Blended Learning Proposal: Intermediate Math Station Rotation

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Melissa Mullis and Nicole Hamilton

Vancouver Island University

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Blended Learning Program Proposal: V.I. Elementary School

We are developing and presenting this proposal to create a blended learning program at V.I. Elementary School. V.I. Elementary currently has a population of 256 students, with twelve classes in Kindergarten through to Grade 7. We appreciate your consideration of our proposal and look forward to providing additional detail and answering any questions you may have during our Zoom presentation.

We plan to present this proposal in eight sections, guided by the following key questions:
1. What problems are you trying to solve?
2. How will you organize your team?
3. What experience would you like to provide to students?
4. What do you want the primary role of the teacher to be?
5. What hardware, software and physical space will you choose?
6. What model of blended learning will you adapt?
7. How will you shape and maintain a positive culture in your school?
8. How will you manage cost to make this program realistic?

This will be followed up by a glimpse of what implementation will look like, with a day in the life of Walter, a Grade 6 student.

1. Identifying the Problems

Since the implementation of the redesigned B.C. curriculum in 2015 the teachers at this school have been working hard to focus on the foundations of literacy and numeracy while also building a greater focus on inquiry and project-based learning to support development of both core and curricular competencies and provide authentic and meaningful learning opportunities for their students. While they are proud of the many achievements that their students have made over the past several years, their teaching staff have also noted some significant challenges in the area of math. Teachers of students in Grades 5, 6 and 7 in particular have noted that there are a wide range of achievement levels in math in their classrooms, and the teachers are struggling to differentiate their instruction enough to meet the wide range of learner needs.

Through classroom based assessments, the teachers have determined that approximately 40% of the students in these intermediate grades are not yet meeting grade level expectations, approximately 10% are extending beyond grade level, and approximetaly 50% are working at grade level, ranging from minimally meeting to proficient. The teachers have observed that learners at both ends of the range are struggling with engagement and this is impacting behaviour in the classroom. Teachers are finding that there just does not seem to be enough time in the day or week to focus on the core content and basic numeracy skills as well practicing applying these skills through problem solving and project based tasks in order to build the math competencies.

We believe this is a core opportunity to implement blended learning as a sustaining innovation to improve the currently existing school model and support the students who currently attend this school as it is within their catchment area (Horn & Staker, 2015). Our goal is to implement a blended learning strategy that increases the personalization of learning in math to better provide "engaging learning opportunities that meet the diverse needs of all students" (B.C. Ministry of Education, 2015, p. 2) and will raise the percentage of students meeting or exceeding grade level expectations in math at the intermediate grade levels to at least 80 percent by the end of the next school year as measured by school developed outcomes based assessments.

Based upon the identified problem and the constraints in which we are working, including the physical space of the school, the size of the teaching team and the nature of the students as attendees of a mainstream bricks-and-mortar school that follows a standard five day per week opening schedule, we are proposing the implementation of a Station Rotation blended model at V.I. School (Horn & Staker, 2015). We believe that using technology to support learning in this way will best fit with the resources we have available to us and also provide us with some flexibility around the groupings of students as well as the use of time and space, factors that will enhance the personalization of learning for students.

2. The Team

In order to best address our challenge and meet our identified goal we need to ensure that we have the right team in place to manage this project. Matching the problem and desired level of change, or the scope of the problem, to the type of team is the recommended starting point (Horn & Staker, 2015). We are looking beyond the level of an individual classroom change in this proposal. We have the intention of four

intermediate grade teachers implementing a station rotation approach together in which they will require the use of some shared school spaces such as the library. These teachers will also need to coordinate and seek support from the school-based Teacher Librarian and Learning Support Teacher as well as school administrators, the district E.L.L. Support Teacher, and district technology teachers and support staff. We believe that a lightweight team is the best match for the scope of this project and the blended learning model that we intend to implement.

