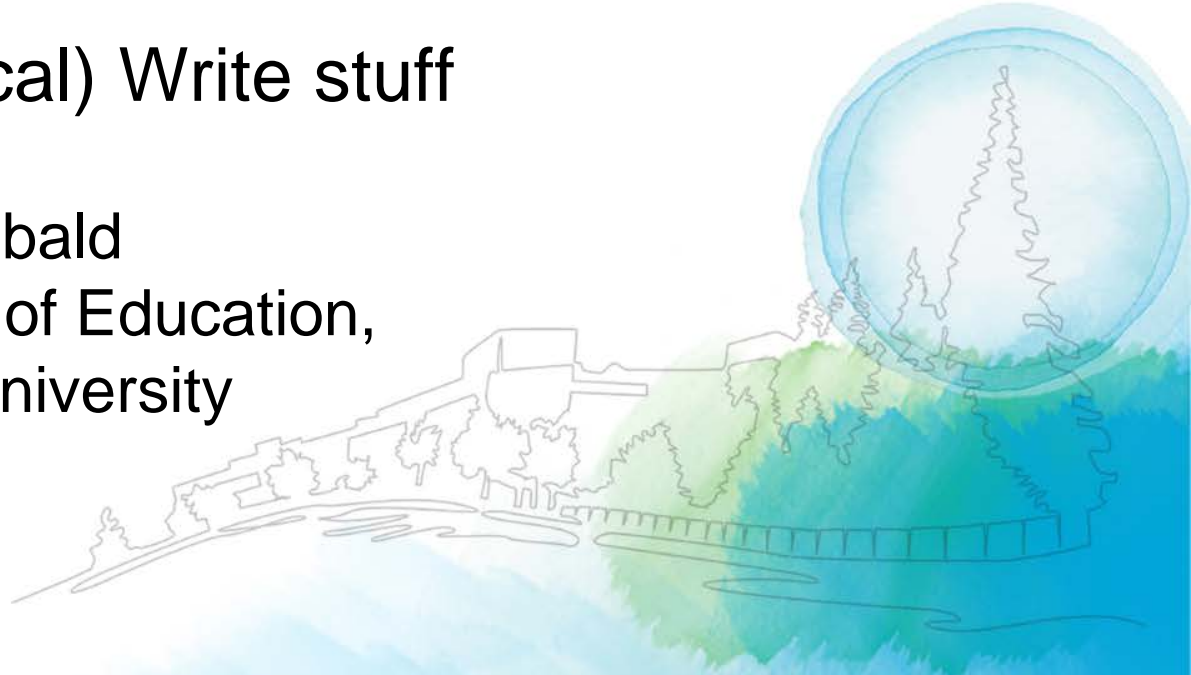


The (Mathematical) Write stuff

Tim Sibbald
Schulich School of Education,
Nipissing University



Session Description

There is a transition gap between high schools and colleges, where high school teachers need to hear from college professors. Whether it is your best practices, challenges you are finding, or classroom research, one way to address the gap is to provide details to teachers. This session will draw on my experience as a high school teacher, mix in some research regarding vocational mathematics, and draw on experience as an editor of a mathematics journal and several books. The intention is to clarify why there are challenges communicating and how we might give high school teachers an edge preparing students for college destinations through the written medium.

Why Write?

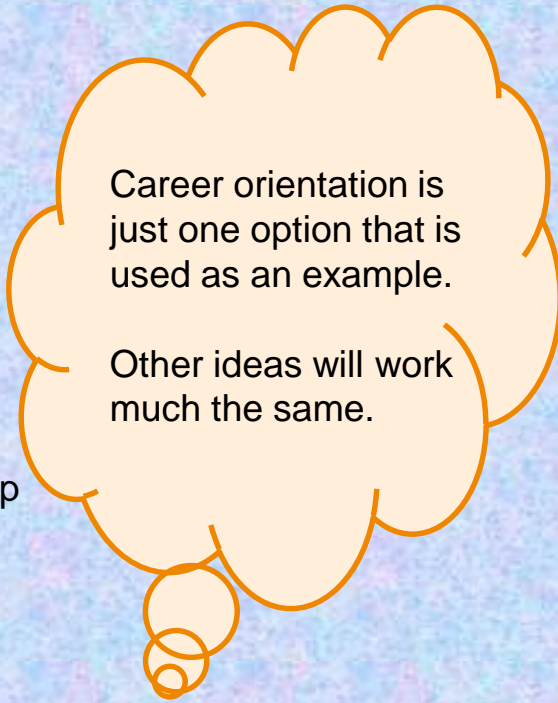
- Others need to learn from you
- Share best-practices (whether you think they are “best” or not)
- As a bridge over boundaries (such as College – High School)
- Support your organization
- Enrich your own understanding by engaging yourself in a communication activity (It helps your students, wouldn't it help you to?).
- Develops your professionalism
- Adds to your experience profile
- Powerful to see yourself in print

What to Write?

