1 Teacher Interview Transcripts

Teacher Interview Transcripts (Year 1 - June 2017)

Interview - Teacher #1

Kelly: Today is June 14th, 2017 and this is interview one. Thank you for participating.

Teacher #1: No problem.

Kelly: Please tell me a little bit about your teaching background.

Teacher #1: I've been teaching for 26 years. I started off in southern Ontario teaching grade 8's for seven years and then I moved back to Thunder Bay and I've been teaching high school for the rest of the time. I've taught at Hillcrest, I've taught at.. this and now I'm at Hammarskjold. I have taught all levels of math, you know from grade 9 Locally developed right up to the grade 12 Calculus.

Kelly: Tell me a little bit about your educational background.

Teacher #1: I graduated from Lakehead University with a BA B.Ed (Bachelor of Arts and Bachelor of education). Then I took AQ courses and also courses at U of T, so right now I have my specialist in religion, specialist in Co-Op and a specialist in Special Ed. I also got qualified for Phys. Ed. so I could teach physical education… I have my part one and part two

of that. And umm… I've attended numerous workshops on classroom discipline and other things.

Kelly: So what made you decide math was where you wanted to be?

Teacher #1: I enjoy math, I enjoyed it right from high school. I love doing math, so I always wanted to be working with students with math. I find that I relate with that, that I can communicate with them, that I can understand their difficulties… so I enjoy math.

Kelly: Was that in your teacher training at all, teaching math?

Teacher #1: In university it is a bit… it's not much though. You know because it's all the one year of education, back then. Now it's two years of education so they'll have more intense training. But they do… touch on it. But the real learning comes in the placements and hands on.

Kelly: In regards to these Locally Developed and Transitions Courses, do you believe the material covered in these courses is relevant to students?

Teacher #1: Well… Yes but you know, you have to sometimes make some adjustments to them. Sometimes it's not realistic what is being asked so you have to make changes, make modifications for what you have in front of you… with where the students are at and not be

caught up on exactly what the- you know, what the curriculum is asking. A lot of teachers have difficulties when they are given one of these courses that they just "Okay. I have limited resources but I have this piece of resource and I am going to go with this resource. They better understand it or otherwise if they don't get it, they are not successful." Usually, that's the wrong attitude to have, but it's unfortunate because these teachers that are usually teaching the locally developed are the rookies, not much experience. So they don't have a lot of tools to go with… mentors they don't really have a mentor to look up to, or to ask questions. You really need, I think, an experienced person that are teaching these locally developed classes and you can't just stick with, you know- you have to make modifications to the curriculum.

Kelly: What do you believe could be done to make the material more relevant to students?

Teacher #1: A project base. I think if it's more project based, topics that the kids would enjoy, would be interested in… I think that's the route we have to go. Even just the style or what you're expecting from the students in the classroom, having them maybe working more with each other to come up with a solution. More talking, which is a challenge to get these kids to do. But I would say making the course a more of a project base

Kelly: As opposed to what?

Teacher #1: As opposed to… what a lot of people do is they have their unit, they have their unit test, you know, very structured math.

Kelly: Very traditional?

Teacher #1: Very traditional yes! You've been in my classroom and you see that it's not very traditional. We're assessing, you probably have a question about assessment, but when we're assessing it's like, okay well, the test is one way that we do sometimes but it's not the final… you know if a student doesn't do well on it then I assess other ways. Having multiple opportunities for the students to demonstrate what they understand, that is key. The ministry assessment and evaluation is right on with providing students with a number of opportunities to demonstrate what they know but a lot of teachers aren't following… and you know maybe because of ignorance, or because it's a lot of work. You never know.

Kelly: Have you been involved in any professional learning that has helped to specifically support your teaching of Locally Developed or transitions mathematics? In any of the schools you've taught at?

Teacher #1: You know when you're in the PLGs the Professional Learning Groups that is with the grade 8 teachers that we have every year, we get a lot of… we have that group for professional development. Then even through PLCs within our school, within our department we're getting training for that too, which does help out with the locally developed.

Kelly: But it's not catered specifically towards it?

Teacher #1: Umm no it's usually—it depends on, for example the PLG with the grade 8s we would maybe look at certain topic and how would you teach this topic, looking at different types of solutions students have, their learning styles, what can you do differently… which you can use with your locally developed students.

Kelly: So Some of it does apply?

Teacher #1: Yes it does.

Kelly: Okay. Does your math department have any specific practices or initiatives that have been important in supporting Locally Developed or transitions mathematics?

Teacher #1: Well next… this fall is the first year we have an actual transition course for these grade 9 students coming in from grade 8. So that's huge, we never had that in the past. We've tried in the past to have all the grade 9 courses for a semester in one period, one slot, so that it would be easy for students to move up and move down. Not just moving down, giving them opportunity for the students to try the 9 applied and always be able to come back to the 9 locally developed. It's a nice concept to try for next year.

Kelly: That kind of back and forth mobility is relatively new idea?

Teacher #1: That's new as of this fall. We tried to do it in the past… it's so hard to get the scheduling done that way, but they were able to do that PLUS that transition course. So we have a transition course, 9 Locally Developed, 9 Applied and 9 Academic all offered at the same time.

Kelly: Oh okay interesting. Are there specific resources, human or material, that have been important to your school's past work with Locally Developed or Transitions mathematics?

Teacher #1: There's some resources. There are some resources that publishers have that were provided to all the high schools years ago. Some of it is a bit outdated. There's another resource that was provided it's… pretty good, that we have also.

Kelly: Which one is that?

Teacher #1: That one is… I can't remember who created that one, I could show it to you later. I pull a lot of information from it, it's pretty good. Then you know, just creating stuff on your own and researching on the internet, pulling resources, and coming up with resources. Now last year, well, in the past we've had people at the board that would support, that would give support to teachers, that were willing to be part of the project. We would have, it's like a consultant who would come in and do projects with your class, project based. That's very

helpful having that resource because it's… whenever you do project based, it's overwhelming to come up with the project. Designing it, coming up with assessment… it's a lot of work. It would be nice if we already had these projects already set in place. Plus it's nice to have support form the board office where someone is coming in. What would I like to see? I would love to see that continue. It's not continuing this year.

Kelly: Did the students respond well to that?

Teacher #1: They love it. They love it. They love seeing a new body in, and they love the project based stuff. Last year we did a lot of the compass work outside, we ended up—we did a lot of practice work in the school on school grounds and then we went to Old Fort [William Historical Park] for our culminating activity. Kids enjoyed it. Definitely. You know, it takes money too. In order for this to happen, you need funding from above and also the kids love the excursions but you need funding for that.

Kelly: Can you give an example of an unsuccessful resource or technique that you've tried in the past?

Teacher #1: Unsuccessful technique or resource? A technique, well with these kids you have to be very understanding. If a student is late you can't hammer down on that. You have to be very welcoming of them in the classroom or you're going to turn them off, you're going to turn them right off. You have to be very flexible in your technique. If it doesn't look like it's

going to be successful, the technique you're using, you have to be able to be flexible and change it. You have to be really… I guess knowledgeable on how to deliver different content.

Kelly: You're talking about changing mid lesson?

Teacher #1: Oh yeah, in the middle if something's not working well you have to maybe change it. For example those whiteboards that we use, remember those whiteboards? Have those off to the side and pull them—but again it comes down to funding. You know, we have one set in the class—in the school right. But yeah, you have to be very flexible in your approach I would say.

Kelly: Can you tell me a little bit about your department meetings at the school?

Teacher #1: They are called the PLCs, the professional learning committies, and they usually happen once every two months. Usually there's—usually we're looking at student work and what teaching strategies you used, we provide feedback on whatever the teacher—the teaching strategy, how could it be taught possibly different or what can be changed. That's basically, we just go through the PLC process.

Kelly: Would you say that there's time spent sharing teaching materials and approaches between each member?

Teacher #1: There is at the PLCs… but as a department we're always sharing material.

Kelly: Outside of these meetings?

Teacher #1: Oh yes. It's like… constant. We even have a shared drive for the department where we put a lot of resources in. So when I was the chair before I used to… I created and it's still there, every course we try to populate it with the resources for that course. Which is very helpful. Locally developed is limited [in] resources, there's limited… you know because there's one workbook that was created how many years ago, and now they just put out a new… they re-release it with some up to date numbers, with percents and stuff like that for taxes.

We share a lot of resources as a department. Maybe not at actual meetings but you see our math office we're always talking. Especially at the beginning of the semester or the year. If someone hasn't taught it before we share what resources we have with them. In terms of sharing resources for these Locally Developed kids… there's limited resources out there, so if someone's willing to put in the effort and time to create all these resources, then that would be beneficial not just to one school but to all schools.

Kelly: Is there any sharing between schools?

Teacher #1: No… there's just no time. Like if they set up meetings with where we can do that, but… the nice thing about teaching for so long is that you make a lot of friends and these people contact you in the future if they need something so… but you know it's not a formal sharing session.

Kelly: Has your school adopted any specific practices to support Locally developed or Transitions mathematics during classroom tasks? And I know you touched on this but what forms of assessment are typically used?

Teacher #1: In the classroom?

Kelly: Yeah.

Teacher #1: Well, a variety of assessments. It depends on the student. The one student I had, he's so strong, he's just challenging the exam. He dropped down from the 10 Applied to my 10 Locally Developed class so he is doing a different way of assessment. He wants to do the in-class exam so he's doing it that way. Other students, when I walk around I'm doing observation. I'm observing to see, and doing checklists, I record where they're at. Those kids, while I'm working on the task, they're getting a mark. They may be a level 1, level 2. I take a lot of anecdotal notes with that. Then I use a test once in a while at the end of a unit, I like to call it not a test, I like to usually call it an assessment at the end, where they're allowed to use their resources, their binder and you know if they're stuck on something I will come around

to give them pointers on what to do next but I'll take that into consideration. I use a holistic approach when I'm giving them their mark. I'm not… they had 10 assignments to do that's 10 marks… I don't enter that. It's more of a holistic approach in terms of levels to see where they're at. I find that very helpful. Instead of the traditional where they have their 5 or 6 assignments, their quiz, their tests and stuff like that. That does not work well with Locally Developed kids. I've been teaching it a number of years, it might work with a few kids, but the lower end kids, you have to be assessing them while they're working, otherwise you're not going to have much to assess them on.

Kelly: What do you think the most important thing a school can do to support achievement in Locally Developed or Transitions Mathematics?

Teacher #1: I think they… if they have the resources in place already, that's going to be huge. Providing the teacher with background knowledge of the students, like where are they at, in terms of the strands of math? The numeracy, where are they at? Giving the teacher this information ahead of time would be huge. When I was in southern Ontario teaching grade 8, we used to meet with the grade 9 teachers—sorry the guidance counsellors at the high school to let them know where they're at in their education. You're going to save weeks of pretests and all this stuff, collecting information. This way, it helps you set up what you're going to be doing the first week or so, if you're going to have to redo numeracy or whatever. It kind of gives you a starting point. I find that's very helpful, having the resources, having some money too so you can do these field trips, make it more meaningful for these kids. Knowing

what the interests of these kids are so that you can have this project based assessment going on in your classroom.

Kelly: That's interesting.

Teacher #1: Yes.

Kelly: What do you think the most important thing a district can do is to support student achievement in these courses?

Teacher #1: A district?

Kelly: Right, so at the district level. Besides funding. Although funding is an obvious one.

Teacher #1: Having these workshops, having sessions, even the OAME conference, having a section for Locally Developed kids like workshops there. I think they have to be more, you know the 9 Applied, the 9 Academics are taking a lot of the attention and maybe some attention has to be focused on the 9 Locally Developed. It seems like besides the funding, resources you know… limited resources that are out there. There's professional learning groups for the 9 Applied, why isn't there something for the 9 Locally Developed?

Kelly: Can you just briefly explain what the OAME conference is?

Teacher #1: The Ontario Math Association, every year there's a major conference, usually in southern Ontario and you just go to that, you sign up for a bunch of sessions that you want to attend. It might be an assessment, or technology session, stuff like that. But it would be kind of cool if there was a session for Locally Developed… imagine taking a Locally Developed session "How to succeed in Grade 9 Locally Developed Classrooms" or how students can succeed. Imagine if someone created that

Kelly: Because there's not any?

Teacher #1: There's very very limited stuff on that.

Kelly: What would you say are the goals of the Locally Developed and Transitions Mathematics courses?

Teacher #1: I would say to prepare them for the next level, to increase their numeracy skills, to have an enjoyment of mathematics, not to find it… a lot of kids find it frustrating. To enjoy math, to be life learners of it too, and prepare them for the next step.

Kelly: Where do you see these students going later in life?

Teacher #1: It would be really nice if you could get some students first of all, get them the credit because there hasn't been very much success I hear in that area. Make sure they're able

to get their credit and possibly have some success stories where students end up taking the 9 Applied afterwards. To be able to enter the workforce and be able to carry on in life and not struggle in terms of numeracy you know, be able to calculate the taxes and wage and not just go through life without having that knowledge, that understanding.

Kelly: You touched on this briefly but what would a typical lesson in your grade 9 Locally Developed course look like—or you're teaching grade 10 currently?

Teacher #1: Yeah I'm teaching grade 10.

Kelly: So what would a typical lesson in your class look like?

Kelly: How would you normally start?

Teacher #1: It's not… we use the Smartboard a lot for our lessons, a lot of teachers do that. I think you have to be really flexible with what you do, change things up a lot. You really don't want to get stuck in a traditional type of lesson I don't think. The kids like different types of things. Sometimes I introduce the learning goals for the day and then sometimes I provide them with the project based. But I try to stay away from the typical "You do your lesson and you do your worksheet" or whatever. The kids love using those whiteboards. Try to have a lot of hands on stuff for the kids to do during the lesson, if it's an investigation, inquiry type. I try to change things up, otherwise the kids will get really bored of it.

Kelly: On a typical day how many students appear to be paying attention?

Teacher #1: On a typical, it depends on what you're doing in the classroom. When I'm using those whiteboards, you saw how many kids that are on task, so there's a high number, a high percentage of kids on task when I'm using those whiteboards. If you are using the blackboard or smartboard then it's probably… the kids probably aren't as on task. I would say 60% on task, 40% off task.

Kelly: Do they typically participate for long, pay attention for long, or do they kind of fade in and out?

Teacher #1: These kids fade in and out. Even the strong students are fading in and out. I find that cellphones are a really big issue in the classrooms. Kids have a hard time putting the phones away. They feel like it's part of their body and they have a hard time with it. That's not just in the Locally Developed, it's in a lot of classes. A lot of teachers are saying the same thing.

Kelly: Do you ever incorporate cell phones into the lessons?

Teacher #1: I do and that's the thing. You want to use cellphones, when you're playing Kahoot or using a program, desmos or whatever. You want them to have their technology

available but then again some of my classes I have websites for so I like that they can go on the website and look at the lesson that we've done for the Academic kids. It's hard… it's new this technology, these phones so I think we're still trying to develop a way of handling these cellphones in the classrooms. I think it's going to take a few years to have a solution for it.

Kelly: Can you give an example of a specific lesson or task that you've tried in these courses that just didn't land with the students at all?

Teacher #1: Ummm

Kelly: You mentioned that typically traditional style lessons don't work. Is there a specific task that you've tried that doesn't work?

Teacher #1: A specific task? Whenever you give a kid a worksheet to do, if it's overwhelming, sometimes these worksheets are overwhelming, there's way too much on the worksheet. I would just say the traditional method is not very successful. It will maybe be successful for maybe 60%-70% if that of the students, but then you have 40% of the students that just weren't successful in your classroom because they don't… they have different learning styles. Specific tasks… I can't think of one right now.

Kelly: What advice would you share with other teachers that are working to improve their student success in Locally Developed or Transitions Mathematics?

Teacher #1: I would say hands on, lots of hands on stuff, use manipulatives, use games in your lessons. Kids love games, use games for introduction for assessing or reinforcement. I use smartboards for my lessons but on my smartboard might be a games type of situation going on to communicate it. You have to be very—you have to assess in very different methods, different ways. That is big, giving students a number of different ways to demonstrate what they learn. You have to be willing to do that also. The traditional methods of assessing are not going to be successful with these Locally Developed kids. Those are about the five- six things. You know what, also we have resources within the school. For example there's the FNMI teacher, I keep in contact with them, so I have a couple kids that spend time in the other room during the day and I let them know what's going on so that he's on them to make sure that they're doing their, for example, culminating activity. Pulling whatever resources within the school, make sure you're using it. Try to keep the parents up to date also because the attendance isn't usually that great so letting the parents know how their child is doing is valuable.

Kelly: What can you say about the consistency between different sections of the Locally Developed or Transitions mathematics, so maybe Grade 9/10?

Teacher #1: Grade 9 and 10 math you have the same units, it's just more advanced in the areas. You'd build on your grade 9 Locally Developed and that's grade 10. But you have to be careful on that because you have to move the students from wherever they're at. They

might be at a grade 7 level and that's where you're moving them, from the 7 to the 8. Even just tracking these, reporting on this, there could be a better way of doing that. They're in grade 10, you have the data, I mentioned this before, but from grade 8 to 9, but in grade 10 it's nice to see the data of how they did specifically in certain strands.

Kelly: Are student behaviours and achievement comparable? Perhaps between the 9 and the 10?

Teacher #1: Student behaviour… you've seen my class are there any behaviour kids? When you talk about behaviour, do you talk about behaviour as in lates, behaviour as in not following the rules? That's a hard question. With an inexperienced teacher I would say yes. But with an experienced teacher that's able to deal with the behaviour and maybe be able to prevent behavioural problems in the classroom. I would… as an experienced teacher I would say no, it's not. They're not correlated, there's no relationship between the two. If you're an inexperienced teacher there could be because you don't have the classroom control, that maybe a more experienced teacher would have.

Kelly: Do these courses receive the same levels of support as other levels of mathematics classes around the school, so compared to the Applied or Academic? Do they receive the same level of support?

Teacher #1: Yes. I don't see it being any different. When it comes to buying resources there's really not much out there and when you do want to buy a resource that's out there, usually there's no issues with it.

Kelly: What about resources in regards to time and energy devoted to it?

Teacher #1: Oh that's… I don't think we spend enough time on it. I think there needs to be more time. There's specific time given to these Applied, the grade 9 Applied but not, like I said before the 9 or 10 Locally Developed classes.

Kelly: How would you describe a typical student in grade 9 Locally Developed or Transitions mathematics?

Teacher #1: How would you describe a typical student?

Kelly: Yes

Teacher #1: That's a hard question to describe a typical student because there are so many different types [of students]. You have your… you might have a student that's super, super quiet and then you may have another student that's outgoing and like way ahead of everybody else in terms of academic level. I wouldn't be able to say… a typical student.

Kelly: Just a wide array?

Teacher #1: Yeah wide and you know some kids are really organized in these classes and some are not, they're having a hard time with organizing their notes and stuff like that. There's a wide, wide range of students in these classes.

Kelly: Would you say the range is wider than maybe in some of the other levels?

Teacher #1: Oh yeah, you know what, in the 9 Applied you have… the range is very small compared to… 9 Applied if you're a strong student you're in Academic, if you're a weak student you drop down to Locally Developed. Locally Developed students can't drop down to anywhere else. Now that we have the transition course, that's new. You have a wide range of students in these 9 and 10 Locally Developed classes.

Kelly: Are exceptionalities common in Locally Developed and Transitions math courses?

Teacher #1: What do you mean?

Kelly: Any behavioural exceptionalities, physical exceptionalities…

Teacher #1: You'd have a lot more in the Locally Developed classes. I would definitely agree with that.

Kelly: You've kind of touched on this but can you just elaborate, between any two students in a Locally Developed course is there a wide range in their abilities, can you give a specific example? Obviously not referring to any specific students but maybe just in general. You've hinted that some may be at a grade 7 level…

Teacher #1: Oh yeah. There's some kids that are… you know I have one student in my class that's answering all the questions so he is definitely understanding what's going on in here and then you'd have other students that are… you go around to see how they're doing or talking to them and they're having a hard time—they're struggling. There is definitely a range between two students.

Kelly: How do you try to accommodate these differences.

Teacher #1: Providing a variety of different methods of assessing them and even teaching strategies. You know, using those whiteboards are awesome, or using manipulatives, sitting down with the kids and talking to them, helping them that way is very helpful. Next year, I've asked for tables in my classroom. I'm pretty sure I'm going to be getting them. That's going to be good because it's a lot better that we will be sitting closer together and be able to talk about the math. What was the question I'm sorry.

Kelly: How do you accommodate the differences?

Teacher #1: Yeah so you have to be very flexible, use different teaching strategies and assessing strategies with the students.

Kelly: Do you differentiate it per student?

Teacher #1: I do… it depends. That one student I have, you've seen, he is… he is a very strong student so I give him the work and he wants to go the traditional way. He just wants the work, does it, done. I use whatever works for the students.

Kelly: Are you aware of the proportion of self identified FNMI students in your class?

Teacher #1: No. I'm not exactly sure the proportion, I would say, by looking at the students I have a pretty good idea of what it is. But I don't know exact numbers no.

Kelly: Have you received any professional development training which might support your training of FNMI students?

Teacher #1: We get some background knowledge about them at… maybe at staff meetings which turns into a PD session. Very limited I would say.

Kelly: Do you vary your lessons with the needs of FNMI students in mind?

Teacher #1: Yes I do.

Kelly: How so?

Teacher #1: For example, taking into account their culture. We were doing for example the circumference of a circle and I don't think you were there but you know the circles, and I gave them the different types, in their culture the different meanings of the circle and I asked the students to explain "What does this mean?" and it was kind of neat that they recognized them. You see a big smile on their face. We went to Old Fort William and learned about the tradition there. We brought in guest speakers in the past. We haven't this year, because of funding, and having the resources and time. I do take it into consideration. I definitely take it into consideration when I'm working with them

Kelly: Do they respond well?

Teacher #1: They love it, they love it when you talk about their culture or include that in any of your lessons, any of the projects or anything to do with that.

Kelly: That's great. What do you think are the biggest barriers to achievement in Locally Developed or Transitions mathematics?

Teacher #1: The biggest barrier?

Kelly: Barriers, as many as you have noticed

Teacher #1: I would say the teacher not being flexible when it comes time for assessment, the teacher's assessment strategies that they use, not being hands on- project based, in the classroom being traditional has not been successful, students attendance- having poor attendance, teachers not able to deal with it in terms of getting the students caught up, maybe not having strategies to get the students caught up. I mentioned assessment? Assessment and evaluation of how you assess these students. That's huge.

Kelly: What are the attendance numbers like in your class?

Teacher #1: I have a lot of students that I would say… for Locally Developed there's a cap size of 17. I have 17 in the class. Four students are from the special needs class so they're just getting certificates. They are very, very weak. They're working at a grade 1 or 2 level, some are grade 3 or 4 level. The attendance, they're usually coming in a little bit later every day. I have… I would say… 4 kids daily that are late to my class that are between 10 and 20 minutes. Giving detentions doesn't work, letting parents know- I let the parents know, going through the process of letting student services know, admin know. You go through all that but in the end it doesn't help too much. The kids… attendance is a huge part that you hear from other teachers, about poor attendance in these classes.

Kelly: How poor is poor?

Teacher #1: I would say between… anything over 25 days absent in the course.

Kelly: Is common for a student?

Teacher #1: Would be considered poor attendance, anything over 25 days.

Kelly: How many students, would you say have poor attendance?

Teacher #1: I would… out of my class I would say there'd be maybe 4 kids.

Kelly: Out of 17?

Teacher #1: Well there's 17 but 4 are from special needs so I'm down to 13. So I would say 4 out of 13.

Kelly: 4 out of that 13…a significant portion

Teacher #1: It's common in a lot of the classes, in a lot of the Locally Developed classes, you'd probably see that trend.

Kelly: Is there a correlation between attendance and student's achievement or success in the course?

Teacher #1: I would say yes to that. But the teacher can still assess a student other ways to get them caught up. If the teacher's an experienced teacher is willing to put in the time and effort being flexible in assessing the students other ways if the student missed whatever days, getting them caught up and assessing to see if they understand it. I find talking to students one on one, watching them do the question, helping them with their work really gives you a good understanding of where they're at. Using that as part of the, not only the formative assessment but the summative assessment.

Kelly: What would be suggestions that you would have that a teacher can do to improve student attendance. Obviously you can't find them and drag them to class but is there anything that teachers can do to improve the attendance in these classes?

Teacher #1: I think if you… communication with home, letting them know, sometimes that will help. Be very welcoming to the students, try to build a rapport with them. If a student is late, then welcoming them in the classroom, don't give them a hard time. Let students know when maybe there's a fun activity in the future, the next day. You may be doing a Kahoot at the beginning the next day. Letting them know any fun activities you're doing in the classroom.

That rapport is huge and keeping everybody informed in the school on how these students are, that'd be nice too. I let the FNMI teacher, I keep him updated all the time. Those students know that we're talking which is good. Communication is huge amongst other teachers. Those are some of the things they can do.

Kelly: How would you describe the student participation in your class?

Teacher #1: Depends on what you're doing. If they're interested in it, you have good participation, if they're not, you have limited participation.

Kelly: What forms of participation do you notice? Are students engaged as in they're keeping an eye on things, do they volunteer answers, do they talk about it?

Teacher #1: There's a wide range, you see if the students… you know there's a few kids who are very quiet. That's fine. But they might be doing their work. I find that if you are using manipulatives you can actually see them engaged or not. It really helps. Those white boards, it really helps to see that they're actually doing it and you can assess them really quickly if they understand the stuff. It's pretty easy to see if they're engaged or not.

Kelly: What types of off task behaviour do you encounter?

Teacher #1: Cellphones, doodling, a need to go to the washroom for breaks—but sometimes they need to get up and move right? I'm not hard on them with that. Maybe talking to their peers. But I get them on task pretty quickly when they're off task.

Kelly: What would you attribute the off task behaviour to? Just a disinterest or…?

Teacher #1: I think it would be not understanding the material, or they're not engaged because they're not interested in it. Depends on what you're doing.

Kelly: Do you think a student's personal life plays a role?