Horn and Staker (2015) identify lightweight teams as ideal "to coordinate projects that implicate more than one set of teachers, but in predictable ways." (p. 132) and as being well-suited to the planning and implementation of any Station Rotation model "that requires coordination across parts of the school but does not involve architectural change, such as new schedules and staffing arrangements" (p. 225). These descriptors fit within the parameters of the change we have identified.

In selecting the key members of our lightweight team, we are extending the bottom-up approach that has initiated this proposal. The desire to implement a blended learning approach to solve the problems in student achievement in the area of math has been initiated by the teachers involved and these four intermediate grades classroom teachers will each be critical team members as they will represent their own classes of students while also collaborating to enhance the achievement levels of the intermediate student cohort as a whole. The team will also include the Vice Principal as the project manager. The Vice Principal is in the position where she is able to communicate and coordinate with each of the other team members as well as the other supporting teachers and district staff as needed. The Vice Principal also has ongoing access to school budgetary information which will be important as we look at any potential hardware or software purchases that may be needed to support this project implementation.

3. The Student Experience

We believe it is most appropriate to address our problem-at-hand through the "Jobs-To-Be-Done Theory", that is. "...the two jobs that are the highest priority for most students…" (Horn & Staker, 2015). These are to:

1) **"...feel successful and make progress..."**

Students should be able to progress at their own rate and demonstrate understanding once they have had the time and opportunity to 'play in the sandbox' for awhile. From Tavenner:

When you realize how irrational the current system of school is-in which students advance based on time regardless of whether they have mastered material...and then you give students a rational, competency-based schooling system-one that just makes sense because it is set up for them to be successful-they want more of it (p.148).

And why wouldn't they? It is difficult to make room for pace and path in a traditional classroom setting as there are up to 30 students to consider when moving through curriculum. By moving to a blended model and incorporating student-centered assessment practises, it becomes a sustainable change, and the notion of one pace/one path becomes a thing of the past.

2) "...have fun with friends."
This multi-classroom program revamp would effectively address the first 'job', and the second would be addressed as the program unfolds. We imagine there will be hiccups, but when you meet Walter, our typical intermediate student who attends VI Elementary school, you will learn how this redesign has helped him make new friends, and this has enriched his overall school experience.

A note on Path:
There is some element of student choice as it relates to path, however, as it is a math program, there will be a general direction as appropriate to be successful in developing math competencies. On the other hand, with employment of the SMART goal setting strategy, we feel this will give students input on path. From Horn & Staker, "...one essential element is empowering (students) to set individual learning goals and then providing them with enough time and the right processes each day to make progress toward those individual goals." (p. 148)
Lastly, time and place will be managed for the most part, through the timetable. There will be room for flexibility here, however, to address individual student needs. That is, student movement will be fluid and groups may change as the year progresses.

4. The Teacher Experience
We believe that the teachers involved in implementing this station rotation model focussed on enhancing math instruction and achievement levels across their four intermediate classrooms will be crucial for the success of this project. As indicated by Horn and Staker (2015) in their description of teacher roles typically seen in various blended learning models, the primary roles of each of these four teachers will continue

to be the delivering of face to face direct instruction, both within their classroom and within some pieces of the rotation, and they will continue to serve as the teacher of record for the students placed in their class. This change will however require the roles of these teachers to expand and adapt to the revised model. As a group, they will also be asked to coordinate online learning plans, provide guidance during independent online learning and identify students who require additional intervention and provide direct tutorial support to these students in small groups or 1:1. Within the station rotations themselves, the primary role of each intermediate teacher will vary depending upon the station that they are attached to.

