

**The NEWSLETTER is a publication of the Canadian Mathematics Education Study Group**

CMESG is a group of mathematicians and mathematics educators who meet annually to discuss mathematics education issues at all levels of learning. The aims of the Study Group are:

- 1) to study the theories and practices of the teaching of mathematics
- 2) to promote research in mathematics education
- 3) to exchange ideas and information about all aspects of mathematics education in Canada
- 4) to disseminate the results of its work.

**Ce BULLETIN est une publication du Groupe canadien d'étude en didactique des mathématiques**

Le GCEDM est composé de personnes œuvrant en mathématiques et en didactique des mathématiques et qui se réunissent une fois par année pour étudier diverses questions relatives à l'enseignement des mathématiques à tous les niveaux. Les buts du Groupe sont les suivants:

- 1) susciter une réflexion critique sur la théorie et la pratique de l'enseignement des mathématiques
- 2) encourager la recherche en didactique des mathématiques
- 3) faciliter l'échange d'idées et d'information sur tous les aspects de l'éducation mathématique au Canada
- 4) faire connaître les résultats de ses travaux.

**IN THIS ISSUE / DANS CE NUMÉRO**  
(in order of appearance / en ordre d'apparition)

President's message du président	1-2
Notices / Avis	3-4
Members' activities / Activités des members	4-6
News from the Executive / des Nouvelles de l'Exécutif	6-7
CMESG Executive / L'exécutif du GCEDM	7
CMESG Editors / Les éditeurs du GCEDM	7

**PRESIDENT'S MESSAGE DU PRÉSIDENT**

**Peter Liljedahl**

For the first time since 2010, CMESG was held in beautiful British Columbia on the idyllic campus of Quest university in Squamish. With record breaking attendance, engaging scientific and social programs, and unbelievable viewpoints at every turn, CMESG 42 will long be remembered as an amazing experience. From the opening reception to the closing session Richard Hoshino, Asia Matthews, and their entire conference team anticipated and attended to our every need.

Although I live only an hour from Squamish, this was my first visit to Quest. It won't be my last. There was a moment during the conference where I had to sneak away to take part in a conference call. I was invited to use one of the corner classrooms with windows on three sides. As I stood by the window an eagle came out of the sky and floated past me not more than 2 meters away. With the backdrop of the valley far below and the mountains in the distance I felt like I was floating right along beside that eagle.

Scientific and social programs aside, CMESG 42 was a time of transitions. Olive Chapman, after four years of service to our community, stepped down as president as I took over the helm. This is a great honour for me and I look forward to serving you and CMESG as president for the next two years. We also thanked

Caroline Lajoie as our outgoing vice-president as well as Richard Hoshino (Quest University) and Jamie Pyper (Queen's University) as our outgoing members-at-large. Joining Manon LeBlanc, Lisa Lunney Borden, and myself on the executive are Ami Mamolo, Tara Gula, and Sarah Dufour. Our new executive duties are as follows:

- Peter Liljedahl (Simon Fraser University) – president
- Lisa Lunney Borden (St. Francis Xavier) – vice-president
- Manon LeBlanc (Université de Moncton) – treasurer
- Ami Mamolo (University of Ontario Institute of Technology) – secretary
- Taras Gula (George Brown College) – member-at-large
- Sarah Dufour (Université du Québec à Montréal) – member-at-large

As CMESG 42 fades into our memories we are beginning to plan for CMESG 43 as Lisa Lunney Borden, Tara Taylor, and Evan Throop-Robinson prepare to welcome us at St. Francis Xavier University in Antigonish, Nova Scotia (May 31 – June 4, 2019). Please watch the CMESG website for a preliminary program in February.

Pour la première fois depuis 2010, la rencontre du GCEDM a eu lieu en Colombie-Britannique sur le campus idyllique de Quest University à Squamish. Avec une participation record, des programmes scientifique et social engageants et une panoplie de points de vue tous plus intéressants les uns que les autres, on se souviendra longtemps de la 42<sup>e</sup> rencontre du GCEDM. De la réception d'ouverture à la session de clôture, Richard Hoshino, Asia Matthews et toute leur équipe ont su anticiper et répondre à tous nos besoins.

Bien que je n'habite qu'à une heure de Squamish, c'était ma première visite à Quest. Ce ne sera pas la dernière. Il y a eu un moment pendant la rencontre où j'ai dû m'esquiver pour prendre part à une conférence téléphonique. J'ai été invité à utiliser l'une des salles de classe avec des fenêtres sur trois côtés. Alors que je me tenais près de la fenêtre, un aigle est sorti du ciel et a

plané devant moi, à moins de 2 mètres. Avec la vue sur les montagnes au loin, j'avais l'impression de flotter à côté de cet aigle.