Teacher #1: Yes. I have that one student that's been coming late regularly and she has some issues going on. Being understanding and accepting, as you can see what I do (becomes distracted by someone in the room). What was the question?

Kelly: Student's personal life playing a role

Teacher #1: What's going on in their life is huge. They come with… some of these students come with baggage. I have one student who goes home for lunch, that's why they're late every day. They go home to eat. Yeah their personal life, you have to take into consideration what's going on in their personal life. That's why if you have a good rapport with them you can understand where they're coming from.

Kelly: Obviously not naming any names, can you give an example of some issues that these students are dealing with?

Teacher #1: Some issues?

Kelly: That you've experienced in the past maybe?

Teacher #1: Food, not having food. Students who have to go home to get it or they're going to—we have a setup here that if you're hungry you can go to a certain room to get food. Even in my class, sometimes students leave my class to go get food. That's a big one.

Kelly: Does engagement vary day to day? Even if the lessons are similar?

Teacher #1: Yes. The kids will get bored I find if you do the same thing too much over and over. That's why when you asked what's a typical lesson look like, I think you really have to be flexible and try to do different things all the time.

Kelly: You referenced cell phones earlier as an issue, how do you normally treat cellphone use during class?

Teacher #1: When I'm teaching I don't want them to have their phones on. Phones have to be off. That's how I deal at the beginning of class. Sometimes if they're working on a worksheet or something, I don't mind them listening to music when they're working on a worksheet or something, their task or whatever it is.

Kelly: In general what's the school's policy on cell phones?

Teacher #1: We don't have one. It's bring your own device. That's what we have. Teachers are making their own rules up within each classroom on how you want to deal with cell phones. We don't have really a policy in terms of cellphones are allowed in the school. It's up to the teacher if they want to—how they want to use them within the classroom.

Kelly: What do you do as the teacher when students just disengage entirely, when they "shutdown" so to speak?

Teacher #1: You have to find out why they're disengaged or shutting down. Did something happen? Personal issues going on? Sometimes they're exhausted. It depends, you know you encourage them to try and get back on task, maybe pull them out in the hallway to talk with them, see what's going on. You might refer them to the student services or speak to their counsellor, you may call home. If they're disengaged, there could be 100 different reasons. Just try to figure out what it is and go through the process of trying to figure out what it is.

Kelly: Final question, do you have any other thoughts or comments that you think it's important to include in the dialogue around supporting student success in grade 9 Locally Developed, grade 10 locally developed, or any transitions mathematics courses? Any thoughts or comments whatsoever.

Teacher #1: What I would like to see, we always say funding, how are you going to use the funding. I think we need to set up a group of teachers, experienced teachers and talk about the funding (if there's funding available), what would you like to see in the classrooms? Would it be instruction support, would it be manipulatives, what would you like to see in the classroom? I would say funding, having time to speak to other teachers, sharing resources, starting a committee—a group, where we meet regularly with other teachers and share what we know, what works.

Kelly: Specifically for these courses?

Teacher #1: Specifically for these courses and not for… and try not to attach this to something else. What you see being done. For example, you have your PLC, have the topic just be Locally Developed students. That's it. Instead of trying to attach it to something else. I think it needs more of a—it needs to be more in the spotlight. More time and effort has to be dedicated towards it. Any teacher that teaches it has to be flexible, their assessment strategies—they have to use a variety, that I mentioned. The experienced teachers have to be teaching it, not the new teachers that are coming into it, starting their profession.

Kelly: Do you think that's a common occurrence, of the newer teachers being placed as the teachers in these courses?

Teacher #1: Oh yes. Because they don't have the experience and not too many people want to teach these courses. Everyone wants to teach the Academic courses, so they don't want to teach these Locally Developed classes. And so, people with less experience end up getting these courses.

Kelly: That seems kind of backwards doesn't it?

Teacher #1: Oh yes, very backwards. See I have how many years experience? 20 whatever… 6 years, I have 26 years experience and I taught 10 Locally Developed first semester and I'm teaching it again this semester. I like working with these students. It seems like I know where they're coming from. I know that they might have issues, I'm very understanding, I'm very flexible and that's what you need with these students. I assess these students all the time, kids that are answering questions in my class. I'm keeping note of that, and assessing them using the ministry guidelines. A lot of teachers don't do that. And you have to follow those, you have to follow those. Does that answer the question?

Kelly: Absolutely, that's great. That's it. Thank you very much for your time.

Teacher #1: Only 54 minutes!

Interview - Teacher #2

Kelly: Today is June 15th, 2017 and this is interview 2. Thank you for participating in the study. Just so you're aware you can refuse to answer any questions whatsoever, any or all, but thank you for your time.

Teacher #2: Oh no problem.

Kelly: Please tell me a little bit about your teaching background.

Teacher #2: I've been teaching since 1992. I have a major in biology and minor in math. I've taught a combination of maths and sciences, I've done guidance, I have my special ed., I do student success. The last few years it has been primarily student success and math, as what I deal with.

Kelly: Okay, and tell me about your educational background, particularly with your teacher training.

Teacher #2: Oh well there we go! So again, biology major, math minor. After that I went back for my honours specialist and then well into my career—oh and also my spec ed. level 1 or whatever they call it. Well into my career I went and got my level 1 in guidance.

Kelly: Do you feel that your teacher training prepared you to teach mathematics?

Teacher #2: Yes, very much so. Especially with the combination of guidance, spec ed… yeah.

Kelly: Do you believe the material covered in Locally Developed and Transitions courses is relevant to students?

Teacher #2: 100%. It's all… everything they learn they *can* apply to real life. It is real life things that they need to know. 100%, it's applicable math.

Kelly: Do you think that they use it?

Teacher #2: Whether they actually use it or should use it are two different things. Should they use it? 100%. Do they use it? Some may… a lot don't.

Kelly: Can you give some examples of topics that you believe are relevant and that they "should" theoretically be using?

Teacher #2: Just for example being able to estimate the cost of something including tax, or being able to estimate how much change they should be receiving. I think a lot of kids you

could really soak them at the store by giving them incorrect change and they wouldn't have a hot clue because they don't bother to think about the numbers at all.

Kelly: Do you think that there's anything that could be done to make it more relevant?

Teacher #2: You know, other than just simply trying to touch on different cultures perhaps, more relevant locations because a lot of our stuff comes from southern Ontario… other than that, my view of the grade 9 Locally Developed is that it is life skills math. Every single thing that they do I am able to draw a real life example of when I use it, when they would need to use it, when they should use it. Really, other than perhaps touching on different cultures might make it a little more relevant.

Kelly: Culturally relevant?

Teacher #2: Yeah…

Kelly: Have you been involved in any professional learning that has helped specifically to support your teaching of grade 9/10 Locally Developed or Transitions math courses?

Teacher #2: Well I was part of the SISSYS project but to be honest I don't think that that kind of impacted much…Sometimes when we've done—and I'm bad at all the acronyms and the edu-speak—but sometimes when we've met with colleagues and often with grade 8 feeder school math teachers as well, I do appreciate the times when we get together and talk

about different approaches to how to do the same question. Because often there's all sort of different methods and tricks and things like that, so I do appreciate those. Primarily, sort of working with colleagues is one of the best PD.

Kelly: Okay, does your math department have any specific practices or initiatives that have been important in supporting grade 9/10 Locally Developed or Transitions math?

Teacher #2: I think transitions math has been completely—has been nonexistent. I don't think we really have transitions math. I think next year we are piloting a transitions math program, so that will be great. It's desperately needed. Other than that, not particularly. I don't think that there's been… other than teachers working independently but also we're all very good at sharing, sharing ideas, sharing resources. Really that's what we've been doing.

Kelly: Are there specific resources human or material that have been important in your school's past work with Locally Developed courses?

Teacher #2: I think the student workbook has been very handy. At times kids have worked with what we refer to as the Durham material, that our school board purchased the rights to use, and simply just pulling resources off the internet in terms of culminating activities and those types of things.

Kelly: Can you give examples of unsuccessful resources or techniques that have maybe been tested out in the past?

Teacher #2: No, and to be honest this is my first time teaching the grade 9 Locally Developed in the classroom, so I don't know what has not necessarily worked in the past. I don't think that the lack of success in the classroom for some of my students, I don't think is a function of the resources, it was a function of society.

Kelly: We can talk about that a little later. Can you tell me about department meetings here at the school?

Teacher #2: We do have department meetings every now and then. Not terribly often to be honest. Because I'm split between two departments I'm not necessarily always part of the math department meeting, because I'm also part of a different department.

Kelly: Oh okay. In the math meetings that you are at is there any time spent sharing those teaching materials?

Teacher #2: Yeah 100%.

Kelly: Enough time?

Teacher #2: There's…

Kelly: Never enough time? (Chuckles)

Teacher #2: Exactly, there's never enough time and sometimes you have to cover other things simply because you have to cover them and they're not things you don't really want to focus your time on, but you have to.

Kelly: Right

Teacher #2: Yeah…

Kelly: Has your school adopted any specific practices to support grade 9/10 Locally Developed during classroom tasks?

Teacher #2: Not that I am aware of no.

Kelly: What forms of assessment are typically used in these classes?

Teacher #2: Day to day there might be just small little activities that the kids complete day to day. After each unit, typically I had a task for the students that was like a real life application

of all the concepts that they worked with. Each unit I had a task and then I also had a test. The test focused more on the knowledge itself and whereas the task was heavily focused on real world application.

Kelly: How did the students respond to each of those respectively?

Teacher #2: To be honest, they prefer the test.

Kelly: Really? (skeptically)

Teacher #2: My experience is that they were able to do the test better than the task… because you know if you said "calculate 5% of blank" they could do it. But if you then put that in a real life application of "you earn 10 dollars an hour and you receive a 5% increase" all of a sudden they struggle with "do I add the 5?" etc. all of a sudden—first of all there's more words. They don't like words. Words throw them. Also, they struggle with just applying that math and know when that's applicable or how to use it necessarily.

Kelly: You think that they at least partially get bogged down in the language maybe?

Teacher #2: They do yeah, absolutely. Some of them, 100% get bogged down. Whether they're kind of intimidated by it or whether they do truly not have the literacy skills… it is a huge issue when you have kids coming into grade 9 math who—when you look at their

OSRs, were working at a grade 3 level. How is it that you can take a kid that is reading and doing numeracy skills at a grade 3 level and then all of a sudden they're in grade 9?

Kelly: How does that happen?

Teacher #2: Because they're passed along in elementary school.

Kelly: Just for the sake of…?

Teacher #2: No one fails. No one fails elementary. So every child is pushed through the elementary system based on age. They "graduate" with their peers and come to high school. In grade 9 they could be operating at a grade 3 level, 4 level, whatever level and they are simply "placed" in high school.

Kelly: What do you think about that?

Teacher #2: It's a massive problem. It's a massive issue. It's actually—I can't remember the specific statistics of how many of our students are in fact placed, but it's a shocking number of how many students are placed not "graduated". It's shocking… To me, I think that, we are not doing these kids a service by simply putting them into grade 9 classes. I think that any student who does not graduate legitimately grade 8 should be put into a transition program of

some sort and that transition program should focus specifically on literacy and numeracy. Because if you don't have literacy skills, well good luck in geography. Good luck in science. Good luck in English. You just—all of your courses will suffer if you can't read or write. And if you don't have your numeracy skills, again, good luck in science. Good luck in geography. We're setting them up for failure. Really we're either setting them up for failure and we fail them, or and unfortunately—not all teachers, but some teachers kind of pass them along again. Which is not doing anyone a service

Kelly: Are they kind of passed along from elementary to high school to remain with their peers? Is it the social component of it?

Teacher #2: Specifically. Yeah, specifically, all students basically are pushed along to remain with their peers.

Kelly: What do you think the most important thing a school can do is to support achievement in grade 9 or 10 Locally Developed, or even the new Transitions mathematics courses.

Teacher #2: One massive, massive, massive thing is that we need more SSP support in the classrooms. That's desperately needed. One teacher is not enough. The teacher needs the support emotionally, mentally… and the students, we need support for more of our students. The way that support funding is right now, basically, you have to have a student that is

behavioural. If you don't have a student that is behavioural then more than likely you will not have SSP support in your classroom. You could have an entire classroom full of IEPs and no one to help. And you're just one person. That's just with the IEPs. We're not even talking about social issues and all of those things that are part and parcel.

Kelly: What role would an additional SSP play in the classroom?

Teacher #2: They're just another body encouraging, moving around the classroom as a teacher does. When kids aren't in the classroom, tracking them down. They're invaluable.

Kelly: You have one in your class correct?

Teacher #2: Luckily, yeah. Due to a behavioural student.

Kelly: What are some of the benefits you see having that extra person there?

Teacher #2: He's really, again he's very good at kind of encouraging students to stay focused. He's really good at helping them out when they need help. You know, because sometimes if you can't get to a kid immediately, they kind of shut down. They want you there right when they need you and if you're not there when they need you, they'll get distracted or shut down.

Kelly: So how do the students respond to him being there and him helping?

Teacher #2: Great. It's nice. Even though this particular SSP is tied to one student with behavioural issues, he helps all students within the class. Whether you are IEP or not. He just helps ALL of the students. It's nice having that extra body.

Kelly: What do you think the most important thing that a district can do to support student achievement in the Locally Developed Transitions courses?

Teacher #2: The problem with the Locally Developed and the Transitions course to a large, large, large extent however is that I think the issue is largely societal. It's where they're coming from and what importance has been placed on education, what importance has been placed on attending school. I think the issues that we are facing in grade 9 didn't just simply surface when the kid popped out of elementary school. They are deep rooted issues that started before the kid started school. I think that in order to help the kids in grade 9, there has to be programs in place for helping get kids into elementary school, attending elementary school on a regular basis and putting more of an importance on education, helping families understand that education is important and that going to school is important.

Kelly: What would you say are the goals of the Locally Developed and Transitions math courses?

Teacher #2: For me, my goals when I teach Locally Developed in particular, I've not taught the transitions but again the same thing would apply, for me there's two kind of separate goals. One is a mathematics goal. Of course you want them to learn the particular curriculum expectations that will help them in life. But my other goal as well is to try to start instilling with them, life skills that are not specific to math. Showing up is a life skill. Showing up *on time* is a life skill. Showing up with what you need to work with is a life skill. Being in class and **staying off your phone** (extreme emphasis)… those phones are the worst thing for this generation. But staying off your phone is a crucial life skill. Like you will be fired if you're on your phone that much. For me, it's not just the math component, it's the life skills. Use your manners, be respectful of others, be respectful to yourself. Respect yourself enough to come on time, do what you need to do, get the credit, get an education to hopefully have a better life. A life that you will enjoy and that you can contribute and be independent.

Kelly: What would a typical lesson in your grade 9 Locally Developed class look like?

Teacher #2: With my particular class, we do have a workbook. I use the smartboard and so everything that we do is kind of up on the smartboard. Typically, I'll start with a general introduction of what we're going to be learning that day, why we're learning what, again I always tie it in to real life. Then typically, we'll kind of work on a concept, I'll give them some time to work on that concept, and then we'll kind of revisit whether we take that concept a little further we'll revisit it and then I'll give them time to do it again… time on

their own. It's really kind of short snippets, it's never simply "here it is, now go tour". It's just kind of, short, little segments and checking in with them and seeing how they're doing.

Kelly: How do they respond to that?

Teacher #2: Good. In terms of… I think they respond to it well. When they are there, generally they will do their work. The odd day you have some kids that simply are not engaged and refuse to engage for whatever reasons. For the most part, they're good at doing that.

Kelly: The portions in which you're talking and explaining a concept, how many students appear to be paying attention? Do they typically pay attention for long, or do they fade in and out?

Teacher #2: Again, if you're looking at let's say—my classroom I think I have eighteen students approximately. I will be lucky to have 10 in attendance on a consistent basis. Some days are really great, and it's like "Hello everyone!" they turned up! But other days will be super poor attendance. You have slightly over half of your class showing up on a regular basis, of those present probably 3 maybe even 4 came quite late. Those that were actually there from the beginning… it's hard to say. In terms of—and again you may have 1 or 2 that simply kind of shut down and not doing anything. It really varies from day to day. I would say on a consistent basis maybe a third of the class is there and focused and doing what they should be doing. Unfortunately, with the class that I have, and it's not necessarily the same

every year, every year it's a different beast, two thirds extremely spotty attendance, come in late, aren't engaged.

Kelly: Do you use similar instructional methods every day or do you use a variety?

Teacher #2: Depends on what we're doing I would say a variety but on the whole similar. Because I think too, to a degree a lot of the students are comfortable with knowing what to expect. A lot of kids don't—they're comfortable with routine. They know what to expect, they know what we're doing. For the most part I do definitely have a consistent pattern.

Kelly: How does that go on average?

Teacher #2: For those who come and for those who are doing what they need to do, they do very well. The sad reality is and I tell the kids this at the very beginning of the semester "If you come, you will get your credit". It's a course that if they were to come and just do what is necessary, they would receive the credit. The kids that did come on a consistent basis, they could have struggled mathematically, but they receive the credit. They did what they had to do, they demonstrated that they knew what they needed to know, you know, enough of. The big, big, big, issue is attendance. Even the kids that kind of disengaged and whether it was because of behavioural, but they disengaged, on the whole they were there and they got their credit.

Kelly: Are there techniques that you use that you think students respond better to? Particular segments of your lesson perhaps?

Teacher #2: It's hard to say. I think in terms of responding, for one thing, my door is always open. I don't'—this doesn't have anything to do with my lesson but my door is always open. Even if a kid is 15 minutes late, 20 minutes late, half an hour late, they can come in. It's not as if they approach this closed door and then think they are going to get in trouble. Even if they're late, of course I tell them I would like them to try and be on time, but I always welcome them into the class. I don't get angry, I don't give them a hard time. If I did, they wouldn't come. Better late than never.

Kelly: You say with your evaluation they respond better to tests, can you give an example of a strategy or lesson that just doesn't work, or an assessment that just doesn't work for them? One that you don't use or shy away from it, because of its ineffectiveness?

Teacher #2: Nothing take home because if it goes home, the likelihood of it coming back is zero. For these kids in particular, a big reason why they are successful—those that are successful a big reason, well part of the reason they are successful is that their work never leaves the room. I'll simply give it back to them the next day and have them finish it, but they will always hand in their stuff… if they are there.

Kelly: What advice would you share with other teachers that are working to improve their student success in Locally Developed or Transitions mathematics courses?

Teacher #2: With the Locally Developed and Transitions I would say a huge, huge, huge aspect of it is not necessarily your math skills ability, it is how you relate to the students. If

they don't like you, they will not come. If they think that you don't like them, they will not come. You have to have a welcoming environment. You have to try to relate to them somehow and make them feel safe, make them feel valued. You have to let them know that it's okay to make mistakes, that everyone makes mistakes, that often it is through mistakes that we gain our greatest knowledge and learning. Really it comes down to a safe environment, welcoming environment because if you don't have those they won't come.

Kelly: What can you say about building a rapport with students, and the effects of that?

Teacher #2: They're huge. Again, it can either make or break. It's not that necessarily you can form a good rapport with all of them. You can do your best but you won't necessarily be successful. A lot of the kids sadly in the Locally Developed and Transitions have personal issues that we have no concept or understanding of what these kids are going through. Some of them have such huge walls that you might not form a good rapport… but your rapport can be an absolute make or break.

Kelly: What can you say about the consistency between different sections of Locally Developed or Transitions math classes. For example, are student behaviours and achievement comparable, between the grade 9 and 10 perhaps?

Teacher #2: I can't really comment on that because I have not taught grade 10 Locally Developed.

Kelly: As far as you're aware do these courses receive the same levels of support as other levels of mathematics from the school, so between the perhaps the applied and academic streams?

Teacher #2: I would say yes.

Kelly: Would you say they receive the exact same amount of support or do they receive any extra support?

Teacher #2: I think that the support my Locally Developed class received in particular is not necessarily a function of the level of the math but it's more of the majority of my students. The majority of my students identify as FNMI. The fact that vast majority of my class were FNMI—I had a lot of support, I have a lot of support through our graduation coach, our Aboriginal tutor. Again it wasn't because we were Locally Developed, it was because the students that I had.

Kelly: Right, the demographics.

Teacher #2: Right so even if I were teaching an Academic class, if I had an FNMI student, I would have received help for that particular student as well.

Kelly: Okay. We kind of hinted at what I want to ask you about next, how would you describe a typical student in grade 9 Locally Developed.

Teacher #2: In my experience, which isn't vast, with the grade 9 Locally Developed, but in my observation as a teacher on the whole as well, our Locally Developed classes are full primarily of FNMI students. There are… well my class in particular I have 18 kids and I think 3 do not identify as FNMI, just to give you a number. A huge majority. Sadly, another kind of constant within Locally Developed is stereotypically they also come from lower socioeconomic backgrounds. Also, from families that they themselves don't have much education, stereotypically.

Kelly: Do you think that has an effect on their learning?

Teacher #2: A huge impact oh yeah. Some of these kids receive encouragement or help outside of school but a lot of these kids in my opinion don't receive a lot of encouragement or assistance outside of school.

Kelly: Are exceptionalities common in Locally Developed?

Teacher #2: They are. You do get more students with IEPs in the Locally Developed absolutely.

Kelly: Is there a wide range in ability between any two students?

Teacher #2: Yes

Kelly: Can you give an example of how big that difference can be

Teacher #2: It can be… you can have within a Locally Developed class a student that is there, who are extremely capable but were placed there perhaps in error, so they're moving up. I have a student who did absolutely amazing all semester, great attendance, when they were away found out what they missed, they caught up on what they missed, focused every single day. That student should have been in applied and luckily that student is going to be moving up to the applied next year. That's great. I have that student, and then I have other students that they will ask, you know, you're talking about a question you'll say "Okay well we should subtract" and they'll ask what does that look like on their calculator… like they don't know that subtraction is the subtraction button or—some of them seem to have very little knowledge of number concepts. Even though you've kind of modelled within your example, you've used the multiplication symbol, yet they still ask "What do I press on my calculator to multiply?" There's a huge, huge range within the classroom.

Kelly: How do you accommodate those differences or attempt to? That's a tall order.

Teacher #2: It's a massive tall order. Luckily there were no—it's not as if within the classroom I have behaviour issues at all. There were no behaviour issues within the classroom. The worst behaviour issue is putting your head down on your desk and not bringing it up. Although a task, if you're extremely capable, may take you just a small portion of the period, that kid was then able to work on something else or just—they weren't behavioural after they finished. I try as best I can to kind of find that happy amount that if you truly struggle, you're not overwhelmed, that you have time to work on things. If you're

strong and you just whiz through things, you're not disrupting. Really that's kind of the best and just always circulating and checking in and trying to help out as best you can.

Kelly: Would you say that certain tasks need to be differentiated per student?

Teacher #2: In a perfect world, we would have the time and the resources to do that. That's not reality. Certainly… yeah that's just simply not reality. In terms of giving different tasks to different students no I did not, they all received the same task. Did I kind of use more of a holistic marking? Perhaps, yes. Sometimes, especially with the tasks I levelled them as opposed to "right, wrong, right wrong, right wrong", I would level them. If a kid was able to demonstrate enough, level 1, level 2 and that type of thing.

Kelly: You commented on the proportion of self identified FNMI students in your class, have you received any professional development training that might support your teaching of FNMI students?

Teacher #2: We have. We've had to watch particular videos and we've had speakers come in and talk at a staff meeting, that type of thing. Personally, I believe yes, I think that I have received enough training to teach FNMI students. I think so.

Kelly: Can you give some examples of how that's helped your teaching?

Teacher #2: To understand some of the different cultural behaviours. Just small things like they won't necessarily make eye contact but they're not being rude. Just small things in terms of interactions with them.

Kelly: Do you vary your lessons with the learning needs of FNMI students in mind?

Teacher #2: Not FNMI students specifically no. I think that a lot of the similar strategies work for all kinds of struggling kids so I try to—yeah I wouldn't say differentiate it specifically for FNMI [students] no.

Kelly: You touched on a bit of these but if you had to list them, what do you think the biggest barriers to achievement in Locally Developed and Transitions mathematics courses are?

Teacher #2: Attendance is huge. The skills that they're coming… and a gain the fact that so so so many of them are simply placed in grade 9, that they don't have the literacy skills or the numeracy skills. And so, you're really… starting from way back.

Kelly: You say attendance, you've said attendance several times, what are the attendance numbers like in your class? You say on average you're lucky to get 10 students, how does that equate to total absences per student at the end of the term?

Teacher #2: heavy sigh* I have some students with a—a good attendance in that class would be 15 or less absences.

Kelly: Out of how many in the semester?

Teacher #2: Approximately 90. That's probably good attendance, 15 or less. I have students with absences into the 30's, 40's, 50's 60's…

Kelly: Wow.

Teacher #2: Yeah.

Kelly: You commented on late students, can you just describe a little bit more about your approach to late students? As you mentioned it's common for students to come late…

Teacher #2: Yeah…It is quite common for students to be late. Whether those same late students would have been absent because as well, because we do have the graduation coach and the Aboriginal tutor. One of the things that they do is between classes, they go scouring the school basically for my students. They know who I have so they basically go around and scour the school for students and try to send them off to the appropriate classes. Quite a few of my students who come in late are in fact "escorted" to my class. Had they not been escorted, they might have in fact been absent. Regardless as to how they got there, whether it was their own choice or whether they were escorted, again it's simply "Oh hey! Nice to see you, welcome" you know? I just roll with it. I don't get angry. Of course whenever I make contact with the parents or the guardians, or the… home parent, I do of course express my concern regarding their attendance, regarding their lates. At no point am I—I don't get angry with them because that won't work.

Kelly: How do those students respond to being escorted to class, are they kind of obstinate?

Teacher #2: No… no. They're generally not obstinate, they'll just—it's kind of like "oh I was caught, okay. Now I'm here". Some, the odd time, depending on the student, they didn't want

to be there in the first place and then they were escorted and so even they've been escorted and they're sitting in class, they'll sit there and do nothing because they didn't want to be there in the first place. Really there's **nothing** you can do about it. Nothing. You can encourage, you can—I wouldn't say get angry because I don't get angry, it's pointless to get angry, but no matter what type of encouragement, if they've decided they're not going to do anything, they are not going to do anything.