While this may sound like a recipe for teacher burnout, with the teachers being asked to wear even more hats and take on a larger workload, we believe that this implementation of blended learning will actually be a significantly positive opportunity for the teachers involved. Horn and Staker (2015) highlight six motivating factors that enhance job satisfaction: achievement, recognition, work itself, responsibility, advancement and growth. This project has the potential to enhance each of these factors for the teachers working as a part of this project team. Through developing and implementing this project, the teachers have the opportunity to work as part of the organizational team and apply their own innovative vision; to take on leadership roles and further develop skills in their own area of expertise through ongoing professional development (eg. reading instruction, math instruction, project planning, data analysis) that they can then share with their colleagues, both in this grade level planning group and with the whole school staff. When working within the station rotation model, each teacher will have increased opportunity to have direct interaction with each student, not only those who typically require the most time and support when working in whole class instruction scenarios. This will help to build better, more meaningful relationships. Collaboration and sharing of responsibility for the success of all students, not only those within their specific classes, are strategies promoted by Rankin (2016) for improving job satisfaction for teachers. These will be integral pieces of the station rotation model implementation. As part of the lightweight team and the ongoing collaborative process, there will be increased opportunities for both informal and formal recognition of the achievements, expertise, and contributions of each of the teachers and other team members as well. A lack of cognitive challenge, otherwise known and boredom, and feelings of having little control over factors affecting their daily work are hazards for teacher burnout (Rankin, 2016). Taking on this blended learning project provides a challenge and an avenue for our teachers to make changes that can boost the achievement of our students while also providing the teachers themselves with additional motivating reasons to love their jobs.

5. The Space, the Devices and the Software

In order to maximize support from school administration, we have designed the station-rotation model to be either a successful component within a 'traditional' brick-and mortar school or a less-daunting transition to a fully blended model. Cost will be a factor, but we have been selective in our furniture and technology, to keep costs manageable. Specific to this reimagining, the plan is for a collaborative process among upper intermediate classes, grades 5-7, with four enrolling classroom teachers.

Along the 'Integration/Modularity Continuum for Online Content', this blended model fits toward the modular end of the spectrum (p. 198) as we plan to use three outside online providers. These are:

1) StudyForge: cost of $30.00 per student (up to $3600 for 120 students per year)
2) Mathletics: cost of $11.00 per student ($1320 for 120 students per year). This already exists in our district.
3) Khan Academy: no cost

These three outside providers maximize the other considerations as outlined in Horn & Staker (p.202), with the notable exception of single sign-on. Utilizing an LMS, such as Canvas would allow single sign-on with StudyForge and Khan, but the additional cost is prohibitive at this time and it doesn't integrate with Mathletics.

In our experience, it has proven problematic since moving to the mobile lap-top cart. Taking them all out, setting up, logging in using slow servers all use precious instructional time. We propose returning to the static computer lab model, and one teacher will be present during the online component of the station rotation. In consultation with District 71 Director of Information Technology, Josh Porter, the approximate cost of each student laptop for the lab is $500.00 (x 30 = $15 000.00). This cost estimate is only in the circumstance where the school chooses to replace all existing mobile cart laptops. In addition, each intermediate classroom will need a minimum of four permanent laptop stations, with the small group instruction space needing up to ten.

Furniture will be a sizable expense, however, it can be done in stages, utilizing a portion of the annual school furniture budget for a period of four years.

Overall, we expect an initial expenditure of approximately $30 000.00, and then $20 000.00 per year for three additional years. Following initial investment, we expect a yearly budget of $5 700.00 for software licensing and maintenance.

6. The Blended Learning Model

We are not intending to change the staffing levels in the school, nor make any major changes to the physical spaces within the building, and have created a blended learning plan that will work with the staff that we have and cause limited changes to class planning and the primary roles of each teacher within the school. Knowing our staffing, and given our desire to enhance the personalization of learning for our students by giving them more autonomy through some control over the path that they navigate through various elements of their program, in particular in math, and the pace at which they progress through the content, while still working within the parameters of the regular bricks-and-mortar school location and setting, we have chosen a station rotation model as the framework for blended learning in V.I. School. While at the independent learning and online math learning stations the students will control their pace and path, having access to a few online math course and practice options, as well as some alternate online course options in other subject areas, as described previously.