Mis à part les programmes scientifiques et sociaux, la 42<sup>e</sup> rencontre du GCEDM a été une période de transition. Olive Chapman, après quatre ans de service dans notre communauté, a quitté ses fonctions de présidente alors que je prenais la barre. C'est un grand honneur pour moi et j'ai hâte de vous servir, ainsi que l'ensemble du groupe, en tant que président pour les deux prochaines années. Nous avons également remercié Caroline Lajoie, notre vice-présidente sortante, ainsi que Richard Hoshino (Université Quest) et Jamie Pyper (Université Queen's), nos membres sortants. Ami Mamolo, Taras Gula et Sarah Dufour se joignent à Manon LeBlanc, Lisa Lunney Borden et moi-même à l'exécutif. Nos nouvelles fonctions exécutives sont les suivantes:

- Peter Liljedahl (Simon Fraser University) – président
- Lisa Lunney Borden (St. Francis Xavier) – vice-président
- Manon LeBlanc (Université de Moncton) – trésorière
- Ami Mamolo (University of Ontario Institute of Technology) – secrétaire
- Taras Gula (George Brown College) – membre extraordinaire
- Sarah Dufour (Université du Québec à Montréal) – membre extraordinaire

Alors que la 42<sup>e</sup> rencontre devient un souvenir dans nos mémoires, nous commençons à planifier la 43<sup>e</sup> rencontre du GCEDM, alors que Lisa Lunney Borden, Tara Taylor et Evan Throop-Robinson se préparent à nous accueillir à la St. Francis Xavier University à Antigonish, en Nouvelle-Écosse (31 mai - 4 juin, 2019). Veuillez consulter le site Web du GCEDM pour un programme préliminaire en février.

## NOTICES / AVIS

May 31st - June 4th, 2019

**CANADIAN MATHEMATICS EDUCATION  
STUDY GROUP 43RD ANNUAL MEETING**



**Location:** St. Francis Xavier University, NS.

### **Call for the identification of prospective new Ph.D. presenters at CMESG**

Each year at the CMESG meeting, individuals who have recently completed their Ph.D. degree in mathematics education are showcased. They are given an opportunity to present their work and share their results with colleagues from across Canada and around the world. To be eligible to present at the meeting, individuals must have successfully defended their dissertations no later than December 31, 2018. Presenters must have completed their Ph.D. program at a Canadian institution, or be a Canadian who has completed her/his doctorate at a foreign institution. We are also looking for individuals who recently completed their Ph.D. in mathematics, but who have been formally working (as postdocs, for instance) on research projects in math education. These individuals would be invited to a CMESG meeting to present (together with our new Ph.D. presenters) about their *mathematics education* research (and not about their math research, nor their Ph.D. thesis).

If you know of such a person (whether you are her/his supervisor or not), please forward their name and contact information to me by email ([dufour.sarah@uqam.ca](mailto:dufour.sarah@uqam.ca)) before January 30. I will then contact that individual to ascertain his/her willingness to attend and present at the CMESG meeting at St-Francis Xavier University in Antigonish, Nova-Scotia, from May 31st to June 4th 2019. If you are yourself a person who is eligible for a new Ph.D. presentation, please contact me directly to inform me that you wish to present at the meeting, and supply the information

below.

#### Information needed

Name:

Email address:

Snail mail address:

Name of Institution where presently employed, and position:

Name of Institution where degree completed:

Type of degree (mathematics or mathematics education):

Date degree granted:

Supervisor's name:

Supervisor's email address:

Thank you for your assistance in identifying this year's addition to the community of mathematics educators in Canada.

Sarah Dufour

### **À la recherche de nouveaux doctorants pour présenter lors de la rencontre annuelle du GCEDM**

Chaque année, à la rencontre annuelle du GCEDM, les personnes qui ont récemment complété leur thèse doctorale en didactique des mathématiques ont l'occasion de présenter leur travail et de partager leurs résultats avec des collègues à travers le Canada et autour du monde. Pour pouvoir présenter leur thèse à la rencontre annuelle du groupe canadien, les personnes doivent avoir soutenu leur thèse avant le 31 décembre 2018. Toute présentatrice ou tout présentateur doit avoir complété son doctorat dans une université canadienne, ou doit être une Canadienne ou un Canadien ayant complété son doctorat dans une université étrangère.

Nous sommes également à la recherche de personnes qui ont récemment complété une thèse de doctorat en mathématiques, mais qui se sont impliquées formellement par la suite (par exemple à titre de stagiaires postdoctoraux) dans un projet de recherche en didactique des mathématiques. Ces personnes sont invitées à présenter leur projet en didactique des mathématiques (pas leur thèse de doctorat en mathématiques ni un projet de recherche en mathématiques) lors de notre

rencontre annuelle, au même titre que les personnes ayant récemment soutenu une thèse de doctorat en didactique des mathématiques.