Kelly: Do you believe that there is a correlation between a student's attendance and their achievement and/or success in the course? You kind of hinted on this.

Teacher #2: 100%

Kelly: To what degree would you say?

Teacher #2: 100% *chuckles* Honestly, if they came, they would pass. It's as simple as that. If they came to class on a regular basis, they would get the credit. I have no doubt about it.

Kelly: The students that are there more regularly, typically have higher marks?

Teacher #2: Every single student that came on a regular basis, even if they struggled mathematically, received their credit.

Kelly: And what about in regards to chronically late students? How do they fare, compared to the rest of the class?

Teacher #2: Chronically late or chronically absent?

Kelly: Chronically late we'll say.

Teacher #2: Chronically late… unfortunately those that were chronically late were also tended to be chronically absent so they kind of went part and parcel. Those students it's honestly hit and miss. They are at risk of losing their credit because as well you know, at the end of the school year, we have our culminating activity and culminating exam, and again they're not showing up! Despite saying "I need you to show up, I need you to do this, then you can get your credit" and they're not showing up. What can you do?

Kelly: For the students that are there, how would you describe their participation in your class?

Teacher #2: It was extremely varied. I had some students that would participate, answer questions… you know they were very much—I wouldn't say that the other ones were not engaged but these ones were very perceivably engaged. I think largely because I have such a huge FNMI group of students, they—and again stereotypically, this is not true of them all—were not as vocal. When I was kind of asking the class questions I might get a nod from some. I might, if I wanted kids to put up their hands, "who got it?", some might put their hand up. Most wouldn't put their hand up.

Kelly: Regardless of whether or not they have an answer?

Teacher #2: Yeah regardless. You could ask a question as simple as "1+1", let's just say I had the need to ask "what's 1+1"? Even though I know that they knew the answer was two I

would be lucky to have some of them very discreetly put up two fingers, and I would really have to kind of look for those two fingers. Whereas I would have other students saying "TWO!" but typically they weren't FNMI students as well. It was not much participation on the whole in that class.

Kelly: What about engagement? How would you describe student engagement overall even if they were not necessarily participating?

Teacher #2: Engagement on the whole I would say is good. Again, if they are there, engagement was good. Therefore, if they were there, they would get the credit because typically they were engaged when they were present.

Kelly: What types of off task behaviour do you usually encounter?

Teacher #2: I will not swear but cellphones. Cellphones are horrible. I refuse to take cellphones because they are far too valuable.

Kelly: And you're liable if something happens to them?

Teacher #2: Exactly. Also, 100% guaranteed if I told some of those kids, "give me your cell phone", they would not give me their cell phone. It would escalate into a huge thing that would then perhaps roll into the next day, you know what I mean? So I could by saying to a student, "give me your cellphone", it could become a behavioural thing that would side rail the whole semester. I am not going to touch them because they are far too expensive and it could become a liability type thing. I don't want to be held responsible for that cellphone. I

will constantly tell them to put it away if it is an issue but they're sneaky and they bring it back out. I don't mind if kids when they're working independently plug themselves in and listen to music, I was the same way, so I don't mind that at all. Kids don't have calculators, but they all have cell phones, so I don't mind if they use it as a cellphone—sorry as a calculator, if only they could have some self discipline. But cellphones are a massive, massive issue. They just do not have the self-control, they are addictions and it's horrible.

Kelly: Do you ever incorporate cell phones into the lesson.

Teacher #2: Yes but not from a standpoint of—in terms of like using them you mean?

Kelly: Yes

Teacher #2: In terms of sometimes, looking up for example different taxes in different provinces, the kids were using them to find that. And that's fine! 100% there are times where you could use technology well, and often kids will ask me a question and I have said "Well this is a good time to use your cellphone because you can google that", you know what I mean? It's like they have this information in their palms but they don't think to use it to gain information. They're just so addicted to the social media aspect.

Kelly: You touched on this briefly earlier, do you think a student's personal life plays a role in their engagement?

Teacher #2 :Huge.

Kelly: Can you give some examples of potentially how it could be affected?

Teacher #2: So many of these kids have not been—they've not had the importance of education instilled in them, so many of them have in fact not attended school on any regular basis in all of their years of education. When I make phone calls home and say that a student wasn't in my class and you just kind of get "Oh they left this morning". As a parent, and I say to them, as a parent I would be really worried as to where are they and what are they doing if they're not where they should be? So often, it just doesn't really seem to phase them, that they're not in class. I think education hasn't been valued, going to school on a regular basis hasn't been instilled, the importance of it. From that standpoint I think—so how can we in grade 9 all of a sudden turn that around? I think that again, that's something that has to be addressed right from when they're stepping into S.K./J.K.

The sad reality is that so many of our students have lives that again, we **cannot** even begin to comprehend. They aren't coming to school maybe because they're babysitting younger siblings. They aren't engaged because they didn't sleep last night because there was a party going on at their house and so they couldn't sleep. Maybe they've been kicked out of their house. Maybe they didn't really eat last night or eat this morning. Some of them have lives I think that they do not—they don't really share with many people. They've experienced things and seen things that we have not and could never really wrap our heads around. I think that they're baggage and their background, has a huge—forms a huge obstacle for many of them.

Kelly: How does engagement vary from one day to another?

Teacher #2: For the most part, kids are fairly consistent I would say, when they're present. They have fairly consistent engagement. I have a few students who can really swing from completely engaged and getting things done and asking questions, on task to putting their head down and refusing to put their head up.

Kelly: Why do you think that happens?

Teacher #2: I do not know *chuckles*. Not a hot clue, not a hot clue. I don't know how their little bodies work, and their little brains work and why one day they can go from absolute[ly] fabulous to yeah, not putting their head up. I don't know. Others will kind of be digging their heels and be super stubborn and not necessarily get stuff done. A phone call home makes a massive difference and then badaboom they're back on track for the next few days and then I might have to make another phone call home. That type of thing. Sometimes the home can be very supportive when need be.

Kelly: You've talked about this a little bit but students just putting their head down and shutting down, how do you approach that?

Teacher #2: To be honest, I try to encourage them as much as I can. I do not get angry and to a degree you have to know the student. There are some of them that I might try to be a bit tougher on and kind of like "Hey come on let's knock this off. Get your head up etc.". I don't get angry. I think that's pointless. I don't want my own blood pressure going up, so I don't get angry, I just don't. For the most part I just kind of write off that day and "okay their

head's down, I can't get their head up so hopefully tomorrow is a better day". I'll even say to them "you're obviously not having a good day today, hopefully tomorrow is a better day".

Kelly: Do you have any other thoughts or comments that you think is important in the dialogue around supporting student success in Locally Developed and Transitions math courses, anything at all? Any comments you'd like to share to put out there, perhaps something we haven't addressed already or something you want to emphasize?

Teacher #2: I think that the root of the issue with grade 9 Locally Developed and Transition occurred long before grade 9. Really that's where the focus needs to start. Yes of course we can't wait for that trickle down effect, so we can try to do our best with the grade 9's currently. Really the root comes as soon as they enter J.K. It's the elementary where we really really need to focus on engaging and getting students to attend regularly and getting the home encourage their young ones to be successful in school.

Kelly: Heavy stuff.

Teacher #2: It is. It's massive. It's not—the issue is not math, the issue isn't math. The issue is society. Societal issues, there are barriers to these kids being successful in math. We can't just tweak the math and expect them to be successful. We have to somehow solve the societal issues that will allow the kids to be successful in the math.

Kelly: That is all. Thank you very much for your time.

Teacher #2: My pleasure.

Interview - Amanda

Kelly: Today is Friday June 23rd and this is interview number 3. Thank you for your time.

Amanda: Yeah no problem Kelly. It's a privilege *chuckles*

Kelly: Tell me a little bit about your teaching background.

Amanda: Varied. Started at Churchill, was three for a number of years. I started in the business department and then moved into the mathematics department and very quickly became the chair of the mathematic department. Became a leader in that school in terms of change for mathematics so then I took advantage of an opportunity at the program department, which allowed me to supervise all high schools and math departments. Therefore, last 5 years I was very much the voice for secondary mathematics for our board and then needed to implement a lot of things I was looking at changing back in a school myself so I'm now at Hammarskjold, been here for a year and trying to move forward with some of those ideas.

Kelly: Tell me a little bit about your educational background.

Amanda: I've been with the board for a number of years in different capacities before I was even teaching. Prior to that I had worked towards a business administration degree. Individual in society minor, business and then math I wanted to get my honours in math so math degree, I got my honours specialist in mathematics and that's where it led, to the leadership roles I have.

Kelly: Did your teacher training prepare you to teach mathematics?

Amanda: I'm going to say it prepared me for—I'm going to be honest no. Not to the capacity I need to see it happen as now, because I'm still learning. To feel that I was at all prepared, I think I was advised and I was made aware of the things I needed to know but it wasn't until I had interaction with students and their needs that I actually learned how to teach mathematics.

Kelly: How long have you been teaching total?

Amanda: 16 plus 5 in another so, 21 years teaching.

Kelly: Do you believe that the material covered in these courses is relevant to students, these courses being the Locally Developed and Transitions Math courses?

Amanda: Good question. The transition course, because it is going to be something that I am engaging in this fall, I hope that the content will absolutely be relevant to students and that's the purpose. Not only to be relevant but to have students learn about being a learner and how

to learn mathematics through a lens of real world mathematics. The applied program at this point and the Locally Developed, yeah there are relevant topics absolutely, but maybe the way they are delivered or the way students are perceiving them are not relevant to students.

Kelly: Can you give an example of a topic?

Amanda: This year I worked very hard at proportional reasoning and measurement with my 9 Applied class, because that's what I had. I had a 9 applied pathway course so I worked with those students very hard to develop an understanding of measurement. Every time I engaged in a big idea I tried to relate it to something that we had that was tangible. Whether it was through proportions of quantities through looking at labels on foods, bringing the food, and we eat the food. It all spanned into understanding proportions and size. Then our culminating for measurement ended up in the foods lab. Their work in the classroom with the skills and understanding and working towards what we were going to do in the kitchen made sense, and they had a goal. They had a goal they worked with. Actually working with the skill itself was a lot more palatable for them because they had a reason to do it, we worked with the recipes we needed to alter and all kinds of things like that. I tried to do little bits of that throughout so I could get a feel for what I wanted to do with the transitions course.

Kelly: Did the students respond well?

Amanda: Very well yeah. That was their highlight. There's a few things we never got to, time is the issue a lot—you know you have to grow these ideas and then it's the end. It's just too quick. Yes. I feel, and through certain responses that I've collected feedback, that they

enjoyed that and them physically taking pictures of them in the food lab, you could tell that they enjoyed that.

Kelly: What do you believe could be done to make these courses more relevant to students?

Amanda: I think as an educator you need the professional development to support any change in the instruction for these students. Sometimes we think we want to make it more exciting and maybe what we do really isn't any more exciting than just giving them the rote skill. Two things, students see it as relevant when they can relate it to themselves, so something that's real to them and then you just find the math in it but not making it so big that you can never accomplish what you set out to. Then for the teachers to not feel overwhelmed that you're trying to take on this big task of making these really fantastic ideas come to fruition and then they don't so you go back to doing workbooks.

Kelly: You mentioned professional learning, have you been involved in any professional learning that has helped to specifically support your teaching of locally developed or transitions math?

Amanda: I wouldn't say specific training. I have attended numerous conferences on the renewed math strategy and been able to engage in conversations with others who are trying things in their classrooms. To me, that's professional development just by networking with other people throughout the region and the province. I think the best P.D. I had personally to be able to change and envision what I wanted was being part of the program department and being in all of those applied classrooms in our system and watching students learn, and what

is and isn't effective for particular students. It's not to say that the teacher is not doing a great job trying to deliver whatever it is they're doing it's just you can get a different perspective when you're watching the students and observing what they're doing or not doing. That P.D. to me was the most beneficial.

Kelly: Does your math department have any specific practices or initiatives that have been important in supporting Locally Developed or Transitions math? You mentioned the Transitions course is starting in the fall, but apart from that?

Amanda: Apart from that, no but a very good collective idea that we are very flexible in what we want to do for those students. Very supportive of if this isn't working, we reach out to each other for ideas through our PLC's or departmental meetings. One thing we have as a department is we've decided to really focus on the COP model, where if we see that we are obtaining every part of the communication, the observation or product of assessment.

Kelly: Are there specific resources, human or material that have been important to your school's past work with Locally Developed or Transitions mathematics?

Amanda: I think the supports we have, the initiatives in the school such as the student success room, alt. ed., student services or spec. ed. all of those people and—lack of the formal name but the aboriginal tutors—which are not called that but our support persons for students whether identified or not… having those resources to tap into, have those conversations with, really support, those are the human resources we use and work as a team to help support the student.

Kelly: Can you give an example of something that is maybe unsuccessful, a resource or a technique?

Amanda: The textbook. I had them lined up in my cupboard, as an in-class resource, and I didn't bring them out once the entire semester. I would say it's there as sometimes as a necessary tool if you need a particular skill and you're looking for things you want the student to practice, but I didn't use the textbook this year. Not that I set out not to or to, that's just the way it happened.

Kelly: Can you elaborate a little bit about the department meetings here at the school?

Amanda: Not a lot of them. The meetings really are—they're focused on the professional learning of the department and things we want to work towards, identifying our marker students. When we come together, we do discuss the kids that we had set out to, for that semester, that are at risk in a variety of ways for whatever reasons you've identified them, and we follow through with what different learning or teaching strategies you've used with those students to help them over the threshold, or bump them up to the next level or any changes you've seen in their learning. That is a good sharing opportunity.

Kelly: So you'd say that there is some time devoted to sharing teaching material or approaches between members?

Amanda: Yeah yeah there are, there is. I think that sometimes you lose—the semester goes by so fast that start the momentum off really well in September-October and then by

December… it goes quickly. I think a lot of it is informal, it becomes informal. Just talk in the hallway, you meet in someone's room, and those are the follow up to the PLC formal meetings.

Kelly: Is that beneficial?

Amanda: Yeah that sometimes is the most beneficial.

Kelly: Has your school adopted any specific practices to support Locally Developed or Transitions math during classroom tasks?

Amanda: I can just speak for myself in attempting to use different strategies for students where they can either walk about and use the boards or they can use the whiteboards—literally the whiteboards that I had made this year for students. Just a different writing platform. We've used technologies, I've utilized online resources; Knowledge Hook. I was piloting a tech-book… not like a flip classroom but a different way to visually appeal to students using the classroom website. Maybe within your classroom you're hitting different learners at different stages and providing different opportunities for learning.

Kelly: What forms of assessment are typically used in these courses.

Amanda: A lot of them is observation. I'll speak to my grade 9 applied course. The ones that I can speak to for the Locally Developed for this term, observation. Having conversations with students. I collect data, I know for myself I collect data. I have little cue cards and they write down their goals and as we move through so I'll get student voice. Journaling and then

tests, yes, in the 9 applied there's space for paper pencil tests as well, just to ensure that skills are there because that's what they need to do for the EQAO. It's not that it's something you don't do as long as it's fair shared around all the other ways of assessing, that you see the full picture.

Kelly: So more of a holistic approach?

Amanda: Yes.

Kelly: What do you think is the most important thing a school can do to support student achievement in Locally Developed or Transitions or Mathematics?

Amanda: Tap into their interests. Tap into their interests and truly into their interests. To gain a relationship first, find out their interests. I know that sounds like a typical—that's been said and it's been over-said and overused actually but truly if you spend that upfront time building a relationship with the student and getting them to your classroom then you can just design a specific project or an idea around their interests and then attach the math to it. It's not easy and it's a lot of work but then the students are the ones that will reap the benefit of it.

Kelly: What do you think the most important thing a district can do to support student achievement in Locally Developed and Transitions math?

Amanda: I think during those changes of time in pedagogy and practices I think there needs to be a lot of hands on resources in the classrooms to support and whether it be—I know at the beginning of the semester when I had—my goal was to get every single student here

every single day in my class and there was 31 of them and all with different challenges. I had support up front where someone else was able to come into the room for no reason other than ask "Who do I need to find? Who do I need to go look for? Who do I need to go search out?". If districts could support that extra resource on the upfront we wouldn't be so much always rescuing at the end. That's always been my pet peeve is that we frontload and we do all these things and make these class sizes larger, absent of resources and people and manpower, and then at the end we have all this resource available to help capture and motivate and get the kids the credits they need. If we did it at the front we would have better learners in the long run. I would like to flip the typical model we're in where we're always rescuing at the end. Put the money and the mouth at the beginning and help support that teacher and get those kids to come to class, get those relationships built, and then once you have them here, they're yours. Then you can start building in the mathematics you want them to learn.

Kelly: What would you say are the goals of Locally Developed and Transitions math courses? You can speak to each separately.

Amanda: Goals I think… I think the goal for sure for the Transition is to engage them in school period. We're using the lens of numeracy and mathematics through this GLS class we're going to call it or Transition, not only is it closing gaps and that'll be the ultimate goal is to close gaps for kids in mathematics but really there's gaps because they've lost the ability to learn. They've not been engaged in the classroom, and engaged in learning, and learning how to learn and be a productive individual in a school setting. They come and go, out in and

out of classrooms or they just engage and disengage constantly so for them to want to become an active member in the classroom, they have to learn how to learn and what does it take? That's a big part of it and I think that's the ultimate goal. Then the math will come.

Kelly: What would a typical lesson in your grade 9 Locally Developed, or Applied in this case, or even transitions in the fall, what would it look like?

Amanda: It always starts with something, like the day always has to start with some sort of story, some sort of event, or something that's happened, or a funny picture, a riddle, or even just a number. Then you can start a conversation. A typical period, it doesn't matter what pathway it is, and I've done it with my academics as well, is you start a conversation. You start a conversation that leads itself to where you want it to go. It may not go that way and that's why you have to be so flexible in what you really have planned. You have to navigate it back to where you want it to go because you never know what the kids or going to—what you're going to get from the kids. Ultimately, it has to start with something that you hook them. It's not always a super big hook, "something happened on my way to work" or "I saw this sign that said this", or "We're going to talk about proportion today. What does that mean to you?" and we always talk about what the topic means. Where do you see it? Where have you heard it? The actual vocabulary of it, the understanding of it. That's the start of every big idea. Then you just bring them in, bring them in on one little task, one little thing that relates to it. Talking about proportions, we opened up fishy bags and we counted the fish. Then we took the data, we all verbalized the data, things like that where it's actual—it's real, it's easy,

it's small enough to do and then you move into more of the—whether it becomes more abstract math, or where does it relate. Then an activity around it, or a problem they have to solve.

Kelly: How would you say students respond to those types of lessons?

Amanda: The period goes by so much faster. It's just so much easier and it's easier for me as the facilitator of that kind of learning. It's more fun. There were a mitt full of times that I had, that there were slides that I needed to get through like I'd create when it's really things I needed them to know, we were reviewing "this is the skill". We were trying to solidify what you know, trying to culminate their big ideas together. Otherwise you would just make… build the big idea in their mind and then attach the skill to it that makes it come alive.

Kelly: How many students typically pay attention?

Amanda: I would say most. There were a lot of things that you have to understand that others may—I was very forgiving. You have to put a lot of investment into these kinds of students. They're not kinds, this is a cohort of kids that they're not engaged in learning. The rules have to be bent a little bit until you put in enough time where you can say "Okay, now I need your phone away, we've got to talk about all those good things" or "I need you since you're on your phone, how about you look up this particular fact for me?" Twisting it so that it looks like they're actually, "Oh, she's really not—it's okay she's not pointing me out for any other reason" they're kind of getting the idea that, yeah, put that phone away or you're not paying

attention because you're zoned out so I'm going to ask you a question I know you're going to be able to answer. That way, every kid is always engaged.

Kelly: Do they typically fade in and out?

Amanda: They do. Some will be with you the other time. You have to be okay with that too. Not all of them. Then you know as soon as you've lost more than you should, then it's over and you've got to switch it up. You've got to be okay with that.

Kelly: If an instructional method or a type of task isn't working…

Amanda: It's over.

Kelly: And you change it?

Amanda: I don't force it. That's why it's very difficult to be absent from these classes. If I am away or if I'm at a PD session, VERY hard to leave prep work.

Kelly: Can you give examples of strategies or lessons you've used or tasks that you've used that have been unsuccessful? Something that maybe you've tried several times and it just hasn't worked and that's when you transition to something else?

Amanda: I don't try things a lot of times. If it doesn't work, I just change it in the moment, I just adjust it. Generally, if we're doing more than one example of something or we're actually relating to the skill, now we're going to need to practice—When I can sense that they've had enough of me, and it might even just be 5 minutes, sometimes they're just so

engaged they just want to keep going. They want to do [individually] and then together as a team and back to—it depends on the mode. Some days they don't want anything from me and they just want to sit and do work. You have to have that ready to go. I always had folders of stuff. They had their journal entries, they had other notes. There's always something ready to go.

Kelly: Are there any techniques that you'd say they respond better to? Group work, or anything like that?

Amanda: They were good when they could work at their tables and that's why this environment, getting the tables and getting rid of all my desks has really worked well. A lot of times things are ready on their desks for them when they come in. They just know. "Now we're doing a numeracy warm up, and we're going to open up and we're going to do 5 numeracy questions". They know. You're working on certain skills of communicating. They like that routine. Those things, when I know that they're all over, I need to do a numeracy block right away and just do some mental math in their little notebooks and they're ready to go. I'll put up some questions.

Kelly: How many students per table typically?

Amanda: Some table groups end up with 4 and some have 2. Sometimes one wants to work all by themselves and then—but no more than 4. 3 works well. If groups of 4 are okay, I don't ever say no—if they're working well I just leave them.

Kelly: Are most tasks collaborative?

Amanda: Most of them yeah. They really are. But then when it comes to the independent they really take that independent task seriously because we didn't have a lot of paper pencil—we did because they knew, they knew when it was going to happen, it was big. It was something that was important. They wanted to do well on it. But we would prepare and they took that more seriously, than everything always being a test or everything always being an assignment marked. As long as they have feedback all the time on how they were doing, they had grown confidence.

Kelly: A lot of times with group work it gives certain students the opportunity to kind of "hide" and not really contribute to their group, how do you mitigate that?

Amanda: By doing some independent work. The beauty of the tables is that I take a chair and I sit at the table. I just do some one on one with that student and I say "show me how far you've gone, can you show me this one?". Those are my observation checklists and conversations that I have with kids. The tables make it easy to do that. I can just pull up a chair, turn one around and I just sit with them. As opposed to when they were all in rows and desks you just can't do that. It seems more when you're with just one student at one desk, when you're at a table group, you can make it "I know I want to speak to this student, but I'll interject and talk to someone else so it doesn't look like I'm just speaking to one". It gives lots of opportunity and it can be discreet at the same time as it's exposed. They know, I have conversations with everybody.

Kelly: How would you describe their relationships with one another?

Amanda: I think that they were very much a group by the end, my 9 applied classroom. They're very cohesive as a group. It doesn't matter what kind of setting you have someone is going to be shouting out something to someone else and someday something is turning someone the wrong way… all of those dynamics happen but for the most part when they see that it's affecting the whole class, they'll tell each other to stop because they want to do well. They'll be my voice instead of me having to say anything, they will make sure that they say "Can you just stop? She wants to tell us something". They were always interested in what I was going to tell them.

Kelly: How does that compare to your experience with the Locally Developed courses?

Amanda: One of my other colleagues that has had the grade 10 Locally Developed has a very good relationship with his students. I think that he's of the same mind where conversations are really helpful with students to engage them and he does change it up as well to ensure that he knows what it is they're able to do. Or at least exhibit some understanding one on one or however it is. I think that is something they all attempt to do. It's a very difficult thing sometimes to get to all students. That's the goal, especially the ones that are hiding amongst the others at table groups.

Kelly: What advice would you share with other teachers that are looking to improve their student success in Locally Developed or Transitions mathematics?

Amanda: That it's almost forgiving of what they don't know. Start with what it is that you can offer them as a collective. The biggest… I learned that on my own by observing so many students that if I'm concerned about what it is I need to teach them, then I'm always going to be concerned about what I have to teach them. Rather than, these are the kids in front of me, let's all learn about this today. As opposed to, "You should have known that from then and you should know this for the coming years. You should come to me ready with this and you need to leave with this". I just focused on teaching them now, and what it was that I could teach them today. What they came with will be an asset and if they didn't it's going to be okay, and what they leave with is going to be more beneficial than trying to fight through everything I think they need. Teaching for today, rather than from the past and for the future. We're always living at what we need them to do and what they haven't done, and that has always been a conflict for me. I gave that up this year. I'm going to teach you today and if you learn something, that is fabulous. That's the biggest piece of advice I'd share.

Kelly: What can you say about the consistency between different sections of the Locally Developed or the Transitions courses?

Amanda: That, in its day, would have been an issue sometimes but because the numbers of sections are so small now that there's one each semester. Sometimes it's the same person doing it so there might be consistency for the year, but there's a really good sharing of resources at this school, so my experience will be (I've only been here one year) but the experience, I'm feeling is that those moving into those courses, if it's a new teacher in that

area, very quickly will someone share the resources that they've used. If anyone has created new… they'll too share that.

Kelly: [Is] student achievement comparable? Are student behaviours comparable?

Amanda: I think for—the outcome… it's hard to say because I've only experienced it for the two semesters here but I think overall, the performance over time just my observation as a program leader being in the school, I think it's been consistent. There's been no dips, like highs and lows so that just means that practices have been quite consistent. Is there always room for improvement? Absolutely. Even in just the enjoyment of the teaching and learning of it, just period. Even if success is the same, this support might be because we have the other programs running and maybe it's been able to maintain because we have student success and alt. ed. and all of those other things that are now available, maybe it's maintaining. The status quo.

Kelly: Do these courses receive the same level of support as other levels of mathematics courses at the school?

