

Critical Transitions from Grade 8 to Grade 9 Mathematics (Jarvis, 2018)

Understanding the Adolescent Learner

Students in Grade 8 and 9 are experiencing multiple and significant changes in their lives during the elementary to secondary school transition years. Their bodies are changing as they reach puberty; their social connections and structures are radically shifting as they prepare for a new learning space with related changes to routines and social hierarchies; and their learning is often being stretched in new directions as their brains further develop, and as a collection of new teachers may choose to adopt noticeably different teaching strategies, classroom management techniques, and assessment expectations (Cushman, 2006; OME, n.d., 2013; Suurtamm & Graves, 2007). It is little wonder why navigation in the transition years is complex.

Understanding the Parent/Guardian Role

Parental or legal guardian engagement in a child's learning is highly important for school success at all stages of learning (Boaler, 2009). In the transition years, it is critical that parents/guardians become informed about school-related choices and available supports. One of the most important decisions that must be made in the Ontario school system throughout the elementary/secondary transition years is the selection of the student's Grade 9 course stream (Academic, Applied, or Locally Developed)—in light of students' abilities, interests, and career goals—and then, subsequently, the pathway of mathematics courses taken throughout high school. Colgan (2016) highlights the urgency and significance of these transition zone choices:

[B]y the time students apply for skilled-trades training, college, or university, it's too late. They find out that they are unprepared in prerequisite courses or lack the experience required to pursue a number of career options. . . . students, their parents, teachers, and guidance counsellors need to be aware of the options and opportunities lost when they say goodbye to STEM learning in secondary school, and the financial and time costs involved of later re-engaging in STEM learning. (p. 11)

Understanding the Teacher of Mathematics and the Mathematics Teacher

It is important to note that the transition to more reform-based mathematics instructional strategies can be equally as discomfiting for the Intermediate Division (i.e., Grades 7-10) teacher as it is for the students moving through the grade transition. This apprehension can sometimes be conveyed to students subconsciously, particularly when the "messy time" teacher transition is in its early stages. However, as teachers of mathematics (non-specialists) or math teachers (math subject specialists) become increasingly comfortable with the use of manipulatives, instructional technology, collaborative group work, problem-based learning, and varied assessment strategies, student engagement (as well as teacher engagement) may become more pronounced over time as these strategies are implemented (Boaler, 2016; Jarvis, 2016; Jarvis & Franks, 2011). Professional development opportunities can be instrumental in helping teachers to become more effective at implementing their respective mathematics curriculum and in engaging their students (Jarvis, 2013; EQAO, n.d.; Jao & MacDougall, 2015). Professional development models that allow for teacher *choice* (selection from among various options), *voice* (active participation in PD design and implementation), and *ongoing support* (meetings spread out over the school year) hold much promise in terms of teacher engagement and overall effectiveness. Professional development initiatives, especially those that are cross-panel (i.e., involving both elementary and secondary teachers) in nature, serve to both raise awareness and to build math teacher confidence and pedagogical consistency surrounding the critical elementary/secondary transition years.

Understanding and Sharing Effective Support Strategies

Support strategies for the adolescent learner in transition can be grouped into three chronological spaces: (i) those that are preparatory and take place towards the end of elementary school; (ii) those that take place during the summer of the transition; and (iii) those that take place once the student has arrived at the secondary school (Butts & Cruzeiro, 2005; McCallumore & Sparapani, 2010). Examples from all three of these spaces have been collected within the pilot study report (Jarvis & Veres, 2017), and will continue to be documented and shared via the Mathematics Knowledge Network (MKN).

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