Three mornings per week, the students in the four intermediate grade classrooms will be reconfigured into four main station groups and they will rotate through the stations on a fixed schedule, as outlined below. This is an adapted version of the station rotation model illustrated in Figure 1.
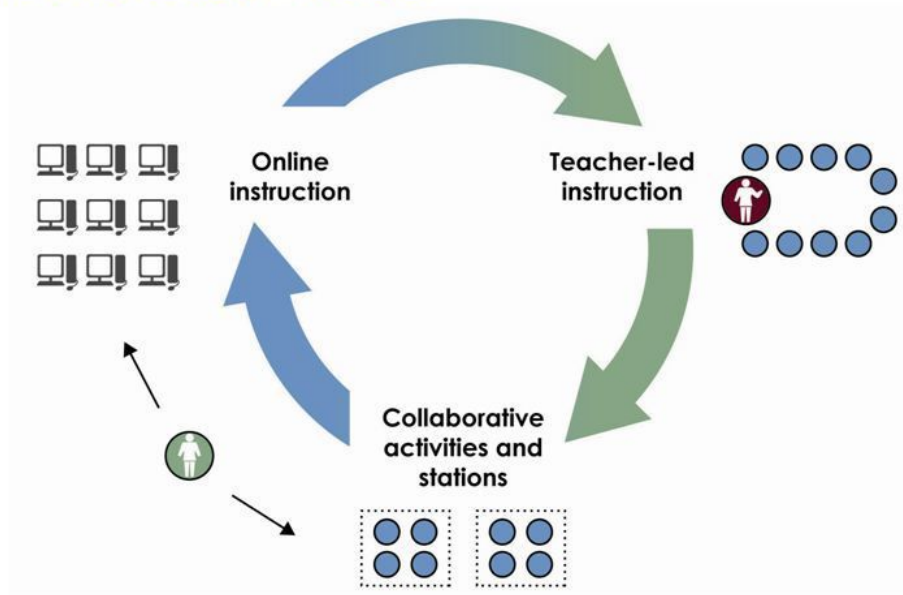
Figure 1. The Basic Station Rotation Model (The Learning Accelerator, 2019)

Station Rotation, Based on Mon/Weds/Fri am Schedule

- ❖ Station A: Independent work: mostly offline, 30 student capacity

- ❖ Station B: P.E. Block

- ❖ Station C: Online learning: student accesses dashboard via folder, 30 student capacity

- ❖ Station D: Group A: Small Group instruction, optional, up to 15 students
        Group B: Library/independent reading (LSS support if needed),
  up   to 15 students

Walter's Calendar (a sample)

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
8:15 AM	Soft Start	Soft Start:	Soft Start	Soft Start	Soft Start
8:30 AM	SMART goal setting for the week	Open gym 8:15-9 or Independent reading/work	Open gym 8:15-9 or Independent reading/work	Open gym 8:15-9 or Independent reading/work	**8:30-8:40: Mentor meeting w/ Mrs. H**
9:00 AM	**Room A**		**Room A**	Class Meeting	**Room A**
	Independent work; offline		Independent work; offline		Independent work; offline
9:45 AM	**Room B**		**Room B**		**Room B**
	P.E.		P.E.		P.E.
10:30 AM	**Recess**		**Recess**		**Recess**
10:45 AM	**Room C**		**Room C**		**Room C**
	Online learning via student folder: StudyForge, Mathletics, Khan as resource options		Online learning via student folder: StudyForge, Mathletics, Khan as resource options		Online learning via student folder: StudyForge, Mathletics, Khan as resource options
11:30	**Room D**		**Room D**		**Room D**
	Small group instruction A or independent work. Assessment opportunity		Small group instruction A or independent work. Assessment opportunity		Small group instruction A or independent work. Assessment opportunity
11:50 AM	Library or independent reading/Small group instruction B		Library or independent reading/Small group instruction B		Library or independent reading/Small group instruction B
12:15 PM	**Lunch**	**Lunch**	**Lunch**	**Lunch**	**Lunch**
1:00 PM	**Genius Hour**				
3:00 PM					