- Letters to the Editor
 - Short pieces – half page or less.
 - Book Reviews
 - Articles
 - Columns
 - Reports on events
-
- We can also talk about reports, academic journals, book chapters, and books.

What to Write cont.: On the Job Math?

- How does math get used in career destinations that high school students are headed to?
 - Many workplaces have difficulty identifying how they use math
 - There is a lack of recognition of math skills
 - K-12 teachers have limited access and little context
- Colleges are a pathway for many of these careers
 - Colleges are positioned to be an intermediary to address the gap
 - This would help teachers and promote college as a destination



Career orientation is just one option that is used as an example.

Other ideas will work much the same.

Communicating to Close the Gap

- Colleges have knowledge of math in occupational circumstances
- How can that be put into the hands of high school teachers?

- The OCMA could produce a publication ...
- There is MathAMAYTC ... (Tim in Spring, 2020)
- There is the Ontario Mathematics Gazette ... (Tim is the editor)

- Other publications – but for connecting with high schools the Gazette is the most direct and “local” in the sense of being Ontario focused.
 - The medium needs to suit the message

What is the *Gazette*?

- The oldest OAME/AOEM publication
 - Since 1962
 - *Abacus* is since 1973
 - All issues in the OAME/AOEM archives
- Published in Sept., Dec., March, and June
 - December is in the final stages!
- Has an editorial team and there are a lot of reviewers.
- Includes French, but mainly English
- There is also an advertising manager
- The Communication Committee or the Board of Directors provides oversight of the *Gazette* and *Abacus* (as well as the website)

Ontario Mathematics Gazette

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ELEMENTARY
MATH
Abacus

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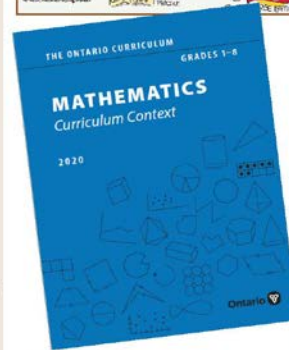
AOEM – ASSOCIATION ONTARIENNE POUR
L'ENSEIGNEMENT DES MATHÉMATIQUES

Vol. 59 #1
Sept 2020

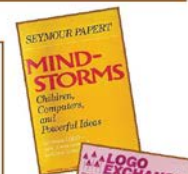
See in the Middle: Interleaving
Practice—The Constant of Change

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See Special Features by Christine Suurtaam and Anne Yeager



See Elementary Math Matters: LOGO—Coding to Learn, Not Learning to Code

See Mathematical Snapshots: Visit to Thunder Bay



Editorial Team

- Tim Sibbald – Editor in Chief
 - Handles all interactions with authors
- Anne Yeager – Associate Editor
- Jacqueline Foster – Associate Editor
- Robert Sherk – Advertising Manager
- Gitta Berg – Proofreader / Copy editor
- Penny Clemens – Graphic Designer

You can be a Reviewer

Requests for reviews give an indication of what the article is about and the division.

You only reply if you have the time and are willing to review.

We have some, but could do with more, for Colleges and French.



@OAMEwrites

When you Write...

- Author agreement form is required
 - Sets out understanding that it is your work, that OAME/AOEM can publish it, etc.
- Photo and biography (less than 100 words) for articles, columns, and reports
- Editor goes over incoming and provides feedback or directs editorial process
 - Decides if review is necessary and if writing is ready
 - Answers questions for authors working on something who are not sure
 - For example, will consider K-12 details you may be unsure of

Letters to the Editor

▲ **LETTER TO THE EDITOR**

- Express an opinion or make a case
- Must be consistent with the vision and mission of the OAME
- Not peer reviewed
- Needs to be clear
- Can be “against the grain” but must respectfully make it clear what the opinion or case is and why.
 - A place to start a dialogue about strengthening the College to High-School connection?
- Ask yourself – Is this something that readers would want to read?
- Example: In the December issue....