Amanda: I think there's a lot less support for math. There is said to be support for mathematics… it's a funny thing that's being said that there's support for mathematics. It's one thing to say you have PD and you have some professional learning on high yield strategies and all of those things, and technologies that support the teaching and learning of mathematics. But when you're just managing the logistics and the custodial things for students in these pathways, transitions or Locally Developed specifically, there's so much

more on that plate than just the mathematics, that I don't think they're supported at all, not nearly enough to be very effective in those areas.

Kelly: How would you describe a typical student in a Locally Developed or Transitions course?

Amanda: Just as a very quick visual, you would see a student who is apathetic, who's not eager; coming ready to learn. You will maybe have maybe a 10% of that population. There will be 1 or 2 students that that's just their nature, it's not that they're happy to come to math, they're just happy individuals it's not because that's what's enticing them to come to class. Very much waiting to be directed or instructed as to what needs to be done. They will do or not do. Kind of just not in charge or in lead of what's happening.

Kelly: Are exceptionalities common in these courses?

Amanda: Yes. On both spectrums. There's the defined words for exceptionalities for sure. Both extremes. Are those needs met? No. Is there resources to support that, I wouldn't say yes. If you were to ask what resources are needed, I wouldn't even be able to say "Well we need this". You just need someone with you at the time at the start of a course to be able to identify needs early on and what you do need then for that group. Because I would say "This is what works", all kids are different in those pathways because their needs are a little bit different.

Kelly: That hints at my next question. You'd say that there's a wide range in ability between any two students?

Amanda: Yeah. You may narrow down to, they both need this but they might need it in a different way. How you interact with that student is also different. I may be able to interact in a conversation with one student and this one over here you may not be able to at all because it will just create anxiety, it might create all kinds of things. You need to deliver it in a different way even though they need the same thing. It is the ultimate in being able to differentiate.

Kelly: Can you give an example of just how drastic the range in ability can be or at least what you've seen?

Amanda: I have one student who, they were partners so I paired them. One, she was so strong she just couldn't wait for me to say what we were doing and what was happening and what the day was going to bring, totally ready to engage in any kind of mathematics. She turned out to be just very fond of math. This other young lady who was, second time through, very quiet, more reserved. This one was more outgoing, this one was more quiet: "Don't look at me, I don't know that I want to speak to you about anything, but I'll definitely write things down". She'll draw, she'll write. To be able to get involved in what that student really needs, I would just write things. I would write messages and she would read them, or I would just speak to her quietly and she'd respond. Then I had the relationship built between the students, the students would transfer the knowledge between each other. I would have the student transfer, I would share with that student: "Would you mind if this person requires any help,

because I think that you're very aware of what we need to do today, if you could share that". She'd take it better from another student. They just didn't want the adult. It didn't matter who I was. You can't take offense to that either, it's just the way the student wants to learn.

Kelly: You mentioned teaching to where students are, can you say anything about the skills that any two students could come to a grade 9 course with, is there a huge range there?

Amanda: There's ranges even to their numeracy skills, and that's a whole definition "What's numeracy?" but even—let's just use an example of numbers 1 to 10 and how I could quickly collect two numbers that add to 10. That's just a really simple example in how we tried work on some mental math so that they could—and that's just verbalizing. What are some numbers? If we want to add up to 20, how many more do we need? All those kinds of things that any time we talked about a number, we would make a problem out of it. That was even so—that used to be almost a common ground, that that was okay, we could do that. But even that itself, a friendly number, count by 10's, skip count, count by 5's… I used to count on those things being the commonality amongst all students. I didn't find a lot of common things in my group of 31. We practiced all of our basic numeracy and number sense through always conversation and talking about "Hey it's the 15th today, how many more days in this month? Easy, can you do 30 minus 15? Or is it 31 this month?" so you learn all those other things. That was a daily occurrence of just stuff we talked about. To answer that question…

Kelly: How do you accommodate those differences?

Amanda: And that's how. Accommodate those differences by having conversations that everyone can talk to you about. When we started in February, how many days in are we? How many days are in a year? What day are we now? How many days are left? That's how you accommodate it. It's easier that way than—and then we'd practice 5 questions, however.

Kelly: Are you aware of the proportion of self-identified FNMI students in your classes?

Amanda: Yes because of the great work that the two people we have at our school that are attached to that cohort of students. They do a great job on supporting, they have, supporting the students and they did support me quite a bit this semester. I'm aware of who they are.

Kelly: Have you received any professional development training that might support your teaching of FNMI students?

Amanda: Not direct. I've been definitely part of—like I have been. I think it all comes down to—yeah I have been but it's still not been something that I say "Oh now that'll work". It's just… it makes you more aware of that student and their needs, yet it's just being aware of any student you have. It's almost the same thing, being more aware and attaching some sort of—one of the traditions that you think "Oh that'll relate to their culture"… don't be that naïve. They may not be practicing that or it just may not be part of their culture. Just treat them with respect. Find out more as you get to know them.

Kelly: Do you vary your lessons with the learning needs of FNMI students in mind?

Amanda: Not actually sometimes the content but just the delivery of it because I know that those students aren't as frequently involved in the verbalization of information, the conversation of that information. They just to deliver it in different ways. I'm just aware of that. I had 3 refugee students—it was so diverse, that I had 3 Syrian students that didn't know the language at all. Their needs were so diverse and different as well. Everybody had their own agenda.

Kelly: What do you think are the biggest barriers to achievement in Locally Developed or Transitions mathematics?

Amanda: The desire for the student to want to earn that credit. The students desire. I think that if we can change that and make that credit more worthy of obtaining… It makes no difference to them if they get that credit or not, like there's no attachment to that credit. But if they enjoy just being in the learning environment… In high school we're really really driven to earn the credit and that's just the way it is, it's our system. That's the way it is. We have to be driven by some structure but unfortunately for those cohorts of students that credit is meaningless. As we say, "You need it for next year", that's even more meaningless. Those words are just on deaf ears, means nothing.

Kelly: There's a difference in how students are valuing education?

Amanda: Yes. For some of our self-identified students I know that it's been said that they're thankful that these students are actually just engaged in coming to class. That's their first

step. They're in a new—this is the big city, they're away from home. Coming to class is just the big step. In our driven society we're looking at, "Well they need to be successful at this credit attainment", where that's not their goal. Ultimately sometimes… yeah.

Kelly: You mentioned that a personal goal of yours was to get students to attend regularly, what was the attendance like in your class?

Amanda: It was really good. They all stuck it out. I had one that just went home because of family reasons, that just left. I had one that at the very end just—life got in the way and just had to leave school. I hung on to the attendance because I varied how I allowed that to happen. I had students that learned by the doorway. They would stand and they would just hover and I'd have their work ready, and I would have things and instructions. They would work independently where they needed to go. Sometimes they'd sit in class, sometimes they didn't. They'd go to alternate locations but I'd always be ready for them. Attendance was good. Attendance was really good.

Kelly: What were some of the things you did to promote better attendance?

Amanda: That I was happy when they came. It's difficult because a lot of—some of the self-identified or not identified students would go back home for periods of time. That's just something can't control. If they were here, they'd come. If they've gone back for a period of time, a week, week and a half, those really affect the learning of those students. We need to work with that somehow. Somehow we need to find out that when they do that we need to be able to fill those gaps. Because they're just creating more gaps. Be appreciative when they

come back. Be okay with—help their anxiety stay low and just appreciative that they're welcome whenever they do arrive.

Kelly: Right. Are students often late?

Amanda: I think it was timetabled well. I was period 2 for that particular course and I think period 2 was good. It was almost like a catch basin where by period 1, unfortunately for whatever class that was, they were found or they had been located, or they got here, or actually came. It wasn't after lunch where they're out for lunch and they don't come back. I think period 2 is THE period. That's why for September we have everything scheduled in period 2.

Kelly: Interesting.

Amanda: Yeah.

Kelly: What's your approach to late students when they do show up late?

Amanda: They know, that I don't even have anything that they write. I just log it. They come in and I verbally welcome them. Either I say "Nice to see you"—I don't not acknowledge them, even if they're late I don't make it like "YOU'RE LATE". I acknowledge it in a very pleasant way that it's "Oh good I am back", because I really am happy to see them, like "YES they came!"

Kelly: Would you say that there is a correlation between a student's attendance and their achievement or success in the course?

Amanda: Yes, and no. Yes, for some, and it depends what drives the student. For those that were obtaining success still had reasons to leave and they still went home or still did other functions with other things in their life. Whether they were successful or not… I had for the most part it was their personal life circumstances—success or not. They tried to get here, those that I know where the success drove them to come here. I have those specific students that I know that's why they came, because they were very much eager to keep being successful.

Kelly: How would you describe student participation in your class?

Amanda: Except those that weren't able to learn that way verbally, everyone verbally participated, except those that didn't. They would engage with prompting, with any problem that they were working on. It would always take prompting. Very rarely could I-- some by the end of the semester I could leave and they would actually engage in all the work. Still, and I never gave up on, it's exhausting but I said "This is not a cheap course. This is not a cheap credit. Not a cheap course. Doesn't matter what pathway you'd be in with me, I don't let anybody up. You need to keep being accountable so I'm accountable for you" so they knew that at no time could they—I mean they do. You turn your back and then the next table is—but you would still make sure that you get around. It's never ending but you have to do it.

Kelly: What forms of participation did you allow for? Verbal and…

Amanda: Verbal, and then written. They share as a group and then one product from—per group. Individual… so yeah a variety. Varied.

Kelly: How would you describe student engagement overall?

Amanda: They were engaged. As much as sometime you think you want them to be able to be successful to do this much, those are your goals right. You've got these big big goals for your kids but realizing they were able to do just this much more than when they came to you, you have to take all the crumbs of success that it's okay. The engagement piece, they all did something. I think that there was only… yeah they all would produce.

Kelly: To what would you attribute that satisfactory engagement?

Amanda: I just didn't let up. Didn't let up on allowing them—they knew because they would "*sigh* This is a lot of work". I taught them that you have to persevere. It's hard work. Using your brain is hard work. They knew that that was my goal, so they attributed to knowing that that was my goal for them, is that you've got to learn how to work and I'm just doing it through math. You have to learn how to work just as an individual. We come here, if you're here, we're going to work. I'm working, you work, everybody has to work.

Kelly: So you set them to high expectations?

Amanda: Yes, very high. They kept questioning why. Why *chuckles*

Kelly: What types of off task behaviours do you typically encounter?

Amanda: Just poking at each other. You can't get rid of that. The poking, they poke fun in the way that grade 9 boys do, just goofy silly behaviours or if one starts something and they just burst out laughing. There's nobody ever that was ever really that. I don't even know how to describe it. They were just off task because they would just get goofy and they just didn't feel like working. I would just give them a minimum expectation that said "Well by this time…" and I would always allot it so "Well this isn't it, we're not done so we've got 10 minutes left" and so those off task behaviours, they weren't punishable. But we would just switch gear.

Kelly: Do you think a student's personal life plays a role?

Amanda: Huge. Very much. If they can at least come here and feel safe. There's a lot of situations that I'm saying that they come here and they feel safe, we would have food on Fridays usually. Something. There's just something to look forward to. Home life yeah… and it puts a lot of pressure on what they can accomplish or not accomplish. If there were days where they just needed to sit there and they weren't participating, you've got to be okay with that. They're just in your presence and you make sure that they leave with one reminder that, "It's good that you're here today, but maybe tomorrow we can work on this", that it was okay for today but tomorrow we need to get back on track.

Kelly: Are you aware of any personal issues students are dealing in these classes?

Amanda: Yeah.

Kelly: Can you give an example? Without saying any names obviously…

Amanda: Yeah…Very many that are taking care of other family members. They are almost like the caregiver for their family. That's one situation where student (inaudible) take care of the younger siblings, many times just has to be home to babysit. Another situation where, personally she's trying to be very successful, she's trying to do well on her own here and try to be that student [but] home life witnesses really awful things with parents and what parents are doing, watching the disintegration of her siblings, older sister tried to commit suicide. Just living it, seeing it… it's horrendous.

Kelly: That's heartbreaking.

Amanda: No food, so they come here and they're not only hungry, they're just mentally spent. And I'm going to try to teach them about proportional reasoning? Well, let's look at the proportion of life problems they've got, it's just horrible. Being respectful of that when they know you know, but not really all the details but knowing you care about them, they really—they'll step up for you. They'll never maybe reach their potential with you at that point but at least you know there's a lot more important things than what I'm offering.

Kelly: Does engagement vary from day to day?

Amanda: Yeah. Completely. After a couple day stint when I was in Toronto and I came back it was like "Okay, I thought I had them, and usually it could take a little bit, and I'll come back and they're back on track"… engagement was done. They were just… a little bit of

change—change is big for these kids. That's another important piece, that they don't do well with change. They life their routines, even if it's very flexible. Routine just meaning this person is going to be here, we're going to do this, we know something's going to happen and it's going to be a good day. It varies, but generally if you've built that respect you can get them back.

Kelly: You hinted at this earlier but what role do cell phones play?

Amanda: They're there. They're part of their life. As a board we encourage bring your own devices. They are to be utilized for educational purposes and I don't think yet that we're there in having kids understand how to use them as educational tools. They're there because it's their social media. And that's a reality. That's what their phones are for. They weren't given phones to be learners on their phones. They have had days and months and years of experience on these devices for social reasons and when you want to flip it to be educational, it's really tricky. When you use it as a barrier, if it's going to become a barrier between you and her and him as a learner, you're not going to get very far with a teenager.

Kelly: How do you personally treat cellphone use during class?

Amanda: It's used and I try to utilize it as often as possible for just that, for going to the website, we're going to do knowledge hook now I've assigned a mission so let's get on our phones, flipping a misuse of phone. Which is a lot. There's some students who really are addicted. Yet if I were to take that phone away which I don't, but we talk about it and I turn them over, or we have conversations about it. I'd lose that student completely. There's a few

where I had to—huge, it's either the phone or the student. If I can work around that phone for this semester, then at least I'm not going to lose that person as a student with defiance and then out. That's not going to get us anywhere. It's an issue and you can't blanket it and ruin it for everybody when those are being respectful, and take it away from everybody. That's not cool either.

Kelly: What do you do as the teacher when students disengage entirely when they just "shutdown", check out and they're just kind of occupying space?

Amanda: I seek out their counsellors or anyone else that might know something about what's going on first so I just ensure—other teachers talk—anyone else that has contact with that student in their life because more often than not someone else knows something else. If not, then someone needs to counsel that student if they've totally checked out. I always do make sure I say hello to every single student and if today—but if it's repeated and they've totally checked out then yeah, definitely make sure there's connection between admin and everybody else.

Kelly: Do you see that regularly?

Amanda: On occasion and usually it becomes—then something comes of it and then there's something that has occurred. But no I really haven't.

Kelly: Final question. Do you have any other thoughts or comments that is important in the dialogue around supporting student success in Locally Developed, Applied, or Transitions

Mathematics courses? Anything at tall that you think needs to be said, that perhaps you've experienced or you've heard of, things you're hopeful for, your goals, something you're fearful of.

Amanda: Things that I'm hopeful for are resources and manpower and support for kids that are struggling in grade 7 or 8 already, with all kinds of things, not just the mathematics. They're struggling with the math because they're gaps in their attendance and family life and just all those things. But we're letting them walk through and then entering the even bigger picture of secondary and we're just letting those kids right through and I just feel like I'm really dis-servicing those kids--even though I'm not really any part of it but I am because I'm part of our cross panel work. If we're trying to do these things at the secondary level in grade 9, we're trying to put in these stops and gap closing and trying to put in resources to support those kids. You've got to remember there's years and years built up already of all of the habits that have happened. I'm hopeful to see things pushed back a little bit so that what [we're] attempting to do here, starts to happen earlier too so that it's not as drastic. You feel not as hopeful for students sometimes after one semester, you get to have them for one period, one semester, where if that student could be tapped into all day at some point… I don't know. There needs to be programming that's put in that's a little different in grade 7 and 8 as well. It can't all happen in grade 9. It just can't anymore. Those things I'm hopeful for and just hopeful that there's more attention to what kids really need. I know what I need as a teacher and what my responsibilities are and I have to produce but I just always think it would be great if we could teach for today and be okay with that. Really be okay with that

and have that messaging to that level of student that, not worry about it being a worksheet but just talk about the reality of what math could be for those kids and be okay when it's not everything that's written in stone as a written document of curriculum.

There are people in your class that just are there to engage in some sort of learning and that we give them the respect that they deserve too. Then maybe those work habits and all those things that are absent that they've been allowed to not—I'm not blaming the students, I'm kind of blaming us as educators. Just letting them not learn from a very young age. I'm not sure why that is. There's not stop gap there.

Kelly: You're referring to the fact that a lot of students are kind of passed from grade 1 to 2 all the way to high school with no…

Amanda: They just are. There's really good learning, there's really good stuff going on it's just that there's a group that keep getting passed along and we know that we're placing kids. The data is there. We're placing kids in grade 9 that aren't ready to be here, we say that we're placing them and yet we're not doing anything about them. If we can consciously say we're placing kids in a grade 9 program who are not ready to be here, then why are we doing something in grade 7 and 8 to help those kids not be placed? You can't fix it all in grade 9.

Kelly: Those students that are just ushered through, what affect do you think that has on them?

Amanda: It has a huge effect if they're already disengaged at that point, miracles aren't just going to happen. I mean good things can happen when change happens like, "Okay fresh start" but it's not that fresh. They've already bought out of school. I don't have that much to sell you that's that much more—I mean I try but heck if I had you for two years I could have tried something even more and built up that confidence.

Kelly: Do you think it exacerbates the problems?

Amanda: *nods* And those around them. Because everything's infectious whether it's positive or negative. You're all surrounded and maybe you become misplaced and you become misrepresented for who you really are when, that's probably not who that kid was. Or could be. Maybe 5-7 years ago it wouldn't have been too late to do what we're trying to do right now with gap closing but we all need to be doing that, end of grade 6, 7, 8 and 9 to be able to support those kids that are entering our Locally Developed. I hope this transitions course—it was only supposed to be temporary, one, two… at max three-year fix. A fix meaning, other things are going on to support kids that no longer need to be placed. We should only be talking about a few kids. Not classes of kids who aren't ready. We shouldn't have a class of kids not ready to enter grade 9. Sad.

Kelly: Do you believe there are systemic issues?

Amanda: For lots of reasons, that grade 7/8 teacher can only do so much. They're-- *small interruption from a colleague* It's systemic in the sense that the resources aren't there and

7's and 8's are left to their own. They do meet with the secondary but that's three sessions, what are you going to do? No one's there to monitor what they're doing, no one can support them elbow to elbow. They've got a lot to do too. Math isn't their only concern sometimes. There's more to it than that.

Kelly: Thank you for your time.

Amanda: You're right it's just like bang on an hour.

Appendix D: Student Interview Transcripts (Term 1 Fall 2017)

Student Interviews - Year 2 Fall 2017

Interview - Zachary

Taylor: Ok, so... the first few questions are talking about your attitudes towards math. So whether its you like it or don't like it, so, the first one is: How do you feel when you come to math class in the morning?

Zachary: Good, cause there's hot chocolate.

Kelly: Seems like Mrs. M.

Zachary: Well do you like want a serious answer?

Kelly: Well, that's – that's important information that you like when Mrs. M brings food and snacks and stuff.

Taylor: Yeah.

Kelly: Ah - what about – how do you feel when you know you have to start like doing math?

Zachary: Um - good, cause like these culminating things that we're doing is easy. But, I don't know about other stuff cause other stuff is kinda boring, but this one's good cause it's easy.

Taylor: Ok. Ah the second question is how do you feel about your math class lately – as in recently or the last little while.

Zachary: Like...how do I feel about it, like?

Kelly: Maybe compared to the beginning of the semester.

Taylor: Yeah.

Zachary: Oh, yeah, um, it wasn't that fun but it's more fun now, cause there's more people to talk to as well.

Kelly: Yeah, it seems like you and Marcus have gotten to know each other pretty well over the course of the semester.

Zachary: Yeah.

Kelly: Does that add to your enjoyment in the course?

Zachary: Yeah. It's fun.

Kelly: Have you gotten to know anybody else in the class really?

Zachary: Um...no.

Kelly: No?

Zachary: Not, really no.

Kelly & Taylor (simultaneously): That's ok.

Taylor: Ah, what do you like about your math class?

Zachary: Um...the food.

Taylor (laughing)

Zachary: And um...and what's-her-name, our teacher? My teacher? I don't even know her name.

Kelly: Mrs. M?

Zachary: Yeah, she's nice. And uhh it's just a fun class.

Kelly: She seems to care about you guys a lot.

Zachary: Yeah, that's good.

Kelly: Mhm. Did – has – is that different from previous math teachers that you've had?

Zachary: Um...yeah. Yeah, probably.

Kelly: Would you say this is one of the better math classes you've been in including elementary school as well?

Zachary: No, I hated my elementary schools, like the classes, like they sucked.

Kelly: Why?

Zachary: Cause, um...ok so when I came here...I lived in a town called Kenora right...

Kelly: Ok.

Zachary: And I came from like a middle school kinda thing, it was like a middle school high school thing. And then going back to like an elementary school in grade 8 just sucked.

Kelly: Yeah.

Taylor: (agreeing)

Kelly: Yeah, so you were kinda grouped in with older kinds and then you kinda got like pushed backwards...

Zachary: Yeah

Kelly: ...towards younger kids.

Taylor: Ok. Umm...can you give an example of an activity or a lesson that you did recently that you enjoyed?

Zachary: This culminating thing.

Kelly: You're enjoying it even though it's a lot of seatwork?

Zachary: Yeah!

Kelly: What do you enjoy about it?

Zachary: Umm...how easy it is. And like, once you get into like getting good like you could just like write it so fast and its fun.

Kelly: You feel practiced?

Zachary: Yeah.

Kelly: Ah, that's good.

Taylor: And you feel like you're doing well then I think cause you're saying it's easy?

Zachary: Yeah.

Taylor: Ok. Ah...can you name one thing, or more, that has happened in math class lately that you didn't like?

Zachary: Um...I don't think there's anything like wrong with it. It's a good class.

Kelly: It doesn't have to be something that you're learning, it may have been just something that happened within the class that you didn't like. Either working with someone or something someone said, or...

Zachary: No, it's – it's just fun.

Kelly: (unintelligible)

Taylor: Ok. Do you think that the things you are learning in math class are relevant to your life –real life outside of the classroom?

Zachary (laughing): No.

Taylor: No?

Zachary: No...well like money maybe, but that's probably about it.

Kelly: What about umm like area and perimeter and measurement and that kind of stuff?

Zachary: Well I don't think I'm really gonna get into like building stuff and making stuff, which like I see that important, that's what that could be good for but...

Kelly: Right.

Zachary: ...I don't – I don't think I'm gonna do that.

Kelly: No?

Zachary: No.

Taylor: What do you...

Kelly: So you think the math that you'll use is money and money sense and that?

Zachary: Yeah. Money is important cause you just gotta know how to do money right.

Kelly: Yeah. So what else would you like to see in the math class that might be relevant to your life to learn?

Zachary: Well like...school is just school and like it's – it's always not gonna be that fun cause you gotta come here and do work, right? So...um...probably nothing, probably just the work that...I dunno...I dunno...

Taylor: Do you ever use things you learn in math outside of school?

Zachary: Money.

Taylor: Yeah?

Kelly: Money?

Zachary: Yeah. It helps just like knowing how to count the money and like subtract it and do whatever you want with the money.

Kelly: And tax?

Zachary: Yeah, tax! Yeah, that's even – yeah that's even more important. Cause I – I didn't even really know how to work with like tax and other stuff like that.

Taylor: Mhm.

Kelly: Mhm.

Taylor: Ok. If you could change anything about your math class this year, what would it be and why?

Zachary: Umm...I would probably change...like probably nothing. Just a good class, it's fun, it's easy.

Kelly: You'd leave the material the same, wouldn't change the teacher, students, time of day? Nothing?

Zachary: Yeah, everything's good. Like the teachers are good, like.... what's-her-name?

Kelly: Mrs. M.

Zachary: Yeah. And, yeah. It's a good class.

Taylor: What about at the beginning of the year, was there anything then that you wish you could change?

Zachary: No. At the beginning of the year we did money too and it was like easy and fun, but it was just kinda boring cause like I didn't really talk to anyone so it was just like a kinda quiet class. I think I made it like a loud class too...

Taylor (laughing)

Zachary: ...cause I started to talk more.

Taylor: Ok. What motivates you to come to class?

Kelly: You have really well – like really good attendance.

Taylor: Yeah!

Kelly: You're here almost every single day.

Zachary (laughing): I have to.

Kelly: Why?

Zachary (laughing): Cause I don't know, I'll get in trouble from my mom if I don't.

Kelly: Yeah.

Taylor: Is there anything else in the school that makes you want to come to class?

Zachary: Ah...in the school?

Taylor: Or just like outside of your parents wanting you to go to school. Is there anything else?

Zachary: Well, like my girlfriend comes here so, that's pretty...

Taylor: Oh. Do you always pay attention in class?

Zachary: Umm...most of the time yeah.

Taylor: Ok. Is it easy to pay attention?

Zachary: Umm...yeah. If you have like the kinda friends that make you pay attention too, like Marcus, like he'll just say like – like "hey you should listen" and and whatever and then yeah I listen and yeah.

Zachary (unintelligible)

Taylor: Ok. So the next few questions are about your understanding of math, and whether you find it easy, difficult or neither. So, the first one is how do you find math class lately? Difficult, easy, neither, and why?

Zachary: Mmm... is there like kind of an in between? Cause like work is always like different right, like always coming up with something new sometimes but like money and umm like just the stuff that we're doing in the culminating things, they're fun and easy to do. But, I don't know what I'd say like would be hard.

Kelly: How did you find the – the measurement?

Zachary: Measurements is – yeah, yeah that's fun too.

Kelly: Do you find it easier, difficult or about the same?

Zachary: It's like around the same.

Kelly: Yeah.

Taylor: Ok. The next one is are there certain topics or procedures you have studied this year that you find easier than other ones? So like, I know you guys did measurements and you did volume and area and you did rates and ratios, money. Is there anything you find easiest than the other ones?

