I used a writing intensive format in my math, chemistry and biology classes. Students used directed journaling activities, marked some writing activities using a rubric, did cooperative investigations in small groups, and learned to reflectively correct unit tests to 100%.

The purpose of this project was to explore the relationship between metacognition and student success, attitude and motivation in grade eleven math and science courses and to help students make connections between and within subjects in school and real life.

I focused my project on eight of the students in my grade 11 class. The students were all Canadian citizens from middle class families, and all live in Kelowna, a city of approximately 150,000 people.

It is clear that my class size was far too small to allow me to make a definite conclusion about the value of my treatment, but the indications that directed-journaling helps at least some of the students solve problems more successfully means that I will continue to use this strategy in my math and science classes. I am especially encouraged to see the lower-performing students believe that that journaling helps them solidify their learning.

What are the effects of directed journaling, which allows students opportunities to think about how they solve problems, and other metacognitive strategies, on problem solving?

Students who found the journaling activities most useful were those whose grades were in the high C and low B range. Students whose grades were in the A range stated that “journaling neither helps nor hurts me”. When prompted with a more generic “I think it is helpful to think about how to solve problems”, all students were more likely to say they valued this metacognition.

What are the effects of directed journaling on understanding of mathematical concepts in biology and chemistry?

Students attitudes toward their classes, classmates and teacher did not change over the course of the intervention. They were mostly positive and upbeat. Both Steven Brock and Larry McCarty commented on the camaraderie between students and between students and teacher. Shannon Gerber pointed out that “when the students feel positively about their abilities and about what they are doing, and when they put in some effort, everything else falls into place more easily.”

I look forward to journaling
Journaling helps me solve problems
confidence in math skills in math class
confidence in math skills in chemistry
confidence in math skills in biology

What are the effects of directed journaling on student’s attitudes and motivation?

What are the effects of directed journaling on my attitudes and motivation to teaching?

Student attitudes toward their classes, classmates and teacher did not change over the course of the intervention. When students understood concepts I was more encouraged, but it was easy to become discouraged when students struggled.

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Non-treatment, pretreatment and posttreatment responses to concept mapping interview questions covering math content, student journal and other writing assignments about math, my journal.