Figure 2. Sample Weekly Calendar

7. The School Culture

Horn and Staker (2015 tell us that "culture is a critical part of the success of any blended-learning program" (p. 249). In V.I. School we want to foster a positive culture of community, collaboration and personal ownership over learning, ideas that we know that we will have to work hard toward and focus on consistently to instill as the norms for behaviours and attitudes within our school. With the teacher initiatives outlined below we also hope to extend upon the motivators for job satisfaction presented by Horn and Stake (2015) and discussed previously when outlining the teacher experience in the station rotation model implementation. The student initiatives that we play to implement in V.I. School also address the two core jobs that are the highest priority for students according to the jobs-to-be-done theory presented by Horn and Stake (2015): a feeling of success, and having fun with friends. These initiatives support and build on the work

that will be done through the implementation of the blended learning model. The goal setting, class meetings, and formal celebrations of learning will all support students in increasing their feelings of self-efficacy, and help them to recognize their accomplishments over time and foster a culture of recognition for the achievements of themselves and others. The V.I. Houses activities will focus more on the second job to be done, providing an environment that promotes positive, rewarding social experiences. Genius Hour has the potential to support both of these core jobs through presenting students with an opportunity to pursue their own passions and potentially spend time collaborating with others who have similar interests.

Initiatives for Students

❖ **Goal Setting**
  Students will learn how to establish SMART goals, develop a plan to meet the goals, and self-assess their progress. This will become a part of the weekly routine within each classroom, using tracking tools such as [Goals on Track](#) or [Goalscape](#). The aim here is for students to establish ownership and a sense of responsibility for their own learning, as recommended by the Learning Accelerator (2019) when setting up a station rotation model, through being provided the opportunity to determine their personal priorities (to have some control), and begin to develop their own culture of success, similar to what Rick Ogsten, the founder of Carpe Diem, was able to do (Horn & Staker, 2015). We want students to develop the tools to manage the increased control and flexibility that they are being offered through the shift to blended learning (Horn & Staker, 2015).

❖ **Class Meetings**
  A weekly opportunity for students to informally share successes and discuss challenges will be built into each class schedule. Students will be encouraged to provide feedback on the rotation process and be partners in problem solving if a persistent challenge is identified, sharing their ideas for why the problems may be happening and potential solutions. Again, we believe this will support student ownership over learning.

❖ **Formal Celebrations of Learning**
  These will be scheduled twice per year. There will be student led conference in the first half of the year, a practice that has already been established in the school. In the second half of the year there will be a Project Fair where students can show off their growth and achievements in various ways. The students will be partners in planning these events.

❖ **V.I. "Houses" Activities**
  Once per month we will have a school wide community building hour where students form various grades are put into groups and participate in an activity with a given teacher, extending on the three days per year that we currently do this as it has proven to be a successful way of helping to build connections and

relationships between students across grades and between teachers and the greater student population. The houses will rotate through different teachers throughout the year. Teachers can choose their own "spark" to share - this could be a physical activity, a game, literacy based, a science experiment, a craft and so on. The flexible grade groupings created by the station rotation model implementation will also support this cross-grade and cross-teacher interaction.

❖ **Genius Hour**
For 1 hour per week, the students will have time to focus on exploring a topic that interests them. Teachers will support this work through guiding the research process. "The goal of genius hour is to create a love for learning" (Genius Hour, 2019), and we believe this fits in very well with our overall goal of increasing the personalization of learning for our students and empowering them to develop core competencies and the skills to become lifelong learners. For an example of what Genius Hour can look like in the classroom, please see the video, Genius Hour at Trailblazer (The Learning Accelerator, 2017).