Zachary: I don't know. I just – money, and like, money and it just – I don't even really know what's in the culminating things but it's just – it's just easy and fun.

Kelly: Makes sense as you're going through them?

Zachary: Yeah.

Kelly: Do you find, for example, like money and tax easier than calculating volume and perimeter and area?

Zachary: Yeah. Well it's not like it's easier, but it's like more fun, but it is easier at the same time.

Kelly: Right.

Zachary: Like, I don't know how to explain it but...

Taylor: Ok. What kind of strategies have you been using to solve problems in math class? It's kind of a hard question.

Zachary: Umm...

Kelly: So like when you're given a math question and you're maybe not one hundred percent certain how to start it, what do you do?

Zachary: Well, I could just sometimes just look at it and compare it to other things on like...cause sometimes we just have our folders right beside us, and you could just like remember, like look back on what I did, cause umm...we have like changed a bunch of umm like unit things right...

Kelly: Right.

Zachary: ...like subject things, but if I've already done it, I'll look back and just look at how I did it and then use that to help.

Kelly: That's a good strategy.

Taylor: Mhm.

Zachary: Yeah.

Taylor: Umm... is that something that you've been doing all year, or did you just start that recently?

Zachary: Umm... I guess that's something like I've been using all year. It's just like using my head too.

Kelly: Yeah.

Zachary: Cause I can't really – I don't know how to explain that but it's just sometimes it just comes you know.

Kelly: Right. So nobody taught you to do that, that's just something that you kind of thought to do?

Zachary: Well like umm if you see like um like maybe like money and like you know that if it's talking about tax you know like do the zero and thirteen and then umm you know. Yeah.

Taylor: Ok. Can you give an example of something you did in math class this year that you understood really well, like something you thought "Oh, I really get this" when you were doing it?

Zachary (laughing): All these questions are gonna be like the culminating stuff, cause that's like – that's something that we're doing now too.

Taylor: Yeah.

Zachary: And it's really fun and easy.

Kelly: Yeah, and it's fresh in your mind too.

Zachary: Yeah, and I can't really go back and like – cause I don't really remember what we did like...

Taylor: Ok.

Zachary: ...coming, you know?

Kelly: Yeah.

Taylor: Ok. The culminating's kinda like a review of everything you've done all year, so...

Zachary: Yeah.

Taylor: ...at this point you might be thinking "Oh, I remember this", like I remember us doing this and stuff like that?

Zachary: Yeah.

Taylor: Ok. Can you give an example of a math problem you worked on recently that you found difficult, and explain how you tried to solve it?

Zachary: Can you say that again, I wasn't...

Taylor: Yeah! Can you give an example of a math problem you worked on recently that you found difficult, and then explain how you tried to solve it?

Zachary: Umm...I haven't really found anything difficult, cause if we're working together too, if it's like the three of us, like one of us will get it and ahead right and we'll say it and then just – we'll both work with each other.

Kelly: So you find working in groups a good strategy as well?

Zachary: Yeah. If it's someone that you can work with, like cause I can work with Marcus and (unnamed student #1) , but umm, if I was to work with someone like I don't know, like (unnamed student #2) – well I don't even really know (unnamed student #2) so like I don't know how it would be, right?

Kelly: Yeah.

Zachary: Yeah.

Taylor: Yeah.

Kelly: Yeah, being comfortable with your classmates...

Zachary: Yeah.

Kelly: ...and working with them.

Taylor: Ok. The next few questions are about success in math. The first is, how can you tell if you're successful at math?

Zachary: Umm...you feel like you're doing good at the work, like you I don't know – that you're answering the questions correctly, and then especially if you have someone there like a teacher or like you guys to say like you did do it right. It's like ok I did it right, and then you know you just keep going.

Taylor: Ok. What does being good at math look like? So if you saw somebody and you thought "Oh, that person's really good at math", how would you know that they're good at math?

Zachary: Well, I don't want to say they look nerdy, but like...

Taylor & Kelly (simultaneously): (laughing)

Zachary: ...they – I don't know some people just have this kinda look to them. Like, I mean you can't just assume that on the way they look right, but sometimes it just happens. Like, maybe like a kid in umm...umm... maybe like the higher classes? And if you know how they look like you can just look at them and see them sitting in there, cause they're in there for a

reason right? Cause they're like pretty good at math, so then you can just look at them and think they're smart.

Kelly: And, what does somebody who's not good at math look like? How can you tell?

Zachary (laughing): Probably like me.

Kelly (laughing)

Taylor: Aww.

Zachary: Probably like how I look.

Kelly: That's not true.

Taylor: So you mentioned the levels, so you think that students in something like academic, that they're good at math? Is that true?

Zachary: What?

Taylor: Did I understand that right? Did you say students in the higher levels?

Zachary: Yeah like, if you like look at them like in there, but um I explained before that like I just explain it to myself sometimes because people like say I'm in that class cause I'm not smart right, but it's like – it's like my level. Like they have their levels and I have mine, and umm it's like the level that I can work at, and it's the level that they can work at, you know?

Taylor: Yeah. Ok, do you believe you are doing well in your math class this year?

Zachary: Yeah.

Kelly: What makes you think that?

Zachary: Umm..my mark.

Kelly: You're doing well, you're happy with your mark?

Zachary: Yeah, it's like a seventy-something, and like at least I'm passing right, like that's alright, that's good.

Kelly: How is that compared to your other classes?

Zachary: Well, like umm I'm passing in all my classes I think except art.

Taylor: Except art? You seem to like art a lot.

Zachary: Yeah.

Kelly: Just a matter of handing stuff in?

Zachary: Well, like yeah and it's just like – that class is like impossible. Like, it's hard to do. And if I wasn't so slow at doing the work at the beginning of the year like I probably would be okay right now, but I was slow, and I probably won't pass this class.

Taylor: Ok. Do you think it's possible for you to become more successful in your math class this year?

Zachary: Umm...probably not. I'm probably like at a good like level.

Taylor: What about your success on your culminating activity? Do you think that might help?

Zachary: Um

Taylor: Or on your exam maybe?

Zachary: My – umm...Can you?

Taylor: Yeah. Do you think it's possible to become more successful in your math class this year? Like could you boost your mark or do something that makes you feel more successful?

Zachary: No, I think I'm good with everything like everything's pretty good, and fun and easy to do so it's just like – and if it's fun too, you know, that even makes it more easier cause you can just go right through it. Umm...but then if it's like coming to like exams, exams are probably going to suck because you have to umm work alone, right?

Kelly: Mhm.

Zachary: And you've gotta use your head.

Kelly: And... I guess at what point would you consider yourself successful in your math class? Like is just passing good enough for you, or are you trying to reach for a speci – like a certain mark, or?

Zachary: Yeah, I just wanna pass. Like I don't really care like where it is, it's just I wanna pass.

Taylor: Is there anything else you wanna tell us about your math class, or school in general?

Zachary: Umm...well I could like talk all day about my art class.

Kelly & Taylor (simultaneously): (laughing)

Zachary: Is that alright?

Taylor: Yeah!

Kelly: Yeah, you can tell us about your art class.

Zachary: Yeah, but are you guys only like working with like math stuff like...

Kelly: We're – we're interested in your – your opinions about math but as well your opinions about school in general.

Taylor: Yeah.

Kelly: So, obviously if – if you're taking art, that's relevant.

Zachary: Ok, ok. So, it's like art right? Um I guess I'm alright at drawing, but you have to be like fast too, which I'm not. I'm only fast with like math, which is weird! Like, I can get stuff done in like a day, but with like drawing it takes like weeks and then um I can't hand in the stuff in time and then I'm failing.

Kelly: Is there any way you can get extensions, or...?

Zachary: Um

Kelly: ...hand it in later?

Zachary: Yeah, you can have like a late and he takes like ten percent off I think, but um that just sucks also, cause like ten percent? That's not a whole lot, but it's still important right.

Kelly: Mhm.

Taylor: Have you talked to your teacher about that? That you – it takes you a long time to do these drawings and stuff?

Zachary: Yeah, and he already knows that like he says like sometimes just calls me out on it, like saying like I sometimes take awhile to do stuff, and like I know that cause...and then my stuff comes out looking pretty cool right, cause I took awhile on it, and then um, I get like ok marks in that class, but it's just it takes forever to do stuff.

Kelly: Mhm.

Zachary: And then I'm failing.

Kelly: Yeah, you'd think that with art being like a creative thing that you wouldn't want to rush it.

Zachary: Yeah.

Kelly: Do you find the volume of the assignments difficult, like there's too many assignments to do in art?

Zachary: In a way yeah, like kind of. But, maybe if I was just like faster too cause I don't do homework. I don't do homework.

Kelly: Ever?

Zachary: No, not really. Like, it it's something like I'm told to do, if it's something that I wanna do, like um sometimes we do sketchbook assignments, and then you just get to pick whatever you want.

Kelly: Ok. Open-ended?

Zachary: What?

Kelly: It's open-ended?

Zachary: Yeah. And then like I pick graffiti sometimes, but I love doing graffiti so it's just like I do that as homework sometimes.

Kelly: Right.

Zachary: And, then I don't do the other assignments, which I probably should...but I don't.

Taylor: Do you get assigned lots of homework?

Zachary: Umm...no...no, not really. I don't get really assigned it just have it from classes and then supposed to do it.

Kelly: Right.

Taylor: Right.

Zachary: Right, like my teachers aren't ever like umm like you have to do this at home, or like – it's just like work that I'm done in class and then I like have it in my bag that they probably expect me to do, but I don't do it cause I like playing games and eating food.

Taylor: And having your own free time?

Zachary: Yeah. Cause like, school's long too right, and you get home and you're tired and you don't really want to do anymore work right? Like, umm where are you guys coming from like a University right?

Taylor & Kelly (simultaneously): Yeah.

Zachary: Yeah. That probably sucks like that probably like really sucks. That's probably like boring, you've gotta go home like – I have a sister, she goes to university, she's becoming like a nurse or something.

Kelly: Your sister, sorry? Is that what you said?

Zachary: Yeah. And then she – she does work until like – she like work all night. Like, why? Like, I think school maybe could just be a waste of time, cause there's a lot of things that you don't need school for. Like, getting a job or something. But, I don't know it is important too cause what if you can't get one of those jobs and then you need school.

Kelly: Mhm. Yeah a lot of jobs nowadays you need a college or university diploma, and it's hard to get through college or university without doing any homework, just there's not enough time in the classes themselves to get the work done, and they rarely devote time in class to doing it so...

Zachary: Yeah.

Kelly: It's difficult for sure. I think that's it?

Taylor: Yeah, I don't have any more questions for you, unless you want to tell us anything else?

Zachary: Um...yeah, I don't really know what you guys are like doing but umm the school times – they're garbage, like they suck.

Kelly: School times?

Taylor: You mean when school starts and ends?

Zachary: Yeah, well like the time that it starts is alright, but the way how I see it too is like if it was to be raised, then people would probably like – like I go to sleep at like one or something right, and then it it's been like raised another one, I feel other people too cause a lot of us like go to bed late right.

Kelly: What do you mean, raised? Like you get out later or earlier?

Zachary: Um yeah like you know how it's like at 9, like raise it up to 10 or something.

Taylor: Oh, I see.

Kelly: Ok, so start 10 and end at 4 or something.

Zachary: Yeah, and then but just like that – like I feel like people would like go to bed even later if it was raised.

Taylor: (laughing)

Kelly: Yeah.

Zachary: Yeah.

Kelly: Yeah, you need a certain amount of time to unwind between when you get home and going to bed for sure.

Zachary: Yeah, but then once you do get home, like there's no – it's like impossible to not be tired at school cause like that's just impossible like even if you do get a good sleep you're gonna be tired cause like some classes are boring and like you get bored right? And get tired. And then, like it just sucks like the times, but that can't really be changed because people would like go to bed later.

Taylor: Gotcha.

Kelly: You also have to be aware of when people typically eat dinner.

Taylor: Yeah.

Zachary: Yeah.

Kelly: It's usually around 4:30-5ish a lot of people eat so getting out at 3:35 gives people time to get home and get dinner on the table.

Zachary: Yeah. But then like after that too right, like once you're doing eating like you only have like a little while to do what you want, and if you are big on school, you can do school, but I'm not big on school so I don't do it. That's probably why I'm failing like that class too. School's never really been a thing that it fun. Well, it is but like it's not that I want to do it at home, you know?

Kelly: You don't prioritize it?

Zachary: Yeah. But um maybe like – like you guys do homework right? Yeah. And that probably sucks cause you like have to.

Taylor: Kinda yeah (laughing).

Zachary: Yeah. And like umm I like how in my classes too, like the LD classes, you don't get assigned any homework like ever, cause it's easy to do and once you're done it in class you just leave it. Umm and then like even if you're not done, you can just leave it in the class and do it the next day.

Taylor: Are you in all LD classes...or?

Zachary: Um in geography it's applied.

Taylor: Ok.

Zachary: But like a lot of the LD class ah – kids that are in that class over there, they're in that one too, cause I don't even know if there is a LD geography.

Taylor: There might not be.

Zachary: Yeah.

Kelly: Not yet, yeah.

Taylor: No.

Taylor & Kelly: (unintelligible)

Taylor: Ok. The bell's going to ring shortly so we'll wrap it up.

Zachary: Alright.

Kelly: But thanks for talking to us, we really appreciate that.

Taylor: Yeah.

Zachary: Ok cool.

Taylor: You had a lot of good input for us.

Interview – Marcus

Taylor: Alright. So I'll start out by asking you some questions, and Kelly might jump in here and there, ok? But I have a list of questions to ask you. So again, if you don't wanna answer anything, that's ok, just tell us you'd rather skip the question or...if you're not sure that's ok too. Ok. So, the first bunch of questions is about your attitude towards mathematics, so do you like it, do you not like it, how do you feel about it sort of questions.

Marcus: Uhh...I don't mind math.

Taylor: Ok.

Kelly: That's good.

Taylor: So how do you feel when you come to math class in the morning?

Marcus: I mean, I like my teacher so yes, I would like it, I like it.

Taylor: You like coming to math in the morning? Ok. How do you feel about your math class lately? So more recently.

Marcus: Uhh...good?

Kelly: Good?

Marcus: Yes.

Kelly: Are you – do you feel like your – umm you're not – are you stressed in math, or...?

Marcus: No.

Kelly: Despite the fact it's the end of the semester you feel ready?

Marcus: Yes.

Kelly: Excellent. That's always good.

Taylor: Ok, ah what do you like about your math class, and can you give an example or – of an activity or a lesson that you really like recently?

Marcus: Hmm...

Taylor: So we can stick with the first part first if you want – what do you like about math class?

Marcus: What do I like about math class? Uh... I'm learning new stuff – like on how like – like tax thing. I don't know what that was or how to do it.

Taylor: Mhm.

Marcus: I like learning about tax, taxes cause after I learned how to do that I was like finding prices of things and taxing them altogether (laughing).

Taylor: Yeah!

Marcus (unintelligible)

Kelly: You mean at home you were doing that?

Marcus: Yes.

Kelly: Oh, cool! Very good.

Taylor: Like when you go out shopping maybe?

Marcus: Yes.

Taylor: Cause you know there's going to be tax. Ok, can you give an example of an activity of lesson that you did recently that you enjoyed?

Marcus: Hmm...

Kelly: Has Mrs. McWhirter done anything in class that you just really, really enjoyed?

Marcus: I don't think so. I don't know. I enjoy all the stuff.

Kelly: You enjoy a lot of it?

Marcus: Yeah.

Kelly: That's good.

Marcus: I just don't know what specifically.

Taylor: Ok. Uh can you name one thing or more that's happened in math class recently that you did not like?

Marcus: What I did not like...uhh... I don't think so.

Kelly: Nothing's happened that either you didn't understand, or just didn't like the way it was explained, nothing like that?

Marcus: No.

Taylor: Ok. Ah....do you believe that the things you are learning in math class are relevant to your life? So, you can use them kind of outside of the classroom, and they're important in life.

Marcus: Yes.

Taylor: Yeah?

Kelly: So you mentioned tax, is there anything else that you find that's really useful in your personal life?

Marcus: Uh, about tax?

Kelly: No, just – any – anything you've learned in that class that you go home and use...

Marcus: Yes.

Kelly: ...or you think that it helps, can you name some of those things?

Marcus: Uh, well umm with like things that I uh enjoy to do uh like uh, hmm.

Taylor: Like, do you ever find yourself adding or subtracting or multiplying or anything, area, anything like that maybe?

Marcus: Not area.

Taylor: Not area?

Marcus: No. (laughing)

Taylor: It's just an example.

Kelly: Done any flooring in your house? (teasing)

Marcus: (laughing)

Taylor: No – no painting? (teasing)

Marcus: I do, just I don't calculate the area.

Kelly: No?

Taylor: Gotcha.

Marcus: Maybe that's the thing. I don't really...uh...volume, that's something I don't enjoy.

Kelly: You don't enjoy volume?

Marcus: Yes. (laughing)

Kelly: Why is that?

Marcus: Cause...adding – sometimes I don't understand it.

Kelly: Ok.

Marcus: That's – that's something.

Taylor: Ok. Ok. If you could change anything about your mathematics class this year, what would it be and why?

Marcus: Mmm...something I would like to change in my math class?

Kelly: Mhm.

Marcus: Nothing I think, I don't know.

Kelly: You like it the way it is?

Marcus: Yes.

Kelly: There's nothing that you would change to make it better for you?

Marcus: I would not change it, no.

Kelly: No?

Marcus: No it – I don't know, no.

Taylor: Ok.

Kelly: What about math in previous years?

Taylor: Yeah.

Kelly: Have you ever wanted to change anything before?

Marcus: (laughing) Obviously! I didn't like math last – like in elementary.

Kelly: Oh, ok, and why is that?

Marcus: I wasn't good at it.

Kelly: And, do you think you're better at it now?

Marcus: Yes.

Kelly: And do you think your teacher this year has an impact on your newfound love of mathematics?

Marcus: (laughing) Yes.

Kelly: Ok.

Taylor: Ok. What motivates you to come to class? So you're here all the times, I don't think there's been a day we've come when you weren't here – maybe one?

Marcus: Umm...what motivates me to come to class?

Kelly & Taylor (simultaneously): Mhm.

Marcus: To not take the same class (laughing).

Taylor: To pass the class?

Marcus: To pass the class (laughing).

Kelly: Yeah, you want to pass the class?

Marcus: Yes.

Kelly: Do your mom and dad, or whoever's at home make sure you come to class?

Marcus: Yes.

Kelly: Yeah? Do they get on your back if you – if you don't'?

Marcus: Sometimes, yes.

Kelly: Yeah?

Taylor (laughing)

Marcus: Mostly – all the time, yes.

Kelly: Yeah.

Taylor: Do you always pay attention in class?

Marcus: Yes. Well, sometimes (laughing).

Kelly: Sometimes? Sometimes you're distracted, that's natural.

Taylor: Is it easy to pay attention? Why or why not?

Marcus: It's easy to pay attention, but if – sometimes it's not cause, me and Zachary (laughing).

Taylor (laughing)

Kelly: So you get – you and Zachary get distracted sometimes?

Marcus: Yes. By talking to each other.

Taylor & Kelly (simultaneously): Yeah.

Taylor: Ok. So the next bunch of questions are about your understanding of math, whether you find it really difficult, really easy or somewhere in between. Ok? So the first one is, how do you find math class lately, difficult, easy, neither?

Marcus: Easy, I guess.

Taylor: Ok. Can you explain why?

Marcus: Uhh...I'm not sure. I just find it easy.

Taylor: Ok.

Kelly: The –

Marcus: I guess –

Kelly: Everything you're doing you understand like

Marcus: Yes.

Kelly: It – do you ever feel like you don't know what to do?

Marcus: Sometimes. Like...

Kelly: Sometimes?

Marcus: Uh, volume as I said.

Kelly: Yeah.

Marcus: I don't know, sometimes I don't understand volume.

Kelly: And what do you do when you find something that you don't understand?

Marcus: I ask the teacher (laughing).

Taylor (laughing)

Kelly: Yeah? That's a good strategy.

Taylor: Yup. Um...are there certain topics or procedures you've studied this year that you find easier than others?

Kelly: So – so what would you say is the one you find the easiest to do?

Marcus: Uh...

Kelly: That you've studied this year.

Marcus: Like – as in like volume, area and like tax and that?

Taylor & Kelly (simultaneously): Yeah.

Kelly: Yeah, like anything you've learned.

Taylor: ...kinda subject.

Marcus: Tax, I guess.

Taylor: Tax is easiest?

Marcus: Yeah, I – I found it the easiest. Teach– like the teacher would put like prices of things on the board, and we have to find that out with our calculators and it's pretty easy, yeah.

Taylor: Ok. What kind of strategies have you been using to solve problems in math class? Do you have a certain way that you like approach a question or anything like that?

Marcus: I don't think so, not like a...

Kelly: When you get a question, what do you do? like how do you...

Taylor: Yeah.

Kelly: ...how do you start it?

Marcus: How do I start it?

Kelly: Yeah.

Marcus: Uh, hmm...I don't understand this question.

Taylor: Like an – an example, when I see a math question, I usually write down all the information I have, and sort of figure out where to go from there, so that's my starting point, but you might do something different.

Marcus: Hmm...

Kelly: Or maybe you draw pictures?

Taylor: Yeah.

Kelly: A lot of people draw pictures as a strategy.

Marcus: Yup. I don't draw pictures, I just draw down – uh, I just write down the numbers I guess and then – or write down whatever I have to and then answer it.

Kelly: And – and what would be a strategy you would use if say you don't know what to do and maybe the teacher's not available to answer a question. How do you – how do you go about trying to figure that out?

Marcus: I'm not sure (laughing).

Kelly: It's a tough question.

Taylor: Yeah, it is.

Kelly: Do you – maybe just start playing with the numbers or something like that? Like putting things into your calculator and seeing what you get?

Marcus: Oh, yes.

Kelly: Yeah?

Marcus: Yes, I do that sometimes.

Taylor: Okay.

Marcus: Like things I don't know and then I would like start calculating some things seeing if it's right but if it's wrong I'll just take it up to the teacher later.

Kelly: And how do you know if it's right or wrong?

Marcus: That's the thing – I don't know. (laughing)

Taylor & Kelly (simultaneously): (laughing)

Taylor: Ok. Umm, are the strategies that you use, like maybe guess and check and things like that – are those different than what you used to do? Or are they the same?

Marcus: (unintelligible)

Taylor: Like – writing down the numbers or when you don't know the question you said you put some numbers in your calculator sometimes – is that stuff you've always done or is that recent stuff?

Marcus: Recent stuff.

Taylor: Recent stuff. Ok. What did you used to do before?

Marcus: Nothing (laughing). In elementary math, I didn't – I wasn't the greatest, and I didn't I guess try that much.

Taylor: Ok. Can you give an example of something you did in math class this year that you understood really well, like something that when you were doing it you thought “Oh, I really get this”?

Marcus: Tax (laughing).

Taylor: Tax? Anything else, or just tax you think?

Marcus: Uh...hmm...like.

Kelly: Cause you’ve done lots this year...

Taylor: Yeah!

Kelly: You’ve done rates and ratios, percents, multiplication

Marcus: I understand ratios.

Kelly: Yeah?

Marcus: Like we're – I think like I understand most of ratios, from what the teacher's given me about ratios – the sheets.

Kelly: Right.

Marcus: And, fractions.

Kelly: Fractions? Yeah.

Marcus: Fractions too.

Kelly: That's good. A lot of people have difficulties with fractions.

Marcus: And...area. I'm – I'm starting to get area.

Kelly: Yeah?

Marcus: Area and volume I'm starting to understand that. Perimeter too.

Kelly: Yeah. And you started doing that within the past couple months right? That's a little bit later in the year?

Marcus: Yes.

Kelly: Ok.

Taylor: Umm...can you give an example of a math problem that you worked on recently that you found difficult and explain how you tried to solve it?

Marcus: Hmm...I'm not sure. Uh...a recent problem that I couldn't?

Taylor: Yeah, something that you found difficult, or like maybe a little bit challenging when you first saw the question.

Marcus: Uh...I found the culminating activity kind of uh challenging in the beginning.

Taylor: Ok.

Kelly: Which – what part was the beginning?

Marcus: Like calculating uh – calculating the area...no. the volume of things like how the question says something about a sandbox and how much sand you need.

Taylor: Oh, ok.

Marcus: And things like that.

Kelly: Oh, ok. That was what you were just working on?

Marcus: Yes, and...

Kelly: What – this is part three of the culminating, what were in the first two parts?

Marcus: Uh, there was something we had to paint – a basketball court which was like you had to calculate like how much paint you would need for the ground area, which is – I found pretty difficult, but I – hmm.

Kelly: How did you go about figuring it out?

Marcus: Mm... with area I get told – like I forget what it is and then I get reminded on like how to do it, like calculate all the height, length and width, I think.

Kelly: Right. So once you're reminded of – I guess the formula, it makes sense – more sense to you?

Marcus: Yes.

Taylor: Ok. Okay, and I just have three more questions for you, but we might add some more as we go, about success in mathematics. So the first one is how can you tell if you're successful in math? And what does being good at math look like? So how can you tell you're successful at math?

Marcus: Handing in my work I guess. If that's –

Kelly: You think that's successful, just handing in the work?

Marcus: Like doing it, yes.

Kelly: Yeah? And what about –

Taylor: What does being good at math look like? So if you're good at math, what does that look like in the classroom?

Marcus: Umm... work? (laughing). Like working (laughing).

Kelly: If you're able to get the work done?

Marcus: Yes.

Kelly: With minimal difficulty – or?

Marcus: Knowing what to do, yes.

Kelly: Knowing what to do?

Taylor: Knowing what to do? How can you tell if somebody knows what to do?

Marcus: I'm not sure. Hmm... yeah I don't understand that one.

Taylor: Ok. Yeah, like if you saw somebody in the classroom and you thought, wow that person's really good at math, what do you picture they would be doing?

Marcus: Uh... hmm...

Kelly: Or think about it this way, what does not being good at math look like?

Taylor: (laughing) yeah. That's good too.

Marcus: Uh... not paying attention, that's for sure.