Short Pieces

- Half a page or less
- Not peer reviewed
- Help to fill the spaces at the ends of articles
- A good place for imaginations, but must be your own creation
- Examples, Jumbles, Sodokus, Ken Kens, Chess puzzles, Poetry, Word Searches, Photos highlighting something mathematical, Cartoons
- **Suits workplace oriented photos – math tools of the trades?**
- A straight forward way to make a contribution as your time permits

Mathematical Word Search: Metric and Imperial units and prefixes

M	I	O	D	E	T	U	N	I	T	E	A
S	U	P	N	U	M	I	L	L	E	P	R
P	N	C	E	O	N	A	N	T	O	H	
O	C	T	T	K	C	D	E	M	O		
O	B	L	I	E	I	E	I	E	N	C	
T	V	N	D	O	F	L	S	T	D	T	
C	E	R	T	L	K	O	L	E	O		
P	H	C	N	T	I	M	T	R	I		
A	I	I	N	G	N	O	L	L	A	G	
M	P	H	O	U	R	Q	U	A	R	T	

Words and prefixes to find:

CENTIL, DECA, DECI, FEET, FOOT, GALLON, GRAM, HECTO, HOUR, INCH, KILO, LITER, METER, MICRO, MILE, MILLI, MINUTE, NANO, OUNCE, PICO, PINT, POUND, QUART, SECOND, TERA

Write the letters that are left over in the spaces below. But write them from left to right and top to bottom.

Metric and Imperial units and prefixes have _____/_____

Daily Numeracy Activity (DNA)

Does adding up the score, with or without special squares, fit with data management skills?

If special squares are ignored, does tallying the overall score support the MATHL expectation "solve problems requiring estimating and calculating the cost of projects that require the purchase of multiples of the same item"?

Spot the erroneous word!

Harold & Kumar: Escape from Guantanamo Bay (Warner Bros., 2008)

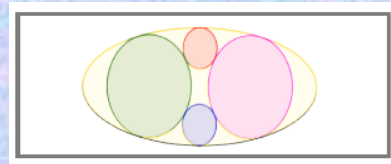
1:35 of the movie

I fear that I will always be
A lonely number like root three.
A three is all that's good and right.
Why must my three keep out of sight,
Beneath a vicious square root sign?
I wish instead I was a nine.
For nine could thwart this evil trick,
With just some quick arithmetic.
I know I'll never see the sun
As one point seven, three, two, one

...

Such is my reality,
A sad irrationality,
When hark, what is this I see,
Another square root of a three?
Has quality come waiting by
Together, now, we multiply.
Form a number we prefer,
Rigging as an integer.
We break free from our mortal bonds,
And with a wave of magic wands,
Our square root signs become unglued,
And love for me, has been renewed.

(Note: "R" rated movies, as I understand it, require principal approval. So consider this as master class for your own thinking about the state of mathematics in pop culture.)



Book Reviews

- Did you know... OAME/AOEM members who get editor approval to review a book get reimbursed when they submit an acceptable review within a year (Note – receipts are needed showing \$CAD amount.)
- A guide is available
- Basic structure – paragraph saying something good, paragraph saying what could be improved, and a few paragraphs saying where takes the reader
- Has to be respectful and sometimes diplomacy is required when addressing shortcomings in books
- Typical length is a page or two
- Editorial process applies
- CV-able



Articles

- Editor works with authors – particularly aspiring writers
- Aim for photos to be placed roughly where they belong
- If you know APA-7 wonderful, if not simply approximate style using previous *Gazette* issues (sample articles on website). If you aren't sure what to do, ask or give it your best shot.
- When you submit an article – editor aims to get back within a few days – may recommend changes or may decide it is ready for review
- Peer review takes about 2.5 weeks (which is exceptionally fast) – three reviewers and the editor makes a decision based on them.
- You will receive the anonymized reviews and the editor decision

Article Review

- It is a “double blind peer review” process – this is the gold standard in academic publishing.
- Feedback may include Track Changes or just a paragraph description that is constructive.

1. Please rate the enclosed article, using the following statements by checking a box on the right for each criterion.

Criterion: Disagree / Slightly Disagree / Slightly Agree / Agree / NA

The mathematics content is accurate.