Initiatives for Teachers

❖ **Parents as Partners**
Parents are an essential piece of the V.I. School community and we value their ongoing support and feedback as a part of our collaborative team. We will continue to encourage parents to volunteer within the school, including as a part of the station rotation team offering to read with some students during the library or independent reading time in Room D. Our teachers will continue to develop portfolios of learning with their students and share these with parents throughout the school year to support the school to home connection and ensure ongoing communication about student learning. This is also an effort to encourage recognition of student success both within school and at home. Teachers will also share a monthly newsletter with parents to communicate about classroom topics of learning and events. Details about the station rotation model will be shared in the beginning of the year newsletter.

❖ **Positive Behaviour Expectations and Supports**
As a team, our staff commits to establishing and maintaining common expectations for student behaviour that focus on creating a culture of mutual respect across the school.
As part of this effort, time will be dedicated at the beginning of the school year when this station rotation model is implemented to establish expectations for quick and smooth stations transitions and rehearse these transitions. Our teachers will clearly identify and praise student success and provide direct redirection and support when needed to solidify these routines. The aim is for both students and teachers to prioritize learning and respect the time that is available. We will also support this by making use of all available resources when starting, including administrators and Learning Support Teachers to ensure each

student has the necessary skills to be successful in the technology / independent learning rotation. During each monthly school assembly teachers will recognize at least two of their students for positive behaviours observed in the month prior, making efforts to ensure all students are recognized throughout the year. In short, we commit to looking for the positive.

❖ **Weekly Team Check-Ins**

Teachers will have a weekly 15 minute meeting of the collaborative teaching team to share celebrations, then raise ideas for questions or challenges to investigate and next steps to focus on. The goal here is to maintain a focus on the positive and provide opportunities to recognize ongoing achievements while also ensuring that problems and tasks are clearly defined before plans are developed (Horn and Staker, 2015). Once per term any more major priorities can be selected and teams established to address these.

❖ **Teachers Leading Teachers**

The plan for this station rotation implementation largely came about as a result of this initiative, and this is one that we plan to continue to pursue. We know that teacher self-efficacy and autonomy are positively associated with enhanced engagement and job satisfaction (Skaalvik & Skaalvik, 2014), and we want to continue to encourage and support the teaching staff at V.I. School to implement innovative instructional methods that can further enhance student achievement. The staff committed to this blended learning have a shared sense of purpose and they will be supported to collaborate and learn new skills as needed through formal and informal professional development opportunities. They will also be encouraged to share their learning with other school staff on committed professional development days and during allocated staff meeting times to support our growth as a whole staff team and encourage interested teachers to pursue leaderships paths.

❖ **Social Hour**

While having fun with friends is identified by Horn and Satker (2015) as an important job-to-be-done for students at school, we believe it is also important for teachers to have opportunities to engage with their colleagues and have fun. We believe the connections made during times that are not specifically focused on instruction or school work to be done can help to make the school a desirable place to be for teachers too and also enhance the collaborative relationships among staff that will ultimately enhance the work that we are able to do together and with our students. We will continue to have a social committee in place, but in addition to the regular seasonal group activities we will aim to establish activities scheduled more regularly within the regular working hours such as a weekly social hour during Thursday lunch. This could take many forms depending on the interests of the staff but could include a month-long teacher badminton tournament, crafting, games and so on.

8. Overall Cost Management

There are ongoing costs associated with running a school and the blended model of station rotation at V.I. Elementary will be no different. In addition to the stated expenditures above, there will be additional expected initial expenses as well, such as headsets for each computer station. Other expenses include, but are not limited to:
-annual program licenses
-ongoing professional development for in-house pro-d workshops
-possible coverage of release time for these teachers for 3 (?) days throughout the year to ensure time for planning, revision, group discussions, training etc.