Kelly: Yeah.

Marcus: Like not doing the work or just like – like me in elementary I did not pay attention in math, I did not like it.

Kelly: Oh, okay.

Marcus: Or enjoy it.

Kelly: So you would say you weren't good at math in elementary school?

Marcus: Yes.

Taylor: Ok. Do you believe you're doing well in your math class this year?

Marcus: Yes.

Kelly: And why do you think that?

Marcus: Uh... cause I do and hand in my work all the time.

Kelly: Excellent, and – do – umm obviously you understand what you're handing in, so that's good.

Marcus: Yes.

Kelly: How do you think your grades are representative of your understanding of math?

Marcus: Hmm... my grades?

Kelly: Yeah. Like does your mark in the class mean anything to you?

Marcus: Uhh...

Kelly: About how well or not well you're doing in math.

Marcus: Yeah. What I'm – like say I hand in something, I get them all right, and just knowing that what I'm doing is right.

Kelly: Ok.

Taylor: Ok. Do you think it's possible for you to become more successful in your math class this year?

Marcus: Yes. If I do – like – do all my work and get ahead.

Kelly: Yeah.

Taylor: Ok.

Marcus: If I do more things like that, yes.

Taylor: So you have your exam coming up as well, do you think that might help you become more successful potentially?

Marcus: Yes.

Kelly: Do the methods – and like the things that you do in class, like the activities and the – all the lessons...do those help you learn? Do you think that those help you become more successful?

Marcus: The things I learn?

Kelly: And just how you learn it –

Taylor: How you learn it.

Kelly: And the – the types of activities you do – do you think those help you learn?

Marcus: Yes. Yeah, as I said the teacher would like put prices on the board and we would have to like figure out the tax, which like helped me understood more on what tax is and how to calculate it.

Kelly: Right. And how is that different from your elementary math classes?

Marcus: In my elementary classes, it's probably because I just didn't like numbers (laughing)

Kelly: Ok.

Marcus: Like I didn't like bother trying to do it.

Taylor: So why do you think that's different now that you're in high school?

Marcus: Well, first cause my teacher's nice.

Taylor (laughing)

Marcus: And – I guess I'm starting to listen now and pay attention to what's going on.

Kelly: Do you think uhh – Mrs. M believes in you? Do you think she holds you to high standards?

Marcus: Yeah, I guess so (laughing).

Kelly: Yeah?

Marcus: Yeah.

Kelly: She thinks you can do it?

Marcus: Yeah.

Taylor: Yeah.

Kelly: That's good.

Taylor: Is there anything else you want to tell me about your math class or school in general? Do you have any feedback? Cause we're trying to make math better for students, so remember that.

Marcus: Math...hmm...

Kelly: Yeah so anything – anything at all you want to say about – not just maybe not math class this year but math in general, like maybe more towards your elementary school math, just suggestions or any feedback you have to help make math better for students like you?

Marcus: Unintelligible

Kelly: It's hard, it's a big question.

Taylor: Yeah, like is there anything specific that helps you succeed in class? Like I know there was an activity from a long time ago where we were measuring things like the doorway, and practical things –

Marcus: Oh yes.

Taylor: – and stuff like that. It's just an example that might not be what works for you, but it might be an example of something.

Kelly: Do you like that type of hands-on activity?

Marcus: Sometimes, yes.

Kelly: Sometimes, but not all the time?

Marcus: Not all the time.

Kelly: No? Umm... what other types of activities do you like to see?

Marcus: Um... just I mean like – I do like going around the classroom and measuring stuff for like an assignment, I do like that.

Kelly: Yeah.

Taylor: Do you like working in groups as well or would you prefer to work by yourself?

Marcus: I like working in groups but it doesn't matter in my opinion.

Kelly: No? That's fair. Umm... and what about like types of math games?

Marcus: Math games? I don't mind them, obviously I would like to do math games (laughing).

Taylor (laughing)

Kelly: Yeah. But the – it doesn't have to be games?

Marcus: Yes, it doesn't have to be games.

Taylor: Ok. Do you have anything else you want to tell us? Any thoughts or feelings?

Kelly: Or comments – it doesn't have to be...

Taylor: Or comments?

Marcus: Uh... no.

Kelly: Any questions for either of us?

Marcus: Mm... I don’t think so, no.

Kelly: Awesome.

Taylor: Ok.

Kelly: Thank you very much.

Taylor: Thank you very much.

Appendix E: Year 2 Teacher Interview Transcripts

Interview Transcripts - Year 2

Interview - Amanda

Kelly: Alright, today is February 1st, 2018 and we are sitting here with Amanda. Thanks again for agreeing to talk to us. And you know the drill, as per usual, if there's any questions at all you don't feel comfortable answering, you don't have to. With that, what course have you been teaching this term?

Amanda: I have a new pilot project, it's a GLS grade 9 numeracy, a grade 9 academic and a grade 11 university.

Kelly: How do you feel that the numeracy course went for you?

Amanda: Upon reflection (and I haven't done it completely and solely yet about how I felt about certain parts of the course) I think overall it was a success. There are things I absolutely would change if we have the opportunity to do this again. And it would be worth doing again. It's not something where you try and say "that didn't work". It did work. And it worked for maybe a few kids, but those kids count.

Kelly: What were some of your highlights for the course?

Amanda: I think the highlight was the fact that I was able to… "save", if that's the way I could call it, "save" some of the applied students that normally wouldn't have been successful in the applied class. Just because the flexibility was there to come in and out of a safe learning environment and build confidence in students. That was my highlight. For those that were absolutely earning the GLS credit, I think for them, they learned the ropes of the school, how to work within the [contexts] of school, begin to understand the rules and regulations, how things happen, and earn a credit along the way.

Kelly: So those students all earned their applied credits?

Amanda: They did. And quite well too. I was really impressed. I don't know if I can say names or not. No but they did very well. SO they were very successful on all culminating activities, performed decently well on EQAO, and I think overall in that actual applied class which started out with 31 students, there was only 1 that needed to change pathways at the end to a Locally Developed.

Kelly: That's pretty good all things considered.

Amanda: Yes

Kelly: What would you say were some of your lowlights for the course?

Amanda: The inability to be able to really pull together the GLS, the true GLS students, the ones earning the GLS, having to work with them in a group specifically for what their needs were. That I think is… I don't know how I could change that anyways… it's just par for the course because of the kids coming in and out all the time, I don't know… that's what I'd like to reflect on. How could I change it so that those GLS kids truly get that whole experience if I could just work as a team with them and less individualized… but that's what they need so… it's hard to find a balance.

Kelly: For sure. What was the enrolment in the course?

Amanda: On paper… On paper, honestly the GLS I started with 7 and by the end there were 4 that were earning GLS. Applied it was always at least 10 coming in and out. And 3—4 that were always here… always. Numbers for those that are looking at course offerings and selections, numbers have to be high in order to run a course. Those were kids that would have been—we would be rescuing them now, trying to find credits for them, and they've all been successful. To me, it shouldn't be the numbers game. It still was a fair number, I think that's…

Kelly: Comparatively a Locally Developed which has 10-15 sometimes. Sometimes less.

Amanda: Yes. Right.

Kelly: So the GLS credit doesn't replace any math credits they must get for their diploma, it's—

Amanda: Right, it doesn't. The beauty of the math teacher being able to teach numeracy through the lens of GLS allows them to gain experience through math which hopefully will turn into success when they are signed up for the applied next semester. That's the idea. But it doesn't replace a math, they still have to take their 3 during their high school time. Yet it gives them the opportunity if I had felt that any of those students that were earning the GLS that did enough work, to support a locally developed credit, I would have offered that. That wasn't the case.

Kelly: That didn't happen?

Amanda: No. It would have been to their disadvantage I think. Just to be able to say "I'm offering you that credit", it was better to give them the GLS.

Kelly: Do you think that any of those students who were successful in the GLS credit will move on to Locally Developed in the future?

Amanda: Umm. Two of them are moving onto applied.

Kelly: Oh wow.

Amanda: We have them rescheduled and we changed the timetable and they're in the applied section. And I'm hoping that somehow along the way that there could be student success opportunity paralleled with the time period that course is running so that similar support could happen so those students don't fall off. The one… the big success that those students had was because of the low numbers and the quiet environment they worked in. Sometimes 30 in a class is overwhelming for those kids.

Taylor: Are you running the GLS again this semester?

Amanda: No it's not running semester 2. We were only able to capture it for first semester this year but the principal is hoping to do one for each semester next year and build it in.

Kelly: Like the fall and the winter?

Amanda: Yeah. One for each. There are kids next semester that I know are in classes that…. We could definitely—those could be another 10 we could have rescued but we'll use other means.

Kelly: And is this the first time that you've taught a transitions course?

Amanda: Ever yes. Ever ever. I know GLS was offered. It's offered in all the schools and it's usually literacy based. It's always been literacy based, and for good reason. There's lots of need for that. The GLS helps support the literacy needs and some of the curriculum through the Geography because that is a high failure course in grade 9. So kids flip to the GLS and have it through the lens of the social science or literacy. It's been years and years and years coming that we wanted it to have a numeracy spin and… it actually happened. So it's been… 10 years?

Kelly: Wow.

Amanda: We've been looking to have that.

Kelly: How did you prepare for teaching this course?

Amanda: *chuckles* Well I prepared to be flexible and work in the moment. I had a lot of resource through the applied. I had done a lot of—I had worked through a lot of big ideas in my applied class the semester before. What I did for the numeracy portion of thinking—if I could use some of those big ideas and activities and weave them into the GLS, that that might work. I'm a math teacher so through that math lens, it was easy to do that component. I did a lot of preparing and reading the GLS curriculum to find out what else I needed to do to connect it so that it was a true GLS credit to the community and global issues and citizenship… all of it. The literacy also had to be there too. It was a lot of other components. But to prepare I thought I was going to (and this is worth noting), the school down east we were connecting with, that I did teleconferencing with, they do a GLS math. We were connecting and were going to share resources but what appeared was… their GLS was a little higher end. They really weren't for the students that I was dealing with. Some of the resources I was able to use in the culminating activities but it was—they're all different and they should be. So really, prepared as the students needed.

Kelly: What were your goals for this course going in?

Amanda: To build a relationship with students and see growth in their confidence. Confidence in the building, confidence in the classroom, and self-regulation: being able to make that first step, ask what needed to be done, be prepared to have the tools that you need and not just sit and wait for someone. For the most part it worked. There were many days

where they still were not agreeable, I mean it just depended on the activity or whatever it was I was presenting to the student. You just have to be flexible. But those were the goals. To build confidence and a rapport where they felt they were connected to the school, that they have somewhere to come to—all of those things that being a grade 9 student, there's a lot of things overwhelming. Definitely didn't want it to be the math that was overwhelming.

Kelly: Right. Do you think that you were successful? Do you think students were more confident?

Amanda: I really do. I really do. If I could have personally interviewed 3 of the 6 that I worked super closely with—it was just evident in their final activities. How they were just expressing, "This is easy, this is good, I can do this". It was just coming together. Everything connected. For me, yeah, I think that was a big part of it.

Kelly: Why do you think that that was successful as it was? Do you think it's because the one on one attention?

Amanda: I think that it was the one on one and then the pullback of the one on one because during that time… and I'm going to say this, sometimes in a student success model it's "help support, get the activity down, and then go back to the class". In my case, I was able to help support, scaffold some learning, and then back away and say "No, now you have to start. You

can't ask me until you've tried this this and this" to build that self-regulation, to build that, "Okay, I'm going to advocate for myself I'll try this and then I'll ask you". Because I could do that every day because they kept coming back every day where in the student success model they might come for a day or two in a week and they don't come back. I think that was a big contributor to why those kids actually were able to be successful on their own… without help at the end. Which is my fear because I was the only one in the class thinking, "Am I helping too much all the time? Are they able to do some of the things?" especially with the applied kids. That was *my* report card. To know that they were successful.

Kelly: Were there any students that you wish you could have done more with?

Amanda: Yes. Two of them, one in particular but there were two. One of my students from a very small remote community who is new to the school, who has had a lot of personal struggles, would come as regular as she could and many days didn't produce a thing, did not do anything but just liked sitting back in her corner and being part of the room. I allowed her to have those days and by the end when I was pushing her to do a little bit more, she actually wanted to and the beauty of all of that… she earned the GLS and then she came in during exam time on her own time, and we afforded her the locally developed credit. Because she was trying to rescue that in an alt ed setting which she wasn't very comfortable with at all and stopped going. So during exam time she came in and we did some coaching and then she wrote Janice's exam and she earned that credit.

Kelly: Wow.

Amanda: And the GLS so she earned 2 credits.

Kelly: Wow…

Amanda: So that was huge. I think towards the end I actually did a lot more with the student than I wanted to because I just felt like, “Did I let her not do anything for a number of days?” but it kept her coming back. Low pressure, low stress, allowed her to stay connected to the school so we didn’t lose her.

Kelly: Just a bit of a mad scramble at the end.

Amanda: Yes. And then a little bit of creative thinking. Think, “Well, what can we do for her? Is she going to be better off to fail that alt ed, that was a last ditch effort. Is it better to let her fail that and go back again and try that? Or capture what she knows, and move on”. Not harming anybody… and building more confidence along the way. The other student that I wish I could have done more with.. yeah.. you think you could teach 40 kids and you could have total success and you have one, and one student is going to be the bane of your existence. It’s good because it’s important to push your professionalism to see what you can

do. You can't change the world but you're definitely forced to try so many different things, and the patience. I mean, as a teacher you have to be resilient too and not take things personally because it was hard many days.

Kelly: Right.

Amanda: But that's why these students are where they're at. They need someone in the instruction phase to push and then pull back and then walk away, and then keep pushing enough and no when to talk away without being offensive. Yeah… there are more things of course.

Kelly: How did you construct the curriculum for this course?

Amanda: I took the big ideas from what the ministry has written for GLS—it did say numeracy, numeracy is a part of it. It just says numeracy as it relates to real world and that is such an overused statement that I can't even bear to say it often. It was just using math where numbers are applicable and useful to kids… and there's some attachment to it. The way I---I just put it into big components and I made sure that during the week that there was always an opportunity for numeracy, piece of literacy and then attachment to others. In my mind I had a good teaching partner and thinking that maybe we could connect to build a community and then the authentic real world was bring them to the lab and doing activities that were hands

on. Those were all in my mind. I mean I never "wrote" the curriculum. I did print—I have the curriculum and I highlighted what it was that the intention was going to be, and then reflected all the time. Have I met that enough? Have we done enough of that? That's how I approached it.

Kelly: Do you think it was relevant to their lives?

Amanda: I do. I really do. I think the biggest relevance though for that course is the social aspect. Just being able to talk to them every day about how the other classes are going, how is school going. We would talk about their friends, their situations, their family life and then we delved into their own personal lives and where they came from. The beautiful part was when we watched youtube videos of their home town. They were highlighting certain things of Martin Falls and—forgive me for not being able to say the right name—I have it, I have it written down. Does it ever bring you to where they're coming from when you're looking at their small little hometown and they're so far away from it… and then they're here and I expect them to do all these things. Many days we just talked. That… I lost track of what the question was but yeah… oh the curriculum and how—yes.

Kelly: Can you give an example of a topic and how it's treatment might differ from other courses?

Amanda: Yeah the math for sure-- A topic in math let's say… there was a few of them proportion, measurement… there's so many topics in math that you could teach, that you can just teach, formula based and rote and all of those things. And we do, because you do need structure and you do need formality, you need to take all those conventions and formalize it so that it's known and it's put in your long term memory but big ideas like measurement and proportionality were really flexible in this course. We were able to do that through our fishy activities where we would count and then we would look at the proportion of the grams in a bag and the number of fish in there, then the larger sizes proportionally if you buy a bigger size. Measurement when we did the cooking: if you double a recipe, if you half a recipe and so we used tangible ideas, things they could relate to. I would hope that that's just good teaching in any course. It was a little more flexible here because I could do it with few numbers and I didn't have a lot of kids to monitor.

Kelly: Right.

Amanda: It could be just in the moment changed, but I think that's how it should be approached.

Kelly: Maybe slightly less realistic in a class of 30.

Amanda: Yeah. Yeah you could maybe try that with one of the topics within the big umbrella of measurement and strive for one really great activity, yet do all those other things that you have to because you can't based on size and number and ability.

Kelly: Right. How was the attendance in your class?

Amanda: They came every day. Every day. Except for the one that sat in the back corner. And I always [knew] when she wasn't coming.

Kelly: Okay.

Amanda: But they came every day unless they were sick. But it was regular. It was very good attendance. It was not ever an issue.

Kelly: No?

Amanda: No. If they felt they couldn't function for that day and some of them needed to go to our extra extra resource room, we called it—I won't refer to it—but we have another room where students are able to go when they need to chill, maybe connect with other people they know. They were still here, they were present.

Kelly: Right. What was the most absences any student had?

Amanda: One was when she travelled to Toronto for a leadership conference. A very good reason to be away.

Kelly: Absolutely

Amanda: Very encouraging. [She was] able to share that when she came back, with the whole class. People actually cared and you had all levels of kids in here so it was really kinda cool that it didn't matter. The level of math they were working on, they really didn't care about what each kid was doing. It didn't matter. They all knew that they were just creating their own success. The other one was usually it was a family emergency or a funeral of some sort—like a tragedy. Those are the longest absences but those were sustained 5 day thing and it was known why. Nobody ever just went missing.

Kelly: Right.

Amanda: Which I think is impressive.

Kelly: Yeah that's definitely good. What were some of the largest challenges for you when teaching this course?

Amanda: Coming up with great ideas every day. All the time. Because you exhaust them. You think that something—that a good idea is going to last you, and we could work through it through a number of days and then it doesn't… Okay that's done now and you don't want to belabour something—how much can you really talk about certain things or do things? So that's why it was important to connect with other classes and do things in a larger group and I think that was important. But that was the biggest challenge to always make sure each and every one of them was able to do something productive in that day. There's evidence of something, of each day. And the opposite would happen, a little activity I think could be done quickly did take longer. It would depend on the effort that the student wanted to put in it. It really did. You can't change someone's perception of "this is good enough". You can only encourage and help them do more. You have to accept what they offer you.

Kelly: What are your thoughts on the levels of support that teachers of these classes or Locally Developed classes receive from fellow teachers? The principal? The board? Parents?

Amanda: I'm going to have to say I had a lot of support, only because the course actually ran. So that—that's the support I'm thinking now was that that's supported definitely through admin, very big push on my administration's part to take the risk and let it happen, who also had to push back some of the senior management—senior staff to say that "we're going to take the risk, I think that it's worth it" and so that was very supportive to me. The department

supported it because colleagues did allow their students to come in and out, and sharing what we were doing. That doesn't have to happen. It really didn't have to happen that the teacher of the applied course would let us take some out and then as they felt, come in and out. Because that's a lot of management, and giving up of your kids. But very much supportive of what we were doing. I think, externally to help run the course, none. That just came from sheer guts and figuring it out and having discussions with a colleague at another school just, you know "How's it going? What do you think?" someone that I've always shared ideas professionally with and someone else who was trying to offer the same idea but completely different model. So that didn't help, that—I thought I was going to have a partner in this at another school but the approach was different so I just went on my own. I don't think we're prepared to be able to support those so I could support someone who would be willing to try it. But I don't think—I don't know who's out there to be able to support those kids. That's why those kids are in the situation they are.

Kelly: What about parents?

Amanda: I think it was a very good support system through student services who were the ones initially I think making some changes. They came to me and said, "what do you think? This student, I know you're offering it". We were building this course as an as needed basis. It's pretty scary starting a class with zero. And I want to go back to that at some point, if it's a question or not, that's a cool piece of information, that they would make the contact with

home, they would suggest what it was that we were doing that this might be the best scenario and then through all of that lens, this student could earn this this or this. So student services was a very big part of reporting that and then as things were going along, the applied teacher would look at their list, same thing, students services would be involved in [that]. I think that was important in building the course.

Kelly: Do you think these levels of support are typical compared to other levels?

Amanda: I don't think so. Well, there's support in the building. I shouldn't say that. You just have to tap into them. If people are aware of what you're doing, they'll help. But you have to make it important enough that they feel that it's good for kids.

knock on door

Kelly: Go ahead.

Amanda: Yeah?

chatter with colleague

Kelly: Do you believe you have sufficient resources to reach every one of your students?

Amanda: I think for the group I had… I would have liked to have more. It would have been—it would have been kind of cool to bring them to—to have resources in the sense that I could take them to the tech area and design something. Have—those are supports but also the access to that, just as we did the foods lab. Just to get out and to be able to be mobile and using math on the run, like doing things that they'll remember and have some sort of long term effect because of it. I mean with fewer number you can have access to computers, you can have access to whatever it is you need but I don't know, sometimes kids just need really good supportive environments where they just do all of the learning. They don't need a lot of resources. They just need support to do the things that you want them to develop as good learners. I don't know… they just need to have good—like the idea behind this was to have good work habits, habits of learning, learning how to work well with yourself and with others. That doesn't take a lot of resources that takes a lot of, just, rapport with students. If you then—you can have all the tools in the world but I'm telling you they're useless. It doesn't matter. It really doesn't matter if you've got the latest technologies, you've got to have rapport with the kids.

Kelly: Do you think having something like a more, I guess, applicable curriculum or something that's one of those types of resources would have helped you? Because it seems like you just kind of made it up from scratch.

Amanda: Yeah that would be very beneficial. If… just like in the Locally developed is supposed to be 'locally developed', but yet even when you develop a good idea, it doesn't mean it means anything to the students. It's almost—it would almost be advantageous to, like if I were to do it again, you know I would have these interviews with students and then we would start with their big idea of what they want to expose and learn about, and then attach the literacy and the numeracy and the global effects to their idea. And have that—and have your community building at the same time at other sessions. That would be what they work towards the entire semester. They would take all those hot topics and apply it to something in their life that they really have importance with. Every time they come in that would be something they would work on or develop and through the lens of literacy, numeracy. It's personalized. Whether they end up with a product, whether they end up with just a big idea. Kind of like what the entrepreneurship course was when I taught it. That was the best course ever. And because you're personalizing each of the learning, every student has to design and come up with their own idea so why can't you do that in every class? When the numbers can speak of it. Although we had--kids are taking entrepreneurship for that reason but you can take that idea and lend itself to a course like this. The resources would be based on the need of the idea that you're developing for each individual student.

Kelly: What can you say about the achievement gap present in your class? Are students comparable—on comparable levels to one another in their understanding/ mathematical skills?

Amanda: No. *chuckles* No, they're all over the map.

Kelly: How drastically?

Amanda: Drastic to the point where those that can achieve the applied level vary fluidly with the right supports that going back to basic basic numeracy of the addition—and I know we say well "do you always need to add, subtract, multiply, divide?" but just the sense of number is not there. That's the gap. Those that could achieve the applied just needed that little bit of guidance, to not having any sense of number.

Kelly: What about the literacy?

Amanda: *emphatically* And the literacy piece too. HUGE. So then a lot of numeracy content, a lot of flexibility with numbers and the mind and mental math, but literacy… communicating it whether it's written or verbal, and reading it… just not there. Huge… to the other side where that's where they excel, able to write fluid sentences and full sentences and ideas and capture ideas.

Kelly: And those skills weren't present in some students?

Amanda: No… nope. The penmanship, the ability to write words clearly, full sentences, not there.

Kelly: Do you believe anything can be done in elementary school to attempt to mitigate these problems?

Amanda: That's a question that I always like to address because I really believe that there's so much that can be done and I know there's a lot being done. So I'm not saying that there's not a lot of work, because they have their challenges. Math is not their all day subject. Math is a small component but the work habits and the learning habits and the habits of learning… are all day. We can work on those skills all day prior to grade 9. I think where I felt totally at loss was when I couldn't help the student who did not have the penmanship and the ability to write, the ability to put a full sentence together in my one semester with him, one period, not all day, to try and help break those habits apart. Where maybe if there was intervention, focused intervention, on those skills that kids need, it would serve them a lot better when they make the transition. There's enough that goes on when they're coming here but the habits of learning—we could drive and teach content, but if the habits and the way of learning is not there… that's really tough when you're doing both when they don't have either. Content or habits that are effective for learning. In those earlier grades yes I know lots of things are changing, lots of PD with teachers are happening and there are good things. I mean we're going to have to eventually see those benefits but it won't be for a while. But within even the

7/8, 6/7/8, we need focused remediation so that we don't have a 5 year gap of learning. We have maybe a year. Or two. Not—it's just so huge. To those 7 and 8 teachers I mean they don't—they're not given the resources. It's just them, they have so many levels of students and yeah, talk about resources needed. They don't have the resources there or the people needed to facilitate that learning. There needs to be a facilitator at each of the high risk schools we have that could rotate 3 times a week, come in and pull kids. There's nothing wrong with helping a student gain confidence and skill based learning to help close some gaps. Earlier than later.

Kelly: Right. What can you say in regards to the current practice that students are often times not held back from elementary school when perhaps they should be, so that they can remain with their peers?

Amanda: Yeah… I know that there's a lot of stigma that people feel if you're held back that's not a good thing but it's worse when you're not able to function in a class, like that's worse. You're really doing a disservice to a student by throwing them into this big vortex of learning, that they don't even have a clue and just—the failure is even more so. There's just failure on top of failure. It's supposed to be a new start sometimes for kids, I get that, maybe elementary didn't work out for them and high school could be a new start and keeping them back could be the worst thing… I don't think we need to keep them back, I think we need to work with them earlier on then we don't have to worry about thinking about keeping them

back. We're putting in place, maybe now more than before, safety nets with student success, alt. ed… these rooms are filled with kids that are closing gaps trying to rescue credits. We now have the GLS that's running. I'm hoping—that this was only supposed to be temporary. It shouldn't be running all the time this is something that should only help close that gap between the work they're doing early on in elementary to now. It should be not a permanent thing. Should be something that's—because there should be early on supports as well as grade 9, but earlier on so that we're not in such a situation for kids. I mean… 20% are placed? I think? It's not a good number… 1 of every 5. I think it's higher than that now… just placed.

Kelly: Meaning just kind of nudged along?