The mathematics content is appropriate for our readers.

The ideas/activities are fresh and innovative.

The article is well written.

The ideas are well organized and clearly communicated.

The article is of interest to our readers.

The article is free of bias: sexual, ethnic, racial, or other stereotypes (equity issues).

The article reflects the OAME Vision Statement (available on our website).

The article does not endorse, financially or otherwise, any specific commercial products or services?

2. Please check the box indicating what you think should be done with the paper and then explain in question 3.

Publish as is (following copy editing and proofreading).

Make minor revisions and then publish.

Make major revisions and then publish.

Reject manuscript.

Article Details

- Appreciate they take time to write
- In my experience good articles entail clarifying one's own thinking and often I find extensions that add value to classroom use afterwards.
- The process is fast in some places and slow in others
- The reviews are good professional learning – you get them back
- When through the editorial process there is a waiting period until you see it in print and the editor will mail you a hardcopy if you would like.


- Unless you have experience aim for one article at a time so that you get to know the work flow they entail.

Columns

- Requires an application to the editor
- Has to be approved by the Communications Committee (sub-committee of the Board of Directors)
- Must have a focus (College math?)
- Author must be credible as a columnist
- One approach is to write several articles and then make your case for a column
- Columns are due on a schedule (two months before each issue)

**▲ WHAT'S THE PROBLEM?
SCRUTINIZING SQUARE SUMS**

SHAWN GODIN
shawn.godin@ocsb.ca



Shawn teaches at Carine Wilson Secondary School in Orleans. He strongly believes in the central role of problem solving in the mathematics classroom. He continues to be involved in mathematical activities: presenting workshops, writing articles, working on local projects, and helping onsite mathematics contests.

Welcome back, problem solvers. Last time, I left you with the following problem:

The numbers from 1 to 576 are written in a grid so that the first row contains the numbers 1 to 34, the second row contains the numbers 25 to 48, and so on, as shown in the diagram below. Determine if it is possible to draw a square around 64 of these numbers such that the sum of the four corner numbers is 1648.

1	2	...	28	29
25	26	...	47	48
...
553	554	...	575	576

This problem is a slight variation of problem A4 from the 2018 Canadian Intermediate Mathematics Contest from the Centre for Education in Mathematics and Computing (CEMC) at the University of Waterloo. You can check out copies of the many mathematics and computer science competitions as well as other resources for teachers and students at the website www.cemc.uwaterloo.ca.

This is a wonderful problem for students to explore and model algebraically. It is also a good example for you, as a teacher, to look at and decide, "How can I adapt this problem for my students?"

A good place to start is to look at an easier problem. If we make some discoveries in the easier version, they might translate to the original problem. How can we simplify this problem? Instead of looking at an 8x8 square on a 24x24 grid, we may look to a 2x2 square on a 10x10 grid. We may have some 100 grids, like the one in Figure 1, lying around that we can work with. If you don't have any, you can easily create your own or find a free version online to download. The familiar grid will make it easier to see the patterns among the numbers, and the smaller square means that the corners are just all the cells in the square.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Figure 1: One hundred table

Now let's deal with this systematically. Starting with a 1 in the upper left corner, then moving to 2, and so on, we come up with the following few sums:

$$1 + 2 + 11 + 12 = 26$$

$$2 + 3 + 12 + 13 = 30$$

$$3 + 4 + 13 + 14 = 34$$

We notice that each sum is 4 more than the previous sum. Does this make sense? It is something to find a pattern, but it is another to entirely deduce why the pattern exists. In this case, if we move our starting point over by one, each of the numbers in the square also moves over so that instead of writing for the second sum

$$2 + 3 + 12 + 13 = 30,$$

we could have written

$$(1+1) + (2+1) + (11+1) + (12+1) = 1+2+11+12 + (1+1+1+1)$$

and, hopefully, we can convince ourselves that that must be true in general. Having done that, it doesn't hurt to try a few cases to make sure we are correct and haven't made a slight error in logic. From the start of the next row, we get:

$$11 + 12 + 21 + 22 = 66$$

$$12 + 13 + 22 + 23 = 70$$

$$13 + 14 + 23 + 24 = 74$$

And, further down the list, we get:

$$64 + 65 + 74 + 75 = 278$$

$$65 + 66 + 75 + 76 = 282,$$

$$66 + 67 + 76 + 77 = 286,$$

which all follow the established pattern. You may have noticed that when we moved from $1 + 2 + 11 + 12$ to the next row with $11 + 12 + 21 + 22$, each number increased by 10, and the sum increased by 40. If we wanted to, we could even generalize this and imagine we had ten cards, each with a grid of numbers on them. The first card contains 1 to 100, the second 101 to 200, and so on. We could even imagine containing our ten cards in a box, and having ten boxes. The first box would contain 1 to 1000, the second