There are ways to minimize expenses, however. One way is to utilize staff already available. The station rotation model actually allows for teachers to provide interventions in small groups and 1:1, potentially reducing the need for additional specialized assessments or services in the long term. Another way to greatly reduce cost is to utilize existing tech in the school, only replacing those absolutely needing to be pulled from service. Mathletics is district-wide and so is Canvas. If we choose to use Canvas as our LMS, we can embed StudyForge and Khan within, and provide a link to Mathletics (because it cannot embed into Canvas at this point). Lastly, existing furniture can be used, where possible, until it can be replaced.

There are couple of other considerations regarding cost. As teachers continue to move toward outsourcing content, they will rely on textbooks and other hard-copy material less, and this will represent a considerable long-term cost-saving initiative for our school. Another consideration centers around corporate sponsorship. Mission Delores in San Francisco, for example, has partnered with Seton Education to look at improving academic results while managing cost, and more recently, a "generous donation" from J.F Shea and Co. resulted in a massive campus renovation in 2016 (Mission Delores, n.d.). In B.C., Chevron's 'Fuel Your Schools' has met with serious debate as to whether or not schools should accept funding from such large businesses (CBC News, 2014). It remains to be seen whether this will ever be acceptable, but there are ways and means to access additional funds for projects such as these, so this would need to be explored further.

Implementation: A School Day in the Life of Walter, 12-year old student at VI Elementary School

Monday morning

8:15 Walter arrives to class, where he will access his personalized learning plan for the week. Upon logging in, he locates his student folder and reviews the contents. It has changed based on prior assessment, areas of success and challenges, and new discoveries. In addition, he knows he needs to tweak his SMART goal as it helps direct his learning.

This is a soft start, and some students may do goal-setting at home prior to arrival, but Walter appreciates the time to hang-out with friends; it's one of his favourite things about school.

9:00-9:45   **Room A: Independent Work Cycle**

30 student capacity with supervising teacher

Students may bring their own devices

Looking for a spare seat, Walter slides in next to a good buddy who is on the same math track as him. It's a good partnership, and one that likely would never have happened at his last school as his peer is two years older. They pull out their Mathletics Workbook, and get to it during this mostly off-line time. Walter is fortunate to have his own laptop, and if he finishes his assigned work before the end of the block…
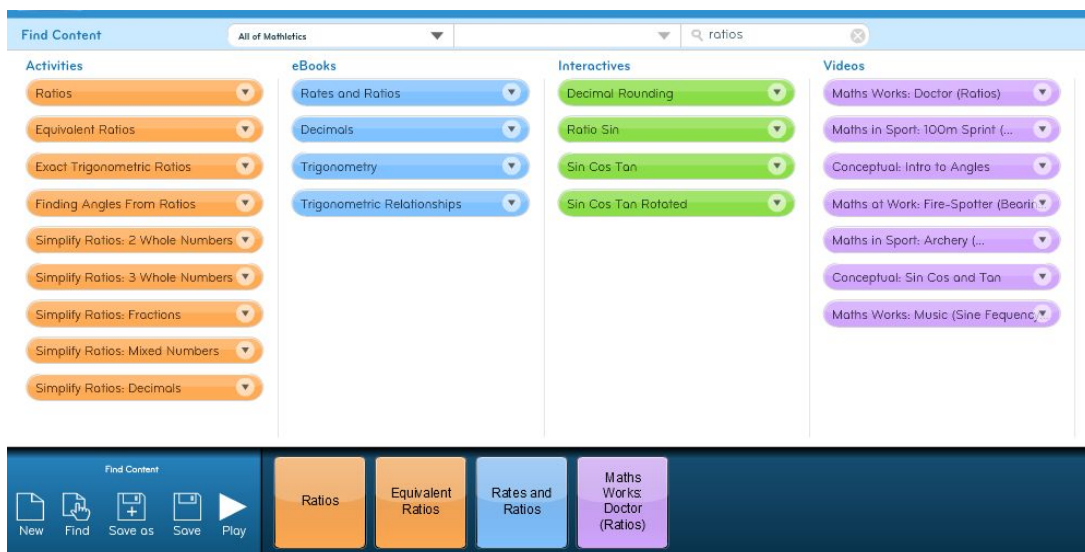
he plans to login to Mathletics online and play a few math games to earn rewards (after modifying his avatar, of course).