Amanda: *nods* We have that data. I was closer attached to it when I worked in my other role but it's—yeah if you look—I mean, I know people don't want to say that EQAO is usable data for that sense but if you do look at data in grade 6… I mean we do a heck of a job in grade 9 closing a lot of gaps and kids actually earning credits based on their results in grade 6. I don't know. They need to be supported earlier on, with focused attention in habits of learning and mathematics.

Kelly: What sorts of lessons or activities respond best to?

Amanda: Ones that they enjoy doing. When I think it's going to be a great idea and I see that it's not going anywhere… an example with one of my students is card playing. He really loves cards and really loves games. If there's anything that's outside related to that, there's not much that I can—there's not much connection with that student. [What] he did during the course of the semester he created a powerpoint based on a game he was creating and I have it. We didn't go anywhere with it but he actively wanted to do something with that. Those are the activities that I feel kids attach most to but can you always just make stuff up like that? No. The numbers allowed that. But where kids can put their own thinking in… yeah. And there's an entry point for them, yeah. Those are the most worthwhile activities.

Kelly: So Ideally every lesson would be like that but you don't think it's realistic?

Amanda: No. No because there has to be time built in for raw skills, and then problem solving, and then utilizing all of that. In a perfect world I would love to have a five day cycle of: skill building, exploratory, sharing, building the skills, and then a project base. Having a cycle to work through because it can't be. I've seen results of when it's all just fun and games and all "This is great, we have these big ideas" and then nothing is consolidated in learning. Maybe sometimes that's what happens when they're exploring new ideas in elementary school, they're exploring and it's not consolidated enough on the individual. It's consolidated as a team, as a group, but…

colleague interruption

Kelly: Feel free to talk about this one at length, I have it starred here, is student opposition present in your class? If so, what forms does it take?

Amanda: Yes student opposition. That was new to me. Not that—yes there was definitely student opposition. In the sense that it took on every aspect. I have to say that I feel like I'm a very approachable person, I'm a very patient person… in my years [in] education I've never been challenged so much with a student who is so opposing to everything. Argumentative, just angry, resistant, defiant, yet could offer so much. There could be so much there, so it was a daily battle of—it was never going to be "who's going to win?" because I didn't want to "win", wasn't about me "winning" over that student. It was about me winning over the fact that we could find a level ground where he could function, produce something, and feel good about it. And push forward maybe some learning. But it was always a battle of a blame game, the student would blame everybody else prior, he is the way he is because of others. It never was, "Well I could fix that. Since I'm in here now I could fix this, and we could work on this" and that would always be my comment. "Well it is what it is, let's move forward, let's maybe try this, maybe this could help". When you can't—I know that you can't change somebody, you can only change yourself, so I would change my approach. But it was really hard because I had nobody else to kind of turn to, to say "Well, got any ideas? Is there anything that"—it just was a daily battle that I didn't expect to have to have. I really didn't

and that was the hardest thing. I've never had conflict with students, and it wasn't a "conflict" but it could have been bad. Had it been anybody else in that environment it could have turned really bad. It just—I don't escalate, I just walk away and let the student be what they need to be. He attended every day, never missed a day, always was here, but wasn't prepared to work. In his mind, wasn't really prepared to work and put a lot of blame on me for not teaching him in a way that he was learning. I don't know what to do with that. It ended up—I've seen success, he did a number of things it just… I don't think he was able to function that way in a larger class, like his geography and science class because there was lots of students in the class, I don't think he was exposed that way. Whereas here, he became who he really was and maybe took out a lot of his frustrations with me. I was quite the sounding board. It was very exhausting.

Kelly: For sure. That kind of follows into my next question, how was student engagement in your class?

Amanda: Other than that where there were times where that student really did engage in the learning, overall students were very receptive, very responsive and did a lot of things that—participated in everything. They were very good. But they also—David Tranter always said you had to put in—you've got to make a lot of deposits with your students, build a lot of rapport before you can start pulling back. Students felt that it was a give and take all the time so when I said that "You know what, no today, really we need this, you need this. This is

what has to happen today. Tomorrow we can do this" so yeah the engagement was always there. It was never—and it was just evident in the attendance.

Kelly: Aside from that one student?

Amanda: Right. Yeah.

Kelly: What role did cellphones play in your classroom?

Amanda: As one of the students had said, she said it's a distractor for me. She admitted it. It got worse as it went along. It never changer her personality or who she was, very pleasant, very cooperative, very engaged when she needed to be. Just the phone became her well--it's just—it's there. They're addicted. Totally addicted. When they weren't present at all during the EQAO and final assessments, that whole last week when they really had to be out—like out of their personal space—it's incredible what you can get kids to do without that phone near but it's not our right to take them you use them productively so sometimes I'd have them look up things on their phones. But I would allow them, work time? They can use their phone. Was I going to send kids to the office because of it? No. It just—you've got to have a lot of—a level of acceptance and maybe sometimes that is not what happens but personally I don't want that to be the case but if I want kids to respond to me, I've got to give in, give and take a little bit.

Kelly: And the school's policy on cellphones is?

Amanda: Bring your own device yeah.

Kelly: And teachers can't confiscate them?

Amanda: No. Not rightly so no. They can be asked to be put away, they can be asked to turn over, turn them off, don't engage in them while the learning is happening. But it's a non-issue with—you just can't take it away. It just opens up a whole other can of worms.

Kelly: Yeah… How would you describe your students' attitudes towards mathematics?

Amanda: Well at first, especially the applied students that were here working, a lot of anxiety. Huge. "Not smart at it, I'm not good at it, I can't do this". When they started coming in—and the reason the attitude was—I was aware of the attitudes was because I went seeking out kids that we could populate this class for. The first two weeks of September, I didn't have any kids, so I visited all the students in all the classes and I would go through, I would meet with the teachers, anybody exposed yet that you feel needs support? Because they were all timetabled period two, all levels of mathematics. And so they would come because they would shut down because they didn't feel they could do the math. That's how those ones

started. A lot of those applied kids they just couldn't do anything and I refused to put them in the GLS right away because it wasn't indicative. Just because they couldn't do it at that moment didn't mean they couldn't do it. That was the other thing, taking the risk of helping them but not taking away their future chances of earning the credit. Gave them a fair shot at it. Yes their attitudes at first, definitely couldn't do it.

Kelly: Where do you think those attitudes came from?

Amanda: I think just the newness, the fear of being in grade 9. Just too fast and it's so new that they think, because it's new they can't do it. But you're not supposed to know how to do it, because you can't, you've never seen it before. If it's a new concept, like polynomials, it's new. So I think helping kids break that down as you're teaching a new idea, that nobody knows about it, this is all new to everybody. You're not the one in the corner that doesn't get it, nobody knows about it because you've never heard about it, that's why you're in this class. I think we forget to tell that to kids, that "Okay we're all in the same boat here, that's why you're in this course. If you knew it why would you be here?" That really helps kids. That really helps them think, "Oh. It's not me". This is new and it's going to hurt your brain every time your brain hurts that means you're learning. It's not because you're dumb, it's not because you're stupid and that you don't know how to do it. Those are the words and the things that you say to kids to help them think it's what the learning process is supposed to feel like. It's supposed to be uncomfortable. They don't think that. Uncomfortable comes

with “I’m stupid”. It’s not, “Oh I’m going to learn something”. You’ve got to change that. That’s what was able to be done with the attitudes.

Kelly: And your attendance numbers kind of speak to this but do you believe students are motivated to come to class despite that anxiety?

Amanda: Yeah, rush. They’d come straight to class. They would be flying in here before the music even started. Yeah. They’d have their little spots and…

Kelly: I think you kind of hinted towards this but do you think that situation would be different if say they were going to the applied class with 30 other kids?

Amanda: Mhm. I can tell you from the experiences that I’ve had, when I would go seek out kids, there would be kids in the hallway, there would be [some] standing at lockers in front of the classroom so they wouldn’t go in. I would ask who they were and then I would have a conversation with them and said, “well you can come in here then”, bring them to my room because the other teacher would be teaching, they didn’t want to go in. It was just too overwhelming. Had there not been someone at that exact moment at that time those kids go away. Those kids go away, they go out the back breezeway, they leave the school. Yeah, it’s too overwhelming for them. Start slow, then go big.

Kelly: Speaking anonymously, can you give some specific examples of issues that students are dealing with in their personal lives?

Amanda: Alcoholism, abuse, death, suicides, living on their own.

Kelly: At 14?

Amanda: Yeah. Taking care of siblings, no food, drug abuse themselves, smoking holy… smoking lots. I don't mean just drugs but just smoking itself.

Kelly: Like cigarette smoking?

Amanda: Yeah. I had just lengthy—one whole period we talked about smoking. The one student and I, we talked about it and related it to her father and related it to—just the whole idea of not just the physical smoking but what that relates to and what that means, and what that means about a lot of things. It was just so revealing about student's life. Yeah they come with lots of stuff. Doing some math is not important. Just being in a room where someone can talk to you, maybe give you a snack, maybe just have a chance to say, "Oh I'm going to be safe for an hour", that's what you provide first. And then you know, I would say one question first, one thing, just show me one thing today. Just do a warm up today and that's good. We'll chat with you tomorrow. Those are the challenges and outside of their own personal fears and

inability and lack of understanding, low… low educational supports—that's not right. But they don't have any supports to move their education forward as soon as they leave the classroom. There's no one in their life, a lot of times, that can help drive that need to learn. Then the opposite is true where they just suffer from anxiety, because they do want to do well but they have never been able to see success. There's trauma, and then there's just self fulfilling prophecies, that no one has ever shown them that they can do it.

Kelly: And obviously it's an insurmountable task seemingly but how do you try to.. not solve those problems but how do you respond to them? How do you try to improve their situation?

Amanda: Listen. Just listening to them and welcoming them back the next day, giving them some adult freedoms. Like, "You need to go for a walk? Sure, go. I'll be here. Just make sure you come bask, 10 minutes come back". There's a lot of—you deal with them through respect because if they know there's a respectful adult or someone who actually respects them… I think they—I don't know, I have no idea but I can only assume, they feel wanted or at least cared for by somebody. And then they'll come back. That one example… yes wouldn't want—if we could say go home with that student for a day… try it and see how you'd come back. Right? You know, it's—so when they come back it's got to be like this great thing. It is a great thing because it's like, "Oh thank god she made it". You know where she's going.

Kelly: Do you believe that there's societal or structural barriers inhibiting your ability to teach these students in the transitions and Locally Developed courses?

Amanda: I don't think I have enough training, I don't think anyone ever will on our diverse population, specifically our First Nations people, those that self-identify or not… you can't be trained enough in anything, you just can't be. There's no one who's able to tell you how to deal with any student that has deficits. You can't because that student—I mean we could have global ideas… but we always bring our personalities to it as well. If you don't have the empathy available, doesn't matter how many times you could be trained and go to PD and go to resources—you have to have empathy to be able to look beyond the fact that they're not doing your task today. And maybe they're not going to do it tomorrow, and they're only going to do something. For a lot of parents that have these students that do have supports, their main goal is to get the kids to come to school and that's their biggest success. We have to change what we think success is for a kid, not always just the credit.

Kelly: Do you believe that there's anything that can be done to help improve success for these students?

Amanda: Yeah to give them—they should have mentors. There's a lot of us in this building. I don't know what the percentage is but let's say 10%... let's say 100 kids. If we could attach ourselves or if that student could be attached to somebody, just to check in for that day, that I

would know that on my prep I would go say, “Hey, how’s it going today? Is there anything you need? How’s that..” if we could each have an attachment to these at-risk kids. They’re going to have their own classes, they’re going to have their alt. ed. Classes, they’re going to have student success, they’ll have their Rhonda room… but just have someone else who actually is a caring adult, a mentorship program where we’re all attached to somebody. That’s easy. It doesn’t cost anything and just reach out to a certain cohort of students to keep them in the school. I don’t know… there’s a lot of creative things that you can do. You just have to have a community of staff who want to engage in it and change the mindset.

Kelly: I’m going to swap these questions around. It just makes sense this way. You mentioned something earlier this year in one of our discussions, you said and this is a rough quote, “Manipulatives have no use if students don’t understand the math behind them”. Can you elaborate on what you mean by this and what this means for your class?

Amanda: Yeah. That’s so good! That’s so true. I’ll always believe that because you can have a piece of technology, have your little linking cubes, have all of those but if you don’t know the math behind it, it’s just another tool. That was evident and that is exactly what happened when we went to the lab and we measured using measuring cups. It’s a tool and it shows measurement, and it shows half. Or it shows ¾, and there’s a full cup. But then you can have a bigger cup. A cup, and then a cup. When we were making pudding, I had 2 students on that

duty and it had called for either a cup of milk or whatever the case was but they were just filling up a cup.

Kelly: Just any cup? Not… one cup as in

Amanda: Not a measuring cup as a tool but just a cup. So they grabbed whatever cup they had and they

Kelly: Like a drinking cup or something?

Amanda: Yes! And used that as their measurement tool… Now had it not been pudding, we just threw in an extra package pf powder to thicken it up, but the idea behind it is that they didn't have a concept of a cup is 8 oz, it's 250 mL, it's just all those things that have different sense of proportion. Even if it's long and narrow, wide and fat, a cup is specifically a size of something. Not just the physical word cup. So there it is, you don't know the math in your tool, it's useless. The learning that happened there was exactly what is a fallacy with manipulatives, it's useless unless you can drive home the meaning behind it. Yeah it was funny. It happened a lot. Oh gosh. It happened a lot in cooking. But that's why you've got to do those things. Yeah there was too much flour, not enough flour just because they weren't understanding the measurement. I remember the salt, gosh, it was my applied students it was

only just ¼ teaspoon, and I think they put ¼ cup, ¼ something. They were just looking for the ¼. So we threw those out.

Kelly: Seems like often students don't have a concept of, I guess, what's realistic and what's not.

Amanda: Yes! And that's the size of the number. They don't understand the proportion of it. That's it. You said it well. They don't understand what ¼ of something really is in terms of the whole or they don't get 1000 is a lot but if it's only 1000…

Kelly: Mililitres?

Amanda: Yeah they don't have that sense if number. That's really important. That's numeracy.

Kelly:*to taylor* do you have a question before we wrap up?

Taylor: No

Kelly: Okay. You mentioned that you wanted to come back to the fact that your transitions course started as a class of zero?

Amanda: Yes.

Kelly: Is there anything you'd like to add onto that?

Amanda: I just—the only… discussing that you can actually have a class that has no students in it is a risky thing for admin to do. Very risky. I commend the staff to be able to support that for me, to have the confidence that something was going to happen. I was taking this risk thinking, "I hope something is going to happen. There's got to be some kids out there I know that need help". And I had names and I had suggestions from grade 7/8 teachers from our feeder schools and I started that process. But there was nobody. To think that there was nobody in my class period 2, that I would come to class and no one was in my class. It was my job to go out and find students that we could support is a whole different approach. It's just not what happens. Kids are identified, they're put in, and then that's who you have. I think this way, kids, really wanted to be in here because it's a place, "I'm going to be rescued here because this was a safe place to go". Rather than, "Oh, this is where they put me, I'm going to do this now". It wasn't. It was everyone wanted to be here because we all chose to be here. It was a good decision between the student—usually it was the student decided, they got to work here for a day, they kind of got used to it and "Could I come back again?". It was a self-populating class and student services were very—because they had lots of kids that needed places to go and they never put them in. It was something that was to be decided

among the math classes and myself. That was really cool. The other model that was happening at a different school, there were kids populated, they were the kids, and then they kept adding to it. So there was this huge cohort of kids already in a class that was decided upon to be this particular type of course. When you said what engaged kids, what kind of activities engaged kids, I also believe the course that a student chooses is also engagement. They didn't—they chose to be in the class because they wanted to be here. And then I think they were successful because they had a part in that. From zero to… the growth I think it's kind of cool. Very risky.

Kelly: Yeah.

Amanda: With a numbers game and when courses are being cancelled, things aren't running… but it has to be a strategy. You have to do something different in order to help kids. Yeah, we tried it.

Kelly: High risk, high reward?

Amanda: Yes! It is, it is exactly that. If there's going to be some issue with trying to have it run again because the numbers were so low on paper—like I don't have the evidence that those students from next door—I mean yeah they passed, they got the credit, they succeeded very well. But nowhere does it say that it's because they came to this class. It's just a known thing, personally that this is what happened. Of course I could speak to it but…

Kelly: That can only go so far

Amanda: Yeah but they really want raw data. There will have to be a way that, if it does come to fruition, I would track it more specifically. If that's what they need. But I don't ever want to be inhibited, that was the whole reason it was inhibited because we just didn't have sections. People didn't want to take the risk to give up a period for something like this.

Kelly: Yeah.

Amanda: I get it but then I only get it for so long. Just too frustrated not to.

Kelly: *to Taylor* You had a question?

Taylor: Yeah I have a question. It's a bit longer. What do you think led to the point that students became enrolled in the GLS class? Do you think it might be outside factors? Anxiety? Home issues? Or do you think it might be internal factors within the school, kind of slipping through the cracks?

Amanda: Yeah… that's a good question. I think each student came for each of the reasons you just said. Different reasons. One definitely was anxiety space. One was no confidence.

One was social, definitely social. One was fear of the school. One was home. They all had their own reason to self-elect to be in this class. Yeah it's not one reason and that's maybe why it's also successful but yet they all got along. It was really kind of neat. All of these people that chose to be here for their own reasons, really became their own little community. And had conflict within their community. Yeah that's a good question. They came for all those reasons and more. Yeah. No one in particular. It wasn't just for math ability. Yeah…

Kelly: Is there anything else that you feel is necessary to add to the dialogue surrounding Locally Developed and/or Transitions mathematics?

Amanda: I would feel that it would be important to timetable if we have to be stuck to structures that the structure has to be one where we are running the courses during the same block in order for it to be effective. Then you're not uprooting students' timetables, you're just manipulating their math knowledge. I think that's important for admin to understand, for senior management to understand. That in order for things to work, you have to have the right—things have to be in place. You have to have the right people and you have to have the right courses in place for it to happen. You can't just offer it in isolation and think, "Oh we've got this course and you can move into here" and then they're stuck. The freedom was what made it work.

Kelly: And in your opinion, which type of teacher should be teaching these courses?

Amanda: Someone who is not bound to curriculum, adheres to it but not bound by the order of it and the definitions of it. And one who has a very very flexible growth mindset that you—that you work from a positive perspective, one that is not negative, that has to be always be "the glass is half full". Because they were empty… these kids, there wasn't a lot there so you have to always have a lot of energy for these students to make them feel like it's worth coming to class. I know we have a lot of those staff members but it has to be directed properly. You have to be able to celebrate crumbs of change, like the little things that matter because it's big in their world. How do you pick those kind of staff members? They often need to be the ones that elect to want to do it because you can't just timetable someone in. That's difficult in the shrinking numbers that we have. It has to be someone that really has a growth mindset and can be flexible in how they deliver curriculum.

Kelly: Is there anything else you'd like to add to anything?

Amanda: No I just think it was a great, great experience. It really was. It really was worthwhile. It was very stressful at times, I felt like I was not making progress or gains. I self-reflected constantly thinking, "What am I going to do? Am I doing enough?" That was—I… for myself at this point in my career, to daily question what I was doing… I mean that's huge. We should. You should never be in a profession and not.

Kelly: For sure.

Amanda: But it was overly. I was really glad I had a colleague I could share some things with and just talk through it. That was important, because it was a little crazy otherwise. But that's it. It was great and it was great to have support, of all of you to come in as well because you were able to have an external set of eyes and hands on with these kids too. You have a sense of what's going on, so it's not just my verbatim, what I'm saying. You can kind of live it as well. You have an understanding, a piece of it.

Kelly: Right.

Amanda: Yeah. I think that's it.

Kelly: Awesome, thank you.

Amanda: Whew!

Interview - Janice

Kelly: Today is February 1st, 2018 and we are sitting here with our second interview of the day. Thank you for joining us. Feel free- you don't have to answer any questions you don't want to so feel free if you don't want to answer it, just say "pass" for any and all of them, just whatever you're comfortable with. With that, what course have you been teaching this term?

Janice: Grade 9 workplace math.

Kelly: How do you feel it has been going for you and for the students?

Janice: Overall I think we've had a lot of successes, most of the students have earned their credit and they have taken away knowledge. I find that there has been struggles along the way, just trying to engage them into the content. But trying to make connections and get them into the school community was part of the problem. Making them feel like they belonged. I do feel we had successes by the end but along the way we had challenges.

Kelly:*pause* Sorry I'm just going to write something to come back to. Was this your first time teaching Locally Developed math?

Janice: No.

Kelly: How many times have you taught it before?

Janice: I haven't taught the 9's, but I've taught the 10's before… so yeah. Just once before.

Kelly: Just once?

Janice: Yeah.

Kelly: Okay. How did you feel when you first discovered you were going to be teaching Locally Developed mathematics?

Janice: I felt okay. I'm willing to tackle any course. Every class has its own challenges and I wanted to first see what types of students were in my class and then I was going to go from there. I was pretty open to working in the classroom.

Kelly: What types of teachers are regularly assigned to teach locally developed in your opinion?

Janice: I… Well it depends on the circumstance right? Sometimes it- everyone is given an opportunity—it depends on what department you're in. Sometimes in a school everyone gets

every level just to keep it balanced. Sometimes its teachers who can benefit the kids so they can work well with the kids. Sometimes it's one of those classes where some—like if you are in a certain program the academic, EQAO classes it's important to have a good teacher in there. So sometimes maybe it's other teachers who have a hard time making connections with the kids.

Taylor: I've heard that sometimes newer teachers can sometimes get Locally Developed math courses. I don't know if that's necessarily true or if you can speak to that at all.

Janice: Sometimes I think the newer will get the applied and the Locally Developed as an introduction to starting your teaching career for sure. When I started I didn't—that wasn't the case. I started with Academic and pre-IB so it was great. It's not always… I find… it depends. I think it depends on the dynamic of a department, what the needs of that department are, what are the needs of the kids and they fill accordingly. Sometimes what they'll do is they'll post those because you don't know who you're getting and when you're divvying out the sections in your department at least you can pinpoint the needs there and then because it's kind of a lottery who gets that other course sometimes that's why it's put there. It's not as detrimental but actually, you know, the high risk kids are the ones that we have to be looking after.

Kelly: Right. What are your thoughts on the curriculum expectations for Locally Developed as outlined in the ministry document?

Taylor: Do you want to repeat?

Kelly: What are your thoughts on the curriculum expectations for Locally Developed as outlined in the ministry document? So the curriculum expectations in the curriculum document meant for Locally Developed?

Janice: I think they're manageable for the students which is important. A lot of them are life skills, especially like the money-sense unit and even the simple area. Most of it I think is applicable if that's as far as they're going in their math. They just need those numeracy skills to get through their high school career or just for life skills. The way it's put out I think it has to change. Not just teaching units, more like projects and things like that… that's another conversation but I think overall what they [expect] of the kids is fair and reasonable.

Kelly: Do you think it's relevant to their lives?

Janice: Most of it. Some maybe not. Area of a circle for like a grade 10 workplace… I don't think they'll probably ever need that but looking at volume of a prism is reasonable. Area… if you're making tasks that are relevant like painting a house. I think that's quite applicable.

There could be some components that we could leave out but I think if you try to make it relevant and connect it to their daily lives—like fractions and recipes—things like that I think it's okay.

Kelly: You said that you'd make some changes to it, do you want to elaborate on that just a little bit?

Janice: I think that just because of the nature of the students that we have and with attendance, I think I would change it to more project based learning which would be more relevant and connected to what their everyday life task is. It could even be starting about, you're building a shed and looking into—researching how much wood costs, and then the paint. Who knows, you could even take a field trip to home depot to figure out all that. Then even making a model of it after, so hands on with connections to things that they would benefit from doing. Then each student may be working at a different pace, you could talk with them as a group doing numeracy skills. But I think as long as [you use] different projects, they just come when they get there, they're not feeling like they're behind and they've missed something. It's a little more seamless for the student.

Kelly: And would you say, in that ideal situation, would students be working on the same project? Or different ones?

Janice: You would have the same because you'd want to meet those expectations in the curriculum so you would make sure that those expectations were covered, but you would have a series so that if someone was only their half the time and they got through project one and two, that would still encompass and you would see they met those expectations. Then you could push them a little bit or have a few extra ones, different sorts, so that they're challenged in different areas.

Kelly: Right. That sounds cool. How was the attendance in your class this term?

Janice: Initially it started off really well and then we dropped for a bit. Then—I don't know, it was up and down. I had initially 15 but one was homeschooled so had 14. Near the end too I had 8 in the class but there was outside circumstances so… it was okay but it wasn't great.

Kelly: Can you provide some specific numbers for student absences? Are we getting up into the 20's, 30's, 40's range? Because there are what, 90 days in a semester?

Janice: Yes. The lowest number… I'm just trying to see is 3, [student 1's name] missed 3 days. And the highest was [student 2's name] which was 45 but she then left. She hasn't been back—she is inactive now, so I don't think we can look at that, and then [student 3's name] was at 45.

Kelly: So that's half the semester…

Janice: Yeah… but he's extremely high risk. He came in with me and we worked on some stuff but he was in court lots and I think he has another court date—I think today so there's… other circumstances with that.

Taylor: When he was there though, I found him to want to work.

Janice I think so yeah.

Kelly: He's a very nice [young] man. He was always extremely polite when I talked to him and…

Janice: Well he did the second part of his exam, he did his first part in class, he did great. Then we were plowing through the culminating and then he's like "My head hurts". I think he hit his cusp. He lives in the group home, you know—so there's things—the group home seems supportive and they encouraged him to come and they drive him every day. I think the attendance, depending on the student—although he did earn his credit so that's good.

Kelly: Good for him.

Janice: Yeah.

Kelly: We're going to come back to extenuating circumstances in a bit. What would you say are some of the largest challenges for you when teaching this level of math?

