Framework for Effective Mathematics Teaching and Learning Using the Interactive Whiteboard

Grounded in Research Observations of Multiple Classrooms KPRDSB

General Descriptor	Example 1 (entry level)	Example 2 (more complex)
Non-Dynamic Demonstration **Providing instruction or information to the class using the IWB as a static screen or series of static screens** [Use of IWB mirrors use of an overhead, chalkboard or chart paper for displaying notes and ideas]	*Context*: Grade 10 applied level Ontario classroom, introduction to a lesson on solving linear systems by reviewing agenda on the IWB.	*Context:* Grade 7/8 Ontario classroom; Introduction to a lesson on linear functions. The teacher shows a photograph of one trapezoid table with 5 chairs from the school library.
Dynamic Demonstration **Demonstrating to the class using IWB where the user manipulates words/images/ objects on the board**	*Context:* Grade 4 Ontario classroom; The teacher posts pattern examples that students recorded on the IWB during the previous lesson. Students discuss their thinking and the teacher moves the pattern examples into one of three categories (growing, shrinking, repeating).	*Context:* Grade 9 applied Ontario classroom; The teacher shows the virtual manipulatives that students will be using in the lesson on the IWB (uses the infinite clone feature for dragging and dropping). The students are also given a set of containers and interlocking cubes in yellow and blue that mirror the virtual manipulatives.

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Student Practice **Students use the IWB to replicate teacher demonstration or model**	*Context:* Grade 7/8 Ontario classroom; The teacher goes to a virtual manipulative website on tangrams. The teacher demonstrates how to use the site (to build figures using tangram pieces). Students are then invited to solve similar problems with tangrams while soliciting suggestions from their peers.	*Context:* Grade 7/8 Ontario classroom; The teacher demonstrates how to measure angles on the IWB using a virtual protractor. A small group then practices on their own at the IWB as part of a station activity, while other groups work on similar concepts at other stations.
Investigation **Students use the IWB for solving a problem /investigating a situation / exploring a concept**	*Context:* Grade 7/8 Ontario classroom; The student creates a graph to re-present his linear equation in a different form.	*Context:* Grade 7/8 Ontario classroom; a small group works together at the IWB, using virtual manipulatives to investigate the properties of triangles.

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Math Talk **Facilitating student math talk and idea building with *student* use of the IWB to illustrate ideas** [May also involve making immediate instructional decisions to further student learning with support from the IWB.]	*Context:* Grade 9 Ontario students; The teacher directs students to demonstrate their solution strategy to the class using the IWB. One student manipulates the board while the other student explains their process.	*Context:* Grade 7/8 Ontario classroom; The class has just completed an investigation that explored triangles by means of preparing a debate. Opposing groups use IWB tools (e.g., IWB protractor, websites, rulers, rotation feature, back and forward navigation through pages) to summarize how certain shapes presented may or may not fit the definition of a "triangle". The teacher invites students to summarize their findings on the IWB.
Consolidation **Using IWB to support the synthesis of ideas brought forth in the lesson**	*Context:* Grade 4 Ontario classroom; The teacher facilitates a student discussion on what they learned during the patterning lesson with the help of key words posted on the IWB.	*Context:* Grade 7/8 Ontario classroom; The teacher saves student IWB work and then displays four examples of student representations of a given linear function (growing pattern) on the IWB in order to review student ideas and consolidate mathematical understandings of linear functions. Students discuss how the representations work together to show the same idea in different ways.