20 A MARCH 2020 A GAMES/GOEM GAZETTE

Report on an Event

- The *Gazette* includes reports for various events
- Should be Provincial or International in scope
- Some have regular reporters (e.g. Fields Report, NCTM Annual Conference)
- Some rely on hearing from people who attend (e.g. OCMA?, CMESG)

- If you think of reporting on an event
 - Ask the editor
 - Ask if it is suited to a Provincial publication (An OCMA Conference report is)
 - Photos can be included but should have permission if it is of specific people (crowds are okay)

Pet Peeves of the Editorial Team

- “great” – it’s a marvelous idea to use synonyms!
- Math is not “hard” – need specific language about the “hard” difficulty
- Sentences that repeat by saying what they mean several times, and often because they say whatever they are saying several times they become run on sentences.
- Insufficient details for references to materials beyond the article, or links to paid websites that don’t work for those who do not pay.
- When you finish writing something, set it aside for three days and then do a final polishing read before you send it in. This will help you catch many small glitches and makes it easier for the editorial team.

Last *Gazette* Thoughts

- Ontario math educators are the focus
- Consider your opportunities for:
 - Reviewing
 - Offering an opinion through a letter
 - Short pieces, such as connecting to trades
 - Book reviews – inquire first to get reimbursed
 - Articles – share your best practices
- The strength and longevity of the *Gazette* is because of educators like you!

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See In the Middle: Interleaving Practice—The Constant of Change

SENIOR PAPER
MIND-STORMS
Creative, Curious, and Powerful Ideas

LOGO EXCHANGE

See Elementary Math Matters: LOGO—Coding to Learn, Not Learning to Code

See Mathematical Snapshots: Visit to Thunder Bay

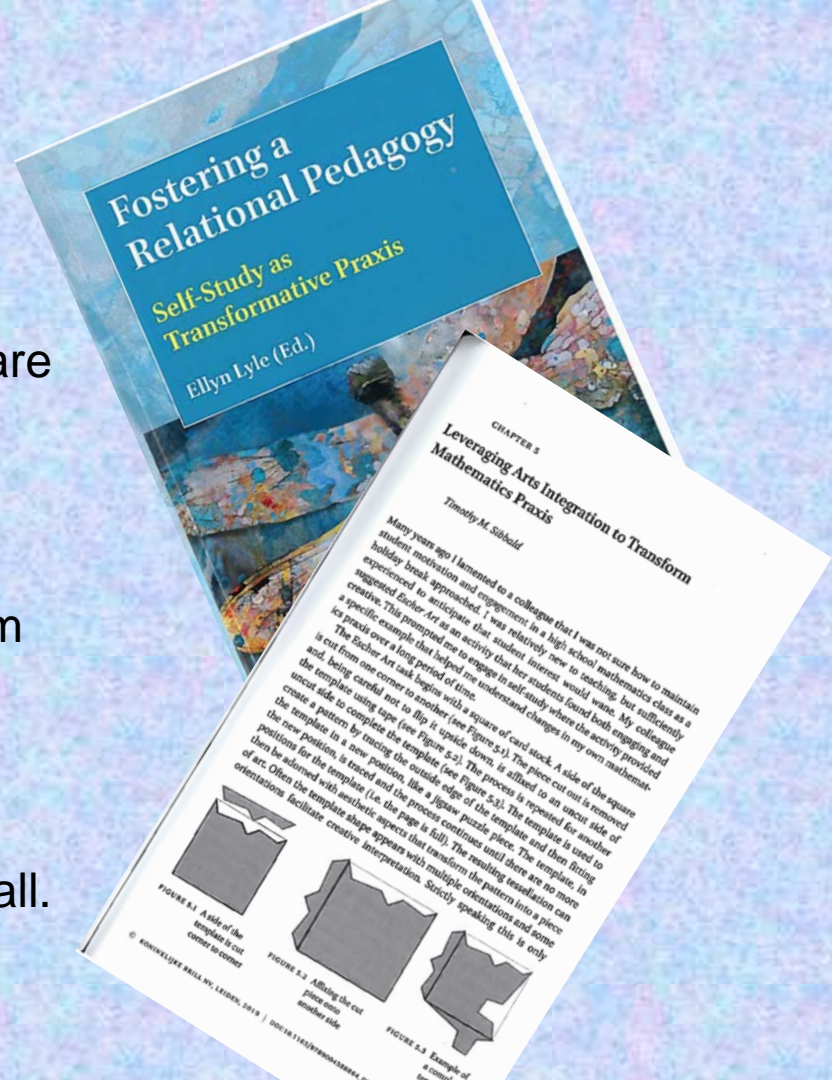
THE ONTARIO CURRICULUM
GRADES 1-8
MATHEMATICS
Curriculum Context
2020