9:45-10:30   **Room B: P.E. Block**

10:30-10:45   **Recess**

10:45-11:30   **Room C: Online learning**

              30 student capacity with supervising teacher

Walter logs in at his assigned work station for an independent, 45-minute online learning session. There is a teacher in the room, and she's available anytime to help him with a specific question about the new math concept he's focusing on. This is new for him; in the past he has been expected to sit through a whole-class lesson, even when he 'gets it' and is itching to move on. His math teacher is a specialist, and she moves through the space with confidence, checking in as needed.
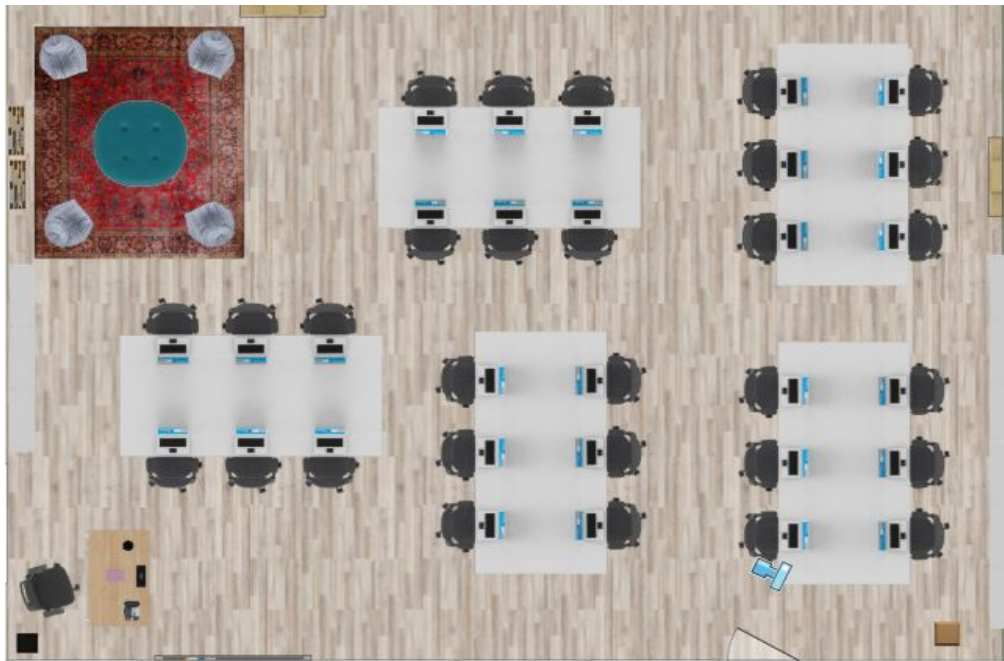
Walter logs on to a pre-booted laptop, and accesses the 'Math' work folder. This week, he's learning about ratios and his folder has been set up with lessons from:

StudyForge

Mathletics

11:30-12:15   **Room D: Small Group Instruction**

This is one of Walter's favourite rooms because it has something for everyone. Based on feedback from Friday's lessons, Mrs. H will hold two sessions in this 45-minute block: the first is a review of adding fractions with different denominators; the second will be a new lesson on ratios. Walter will sit in on the review because he was stuck on a few online questions, but following his online work last block on ratios, he's confident in his understanding and will instead spend the rest of the time reading "Code Talker" by Joseph Bruchac. This school's format allows plenty of opportunities and places for reading, and it has grown his love of reading immensely.

12:15-1:00   Lunch

1:00-3:00   Regular programming commences

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