Janice: Attendance is huge. Then the fact that students come in with all different needs, not mathematics related. Trying to meet the needs of the student and work with them to learn of a bit of math, I find, you know sometimes they have so many problems that math is the least important thing in their lives. I find that's really hard. Then to engage them no matter what type of task you do, that engagement level isn't there. For some, they're engaged no matter what you're doing. But to try to get them really into what you're doing, I find that's really difficult… and keeping them motivated. Task completion is sometimes hard too.

Kelly: In the Locally Developed curriculum document there's expectations for things in addition to the math content, like there's literacy, work habits, community building… that seems like a lot to try to encompass into…

Janice: …one course yeah.

Kelly: Does that provide challenges in itself?

Janice: It does but the way I approach any group classroom I try to encompass that, you know, building—making those connections, building community. I've brought classes to the shelter house, I've tried different things. I find that those are the skills that are more important than sometimes the stuff we're teaching. I find if you make those connections with the community building, teaching is so much easier too. You can make those… the work habits and stuff, you try to help them with that in any class. It doesn't matter if it's Locally Developed, maybe their needs are higher, and they have had less structure, less help with that. But I find—I think it's an open slate every student. You can have [an] academic kid who has poor work habits, it depends on what's put in front of you and you kind of tackle that full force to meet their needs.

Kelly: True… What are your thoughts on the levels of support teachers of Locally Developed courses receive from fellow teachers, the principal, board, parents, do you feel supported from the other levels of education?

Janice: Sometimes… Sometimes I feel that Locally Developed because the types of students and their families, those are the families that may not, like if there's a problem they're not in fighting for their child. Sometimes I feel like they're pushed to the wayside and it's not focused on as much, although those are our highest risk kids. Our school though, I do feel that if I needed to reach out for support—there's Rhonda, Dave, and student success. There were opportunities for them to go elsewhere. Within the class though, trying to help each of

the needs, though the class numbers are small, there are so many high needs that you could probably have a 1-1 ratio of student support people and that would still just meet their needs of helping them through it. So yes and no. I don't know if that's very clear. I think maybe more focus should be put into these classes--more resources so that we would be able to take them out into the community and do that community building and do that building with them. Even going to the foods lab, that rarely happens in Locally Developed courses that I've seen. The last one I had did not have—and it depends on what school you're at too. A lot of it is just sit in the classroom and do your work which is not really meeting their needs. Trying to get them into those real world experiences I think would be beneficial.

Taylor: Locally Developed students don't write the EQAO testing and I know sometimes there's a lot of emphasis placed on school scores for EQAO testing, so there's lots of focus placed on Academic and Applied classes for that purpose. Which might take some time away from the Locally Developed classes I'm not sure if you've felt that at all.

Janice: What do you mean "take time away"?

Taylor: Less professional development and less offering of support and resources given to you versus applied or academic classes.

Janice: For sure. When they're applied or academic—9 Applied is one of the big ones right now, [Applied] is the focus so there's tons of—the RMS strategy… We have huge PD on all of that. It's focusing on the 9 Applied, by all means. And the Academic, yes, for sure. There is nothing—I don't think there's anything for Locally Developed. Which is obviously a problem especially with the pass rate and the type of kids. These are the ones we're flagging as the most at risk.

Kelly: And it's receiving the least support?

Janice: Yes. Especially when they say "The highest risk kids are in all of these classes" and we're losing some of them…

Taylor: Sorry I had that question.

Kelly: No that's a perfect follow up question. I did have one but I can't remember what it was. Probably wasn't important. Do you believe you have sufficient resources to reach every one of your students? You kind of hinted on this. Can you describe some resources that would improve your ability to effectively reach your students? I know you've commented with us just being there during the day that having us there is helpful.

Janice: Yes

Kelly: So… extra bodies?

Janice: For sure, having more people in the room helping the kids because I physically can't get around to meet everyone's needs . Especially when you want to do things like activities. Even in the lab. Thank goodness you guys were there because it was basically one per station and I still felt like we were flying around. Those are the activities that could see it bring out kids. Even [student 1's name] you saw a different side of him. Even [student 3's name]… the way he engaged in things like that. In my grade 10's, kids who sat there [and] would not say a peep were talking and laughing. Having those extra people to work with them is huge. And I know that is not a real situation… I don't think we can. But maybe we could pull in people to volunteer and—from the faculty or whatever to help support these classes instead of going into an academic classroom. They do the literacy support pulling kids, why not have the numeracy support from there as well.

Kelly: That's true they definitely—the faculty does do literacy coaching.

Taylor: Yeah high school candidates don't do any sort of "in the school" in terms of coaching. I didn't do any placements inside the school besides my main placement, I wasn't in literacy coaching.

Kelly: Oh you mean I/S?

Taylor: Yeah I/S students don't do any of that so it could be an option.

Janice: Yeah that would be great. Even if you have one person. That one extra person can go—but it's also the way… it depends on the teacher too and what the approach is. I would say, for sure, having more people and even having time to build different resources. It's very limited. There's lots of things I'd love to do and go, having more I guess of a budget to support these kids too. You saw, I brought food in all the time. They were starving. It brought some of them there. It helped and I know—I think they appreciated that and kept them maybe a little bit more focused because they weren't hungry. They do offer food in the school but sometimes they don't want to go into a bigger room where everybody else is.

Kelly: Definitely lots of resources that you think would help?

Janice: Yeah…

Kelly: What can you say about the achievement gap present in these classes? Are students on comparable levels to one another in terms of their understanding and mathematical skills?

Janice: No. It's a very wide gap. There's lots of holes in their understanding for sure. There's kids who come to us and they have maybe done grade 6, and then they've not been in school for 3 years and now they're in grade 9 and I'm working with them. They have huge gaps in their understanding. And then there's some kids who just maybe need a bit more support in elementary. When they're there they find this really easy but maybe it's other circumstances like attendance or maybe even that they can't focus, that they're placed in these courses. Just almost like a holding ground… so you have kids who really need to be there because that's where there ability is, and then you have kids that shouldn't be there because of behaviours or attendance, and then you have kids who are probably too low for it, they should be in different programming… but there's not even—there's not much available for them because they have very poor numeracy skills.

Kelly: And what about literacy skills? How big is that range?

Janice: It's—for sure. There's some kids who don't know how to read. There's some kids who are great. The could probably be in an academic or applied class for literacy. It's such a wide gap as well. I think it's the same with literacy and numeracy, if they've missed a couple years of schooling along the way and they've been bouncing from elementary to elementary… by the time they get—looking and testing them on where they are with numeracy and literacy, it's almost too late because they're moving on to the next school. They can't get that support along the way. Actually we looked at an OSR with one student

and it was crazy. They had a two year or three year gap, they were in like 14 different schools and the consistency of that support isn't there because by the time you try to help them, they're gone.

Kelly: That's unbelievable.

Janice: It's sad… yeah.

Kelly: That kind of hits on the next question. Do you believe there's anything that can be done in elementary school to attempt to mitigate these problems?

Janice: I don't think you can control if a kid is being pulled…

Kelly: For sure, but for the other students for example?

Janice: I think if they are—I know lots of them though do differentiate instruction, so they could be in grade 8, learning grade 4 content right? Because that's where they are in the grade 8 class. So the teacher is supporting them, but I can see if you have a full grade 8 classroom and this one student is doing grade 4, they're teaching to the grade 8's and trying to help them, I could see it being, "Okay work on this sheet", or you know the instruction may be limited. I don't know, I haven't really seen it. I do think there should be some supports

implemented or some sort of maybe coaching or extra resource for them to help with those weaker kids when they're placed into our system. Lots of times when they're placed now into high school, they're not necessarily put in the right stream. Lots of the time we didn't realize, "Okay you're working at a grade 4 but now you're placed in 9 applied because that's the next step". Even having the transition course but just to see where they are so we can meet their needs.

Kelly: And what can you say in regards to the current practice that students are often times not held back from elementary school when perhaps they should be, just to remain with their peers or for whatever other reasons?

Janice: I think that—it's difficult this day and age with kids… I understand why they socially promote.

Kelly: There's the stigma associated with it for sure.

Janice: For sure. Just reflecting on my own kids, I know one of mine would be devastated if they were held back academically just because how sensitive they are. I could see that for sure—there's enough issues with the bullying and never mind, "Oh now you're in this class". But I also do see the benefit, if you are not there anymore, if you're not at that point academically, we're just going to keep pushing you through, and you're going to fall further

and further behind? Ideally it would be great if kids move ahead when they're ready. If we had a system where, "Okay you know these expectations, so you could do grade 8 math in grade 6, if that's where you are" and you're assessing them when kids are ready, but that's not the system we're in. I think even in a regular class we try to—there's kids who know the expectations already and there's kids who need two more days with it, but we try to average the needs of everybody and assess if kids aren't ready, we wait. You try to do it [on] an individual basis but I think it's difficult for elementaries to—I haven't taught in elementary so I think it's hard to assess.

Taylor: If they were to then keep pushing students to remain with their peers because of all those other issues, the bullying and whatnot, do you think that there's anything that could be done as kind of like a… I'm looking for a specific word, not like an implementation but kind of an intervention—an intervention strategy to help those students being pushed along? Do you think that there's anything like that that could exist?

Janice: For sure, or even they have the spec ed people at the schools or whatever right? Even having a teacher who works with kids trying to bridge the gap, having a program where you're trying to get them over to the next level so those kids who are weak—maybe they are pulled from something, I don't know what it would be, but even having—I know they're starting to have summer classes, for literacy specifically. But why not have a numeracy one? In the younger grades… because they do a literacy, for kids who are behind in reading so

why not put a numeracy one for kids who are, if you're behind in math, you can do that during the summer for 6 weeks. They do fun things, they bring them on field trips and then they do the learning. There is stuff that's becoming in place but more on the literacy aspect. If we can use some of that strategy for numeracy then I think that would be helpful.

Kelly: Seems to be an interesting trend that numeracy kind of gets brushed to the wayside where literacy is more focused on, whereas they're both important.

Janice: Needed. Yeah for sure.

Kelly: What sorts of activities and lessons do your students respond best to?

Janice: Eating. *laughs* Just joking.

Kelly: *laughs* But that's not even… a joke. If an activity involved something edible they're interested.

Janice: Yeah absolutely. If food is included, which I brought many times, the engagement piece is a lot higher. But hands on for sure. If they're doing hands on activities they're much more engaged then just sitting at their desks--with any type of, going out measuring or—I

find if they're doing something it's much more—they're much more engaged than if they're just sitting there.

Kelly: Even just getting up and moving around with measuring tape or measuring sticks?

Janice: Yeah for sure. I've noticed, they seem happier and more energetic, not lethargic you know? At least they seem more engaged. Maybe they won't get much done but at least they're interacting with their peers and those components.

Kelly: Is it possible for every lesson to be like that?

Janice: No.

Kelly: Why not?

Janice: Manpower for sure because you need to make sure—trying to facilitate some of that is difficult, financial restraints. You can't be cooking every day with them because we don't have unlimited amounts of money. It would be fabulous to go out on field trips with them but having those resources available, we don't have. Things are limited. At the same time, sometimes they just have to actually do that pen and paper math. They can't always be doing

that because you want to make sure they're understanding the purposes behind it and what they were supposed to take from that.

Kelly: Is student opposition, or was student opposition present in your class?

Janice: Like students refusing to do work?

Kelly: Anything that you would consider I guess "obstructing", like they're intentionally trying to either distract, or disrupt, or abstain?

Janice: Oh absolutely.

Kelly: What forms did it take?

Jeanie: Cell phone use, random just blurting out things, having conversations when they should have been doing other [things], getting up and walking out *chuckles*. Just trying to get them to work and maybe just—most of the time they were pretty good when you approached them to work but sometimes you would have a bit of butting heads to get them motivated. I found cellphones and just—one student was just distracted a lot by themselves.

Kelly: For what reasons?

Janice: Just had a hard time focusing. [Student's name] some days he was great, some days he just couldn't contain himself and that's an individual basis but that could be disruptive. He would walk across all the chairs to get to one side of the room, which would be disruptive when trying to have a conversation, or a lesson or, discussion.

Kelly: Can you go on more about the cellphone use and what effect that has on your classroom?

Janice: I found they weren't as bad as I've seen in other classes but they would pull it out and then I found they weren't engaged in what they were listening to. Some students would benefit [from] me putting it in the desk because it's just a distraction. If it's a snapchat, if it's a text, any type of—they're not listening and they have no idea what's going on. I think just being in a classroom and watching different behaviour is enough distraction for some of these kids. Never mind having—and then if someone texts them and the next thing you know, the student is upset because their friend is not being nice or something's been on snapchat about them. Then there's a whole other aspect of the emotional roller coaster and they've disengaged totally in the math. If they didn't have their phone, it wouldn't have been a problem in the first place. Little games even right? If they're doing their match 3 or whatever games they're doing. [Student's name] likes to do whatever that "Capture the town". Just having that—they're not talking with their peers, they're not engaging in any type of activity

no matter what you're doing. Without the phones they would have been easier to maybe participate, without the distraction.

Kelly: Do you have any particular students that are extremely difficult to engage?

Janice: A lot of them I think were, for sure. Trying to see what works for them and I think [Student's name] is a prime example. At the beginning of the year, trying to engage him in any task there was none. But then finding what works for [him]. Changing his location was the first step but he was not happy where he was sitting initially but when he befriended somebody and built that relationship right? **It shows you what's important, those relationships, made all the difference**. He's in another class and from what I hear, he's how he was at the beginning of the year still with us. Because he had that relationship, that was huge. [Student's name] was another one I found hard but because of his attendance and what he brings with him… he was willing to share things but trying to build that relationship with him was difficult I found. Even [student's name] was very difficult to work with. She would refuse. [Student's name] sometimes because of her anxiety she wouldn't even want to come in to the classroom. [Another student's name] had high anxiety, she didn't want to come in and eventually ended up staying back in Fort Hope. So [Two student's previously mentioned] I think they were good working one on one, having that comfort zone if you were able to work with them. But being one person, and [The SSP in the classroom] would be with some as well, it would be really difficult to sit there the whole time. I think they needed someone to

be with them and just give them comfort zone just to keep on helping them with the confidence. Confidence was part of the problem with a lot of them. They all had different strengths and different weaknesses coming in that made it difficult to keep them going. [Student's name] was a really, really hard one to figure out because you would talk to her and she wouldn't even respond to you sometimes. I remember sitting in front of her trying to help her and if she didn't want to do it that day, she just wasn't going to do it. You could try to encourage and try different spaces, whatever it may be but it was very limited.

Kelly: And how important was it to you to make those relationships?

Janice: Very important, I think that's half of it. If the kids know that you truly care about them and you want their best interest then the kids will be more willing to do things for you, they'll feel comfortable with you. [Student's name] he—same thing. He would really need someone beside him working. He came in today just to relax, say hi, and hang out. I think it's important. You don't realize what impact you're having on them at the time and sometimes you're like "I don't feel like I'm doing anything". But sometimes after the fact… when you have conversations with them after and they come up to you or—because it's hard to really reflect while you're in the moment if you have made a difference.

Kelly: How would you describe your student's attitudes towards mathematics?

Janice: Some students were great. They were willing to take on any task given to them, it didn't matter what it was they were willing to jump in. Some students were like, "I don't like math, I'm not good at math, I hate math because I suck at math" (which is a stigma coming from… I don't know, elementary? Maybe their parents, maybe they've heard their parents say it before), a confidence thing because maybe they do like math but because—just in case of making mistakes, they're scared or they feel intimidated when they make mistakes, they sometimes feel that that shows weakness. I think depending on the student and the way that they experienced math in the past, maybe it was something that they really struggled with through elementary and they didn't get that support so now they're just like "I hate it". Before you even start something, they're just already refusing. Trying to break that stigma and let them just try one question, or let's just start from scratch. Giving them that confidence in mathematics is helpful.

Kelly: Do you believe that some of your students or any of them or all of them were motivated to come to class?

Janice: I think some were for sure. Not all of them, not all no. But I don't know if they're motivated to go to any class.

Kelly: So it wasn't math specifically?

Janice: No it's all of their classes if you looked at their attendance it was full days missing. Students that would come like [student's name] and [other student's name] would only come to math, but they would come late. It was fortunate that we got them as much as we did. [Student's name] even, full days and she would come to math sometimes. [Different student's name] would be late for all of his classes. There's a pattern in their behaviour, it's not just the math. It doesn't matter what subject it is, it's just the nature of who they are or what they're doing, or what friend groups they're hanging out with. Grade 9 is a sensitive year too right? Because they're being put into this school with all different peers, they're trying to figure out where they belong, what friends they're becoming a part of. I think that adds to some of it. Maybe they don't want to… it's not that they don't want to come to math, they just don't want to come to class because they don't want to miss out with being with their friends.

Kelly: Yeah a couple students that was definitely an issue I remember. What do you think is the primary motivators I guess for them coming to class? Those that do, and attend regularly, what do you think is their primary motivation?

Janice: I don't think… it is a bit of the credit but lots of them just care whether they pass or fail, it's not getting a 90, or an 80. Although some were interested in their marks, those are the rarity like [names several students] they were really wanting to do well. A lot of them, I don't think that was a driving force for them. Sometimes it was just being a welcoming environment, that had a part of it I think. Just me being "whenever you come, I'm glad to see

you. Even if something happened yesterday that's okay, we'll move on". Seeing some of their peers too, helps if they have a friend in the class. That is a driving force, I think that helped them come. When we cooked, just trying to—knowing there was different activities… food brought them in.

Kelly: Yeah… Speaking anonymously, so this is what we were going to talk about earlier, can you give some specific examples of issues that students in your class are dealing with in their personal lives?

Janice: Okay well…

Kelly: You mentioned a student was in legal trouble

Janice: Right, so he got into an altercation with another student and beat them up… I guess broke his face so he needs facial reconstruction, so he is in the process of being charged. (unintelligible) He was in foster care and now he is in a boarding home. So not having stable—Another one coming from Fort Hope coming here was just the transition of being in a different high school, being away from their parents, the community, living with a sister who not necessarily tried her best but not a guardian that would…

Kelly: Yeah…

Janice: Having another student having problems within the home with the father and some abuse, Dilico being involved and having a parent being removed from the home was another scenario. One of the girls felt like she had no friends was bullied lots, was getting into physical altercations and then she um—was a little bit just struggling to find her place, to fit in. Drugs, some of the students were doing drugs, which was pulling them away. I think a lot of it was the homes. The homes were not—maybe it was a large family. Maybe there was 14 of them living in the same roof, which would be challenging right.

Kelly: Oh for sure.

Janice: Cultural, different cultures. There was also some domestic violence within the home to both the parents as well as the children. It ranges from some of them not having—they don't have any clean clothes to wear or food on their table, it stems in so many directions.

Kelly: And how do you respond to that? What do you try to do in your classroom to…

Janice: Well… realizing that in the end, the math is important but sometimes if it's just getting them into the building, into the room and making them feel like it's a good place. That's why "Try one question and that's it for today, I'm not going to fight you on it because I understand. Go get something to drink, go get something to eat. If you want to talk I'm here". Making sure those resources, like if you're having a bad day, bring you to [Graduation

coach], your counsellor, just trying to know that I care about them and I'll help them in any way I can. I can't change a lot of it but I can be a positive supportive person while they're here at school.

Taylor: Just so we have this on recording you also had one student who had severe mental health issues, who then left?

Janice: Oh right.

Taylor: Just in case we wanted to know, there was mental health issues as well.

Janice: Yes. Very severe for sure. He was brought in to Thunder Bay for that reason, to get the additional support…

Kelly: Do you believe that there are societal or structural barriers inhibiting your ability to teach Locally Developed math?

Janice: …

Kelly: Obviously with students coming with all these external issues that's…

Janice: Well for sure. When they're coming… and like I said they're coming to class and math is the last—it's not an important part. What really matters? If you're coming from a home where you just—you have no food or maybe you slept on the floor and you didn't have a fresh change of clothes. We take for granted what we have, what we're given. And these kids come, the fact that they actually came… if they were up all night because their parents were partying all night, that's another situation too. "My dad was up all night drinking and so I couldn't sleep". They're exhausted, putting their head down and then there's me, "Okay let's try some math". Sometimes you have to look at the most important thing: "Okay you need to have that time, you're safe here. You feel comfortable enough to fall asleep, maybe that's okay. You need that time right now". Or, "You just need to get something to eat and you know what, you're talking with someone, maybe getting counselling" which is helping them. If they're just coming here I think that's great. It may not be curriculum but it's helping them as a person.

Kelly: Is there anything else that you feel is necessary to add to the dialogue surrounding Locally Developed mathematics?

Janice: I think consistency maybe for (unintelligible) us to get a program developed that—depending on what task it is but maybe having consistent person or having a time to work with other teachers to develop resources that will engage them, having the financial support so that you can go out and do different activities with the kids, just trying to build

that community I think that would really be helpful. If we could maybe pull in some faculty students.

Kelly: Yeah *chuckles*. Earlier you mentioned trying to make students feel like they belong, do you think that there—that they don't feel like they belong? And do you think there's a stigma of being in Locally Developed mathematics?

Janice: Sometimes they're like, "I'm in Locally Developed math, I'm in the stupid math". For sure there is a stigma with it. Trying to get them to realize we all have our strengths. You're trying your best and that's all that matters, it doesn't matter what other people say. Trying to make them feel okay because some of their friends will say, "You're in LDCC…". People are cruel, kids are cruel, we know that. Even from applied to academic, "Oh you're in applied?". That goes through all the levels, it's not just LDCC. But the kids too, because you're being displaced into this huge environment, especially grade 9, just trying to find that place, a place where you know you have your peers, some friends are turning on you that you were good friends with for 8 years of your life, or this is a new school again, you're coming from up north being boarded here so you're living with strangers and you're now in a school with kids you don't know. Making them feel like this is your school, this is your classroom, we want you here, you belong, I think is really hard to do sometimes but we try our best to make them feel that way. There are resources here like with the Aboriginal cultural tutor, we're trying but I think we have to keep on trying.

Kelly: Do you think that there's an issue with students taking ownership over the credit, and the class and things like that?

Janice: For sure. Students sometimes—like I said it's the least of their priorities or sometimes students think that "If I get my other credits I don't need this credit". There's a lot of misconceptions and you try to educate them on what's right. Or being social and having friends is more important than earning any credit. Sometimes they're not in the place to be in school. It's unfortunate but sometimes it takes a little while. I have a student who, in my [other] class, 18 in a grade 10 class because first 3 years of high school he couldn't get it together. He was in trouble, he just—all of a sudden something clicked, "I need to do this", he [is a] level 4, 4+ student now, tries hard, cares about what's happening. Sometimes it's just that time in their life right. Maybe they have more going on right now that they can't focus. You try to get them to care but it's really hard for them to care when they have all those other circumstances.

Kelly: Yeah for sure.

Taylor: Do you think a numeric grade for a course is the end all, be all measure of success or do you think there's other ways you can measure student success in your class?

Janice: I think with a Locally Developed maybe like a pass/fail even would be fine too. "You've met the expectations", do they need that number?

Taylor: Or even are there other successes like social successes, or integrating into the school or something like that.

Janice: Because it is a math course, you have to kind of meet those expectations. It'd be nice—there are other courses that will encompass more of that, like community building the GLS's and GLE's and all those other ones that will be more about that rather than—but with the math… I don't know if we even could report on that because it's not directly linked to the expectations. Unless it's more directly put into the document.

Kelly: Yeah.

Janice: Which would be ideal too. If you could put some of those other things in so it's not solely math, we're looking at bigger picture.

Taylor: What do you think led to the point of students enrolling in Locally Developed and being at that level? Do you think there were factors outside of school? Family issues? Do you think that they slipped through the cracks in elementary school, were pushed along, do you think it's a combination?

Janice: I think it's very circumstantial on the student. It could stem from them being moved from school to school so gaps in their learning so eventually it's a holding tank. They can't do this math, they can't meet applied math because of the holes so we're putting them in LDCC. Or they don't attend regularly, so we need somewhere to put them when they go to grade 9 so we're going to put them here because they will not be able to do the other two, or they may have some success in the LDCC.

Kelly: So it's not always the students are put there because it's best for them, it's just because that's the default?

Taylor: Nowhere else to put them.

Janice: Well you want to somewhat set them up for success so if you put them in an applied class and they have all these gaps… yeah maybe they're able to… but because of those gaps they're going to—you know, feel like they're up against (unintelligible) high school grade 9, if you can't do half the math, that's very discouraging. You don't want to do that either to them. That's why the transition course is good, because kids who technically shouldn't be in LDCC because of circumstances could do applied, but we need to fill those gaps. That gives them the opportunity to build on that. Some kids could have gone into my class but it would have been a disservice if they had talent. I think it depends on the circumstance for sure. Ability is one, some of them just physically can't do higher level math for sure… and some it

goes from attendance to gaps to… I know depending on where they're coming from, what background they have as well. There's many different reasons why they come into LDCC. That's why you have such a range in ability. I think if a student is there and willing you could then push them—you could say that LDCC is like building your numeracy and possibly you could try the 9 applied if you feel like they're strong enough.

Kelly: Right.

Taylor: How do you tackle students who don't have the skills to even achieve the LDCC credit? What would be their next steps or how can we better support them?

Janice: I think if you—if they have individual growth, like if they can build on their own skills, if you see improvement in their numeracy skills or what they're able to do, I think we're working with their needs. I think that's really important, maybe it's not every expectation they're meeting, but they're improving their numeracy, they're improving some sort of skill. I think that's how we can work with them. So we can meet their specific needs, we can veer from the curriculum a bit to meet those needs of the student. Sometimes—I don't know. There was one student, one of the girls in my class who really struggled and I thought she was lower but when she did her final exam she did a lot of it right. I was baffled because I thought she was a lot—it depends where their mind is. I think you have to work with them, one on one and assess what that student's needs are.

Taylor: Alright.

Kelly: That's it? Alright, thank you very much!

Janice: Thank you very much.

The MKN is funded by the Ontario Ministry of Education. The MKN is a KNAER Project, hosted by the Fields Institute for Research in Mathematical Sciences. The views expressed in this [document] belong to the authors and do not necessarily reflect the opinions of the Ministry of Education nor the Ontario government.

Ontario

FIELDS

KNAER | RECRAE