See Special Features by Christine Suurtaam and Anne Yeager

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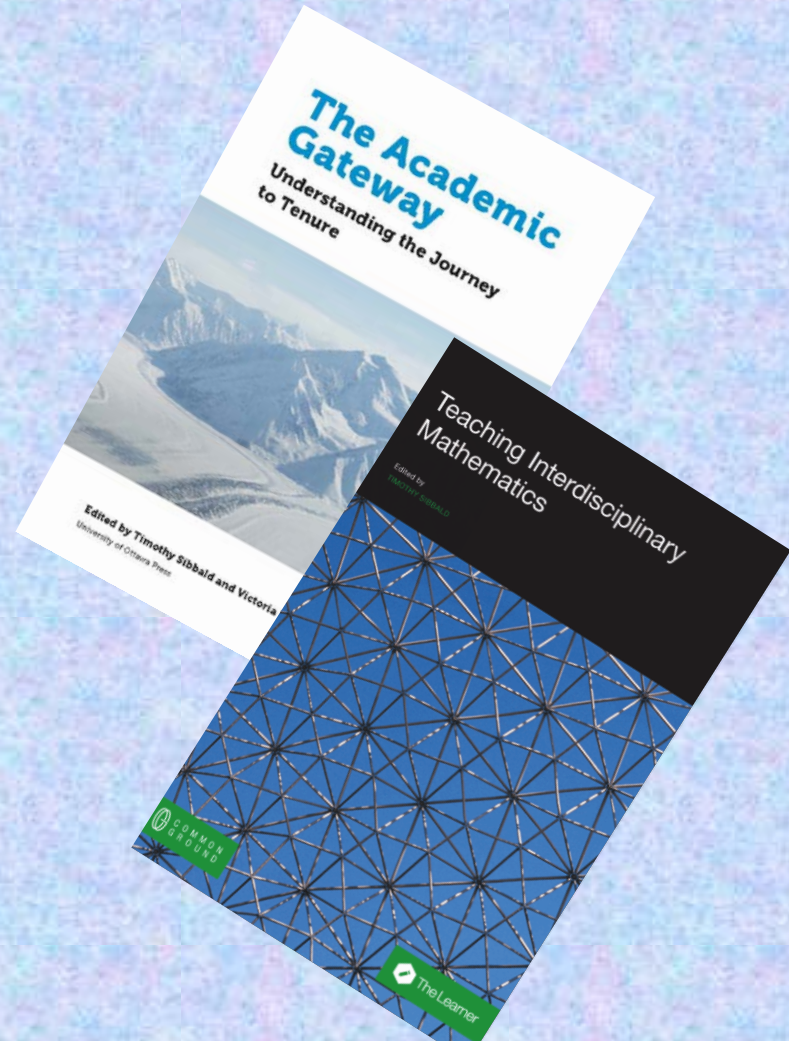
Other Publishing

- Reports – Generally grounded by the work that is being reported on. Find out if there are any specifications for publishing such as a style sheet.
- Book Chapters – Typically you hear of them through a call for chapters. Usually a proposal of a page or so before actually writing the chapter. Chapters typically ten pages or so. Follow style specified in the call.



Other Publishing

- Editing a Book – Begins with a proposal. Be specific and have a draft chapter and proposed list of chapters or explanation for how it will develop. Provide a timeline. You usually need to include your CV; Evidence of publishing is expected.
- Writing a Book – Requires substantial evidence of writing experience.



Questions? Bounce and Idea?

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