Si vous connaissez quelqu'un qui remplit ces conditions (que vous soyez la directrice ou le directeur de thèse de cette personne ou non), veuillez m'envoyer l'information ci-dessous par courriel (dufour.sarah@uqam.ca) avant le 30 janvier. Ensuite, je communiquerai avec cette personne pour m'assurer qu'elle ou il souhaite assister et faire une présentation à la rencontre annuelle du groupe canadien à l'Université Saint-Francis-Xavier à Antigonish en Nouvelle-Écosse, du 31 mai au 4 juin 2019. Si vous remplissez vous-mêmes les critères pour présenter votre thèse à la rencontre du GCEDM, vous pouvez également me contacter directement pour me faire part de votre intérêt.

#### Renseignements nécessaires

Nom:  
Adresse électronique:  
Adresse postale:  
Nom de l'université d'attache et position occupée:

Nom de l'institution où le diplôme a été complété:  
Type de diplôme (mathématiques ou didactique des mathématiques):  
Date de l'obtention du diplôme:  
Nom de la directrice ou du directeur de thèse:  
Adresse électronique de la directrice ou du directeur de thèse:

Je vous remercie de nous aider à ajouter des noms à la communauté des didacticiens et didacticiennes des mathématiques du Canada.

Sarah Dufour

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At CMESG 42 at Quest University Merrilyn Goos gave a plenary talk on making connections across disciplinary boundaries. In particular, Merrilyn presented to us a number of collaborations between mathematicians and mathematics educators within six Australian universities. Later in the program, Frédéric Gourdeau gave an AdHoc on the importance of such collaborations and made a call to the CMESG community to not

only create such opportunities, but also to celebrate our existing collaborations. As such, the CMESG executive is very interested in hearing about any such existing (or recent) relationships between mathematicians and mathematics educators. You could be working together on a project, on curriculum, co-supervision, co-teaching, or research. If you are working in such a collaboration we would like to hear from you. Please email Peter Liljedahl ([liljedahl@sfu.ca](mailto:liljedahl@sfu.ca)).

Thank you.

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À la dernière rencontre du GCEDM, Merrilyn Goos, a prononcé une allocution plénière sur la création de liens au-delà des frontières disciplinaires. Merrilyn nous a notamment présenté un certain nombre de collaborations entre mathématiciens et chercheurs en enseignement des mathématiques au sein de six universités australiennes. Plus tard dans le programme, Frédéric Gourdeau a expliqué à une séance Ad Hoc l'importance de telles collaborations et a appelé la communauté du GCEDM à créer non seulement de telles opportunités, mais également à célébrer nos collaborations existantes. Dans cet ordre d'idée, l'exécutif du GCEDM est très intéressé par toute relation existante (ou récente) entre mathématiciens et chercheurs en enseignement des mathématiques. Vous pourriez travailler ensemble sur un projet, un programme, une co-supervision, un co-enseignement ou une recherche. Si vous travaillez dans une telle collaboration, nous aimerions avoir de vos nouvelles. Veuillez envoyer un courriel à Peter Liljedahl ([liljedahl@sfu.ca](mailto:liljedahl@sfu.ca)).

Merci.

## MEMBERS' ACTIVITIES / ACTIVITÉS DES MEMBERS

### ON FLM HOUSE STYLE, PART 2

**David A Reid**

One change my associate editors and I made to the *Suggestions for writers* on the inside back



cover of FLM, starting in issue 37(3), was to add the sentences “Writing should be in the form of an essay or a narrative.” and “Standard research reports and outlines of teaching ideas should be submitted elsewhere, unless they also include significant impetus for discussion”. We added these sentences because we found that many submissions to FLM followed a standard format for a research report, and that this undermined the authors’ ability to explore whatever issue they hoped to address.

But for many people, the research report is the only form of writing they have been taught, and so guidance that “writing should be in the form of an essay or a narrative” and not a research report is not all that helpful. So, in this instalment I will share a few thoughts about how to write an FLM article.

### **Starting well**

Good FLM articles start well. Most readers are reading out of interest, not obligation, and so it is important that the beginning of an article be interesting. This is especially important because a common strategy for deciding if an article is worth reading, reading the abstract, involves a trip to the web site, as the abstracts of articles appear only there. Instead, the title of an FLM article and the first few paragraphs must engage the reader’s attention.

There are almost as many ways to do that as there are FLM articles. Some start with a provocative quote. Some start with an interesting bit of transcript or a narrative of something interesting that happened in a classroom. Some start by asking a question. I encourage you to pick an issue at random and to look through it for an article that piques your interest, on a topic that is not a research focus of yours. Look at the beginning. How did the authors engage your attention?

Once the readers are interested, their interest has to be maintained. Not every paragraph has to be as fascinating as the first one, but it is important not to try the readers’ patience too much. One thing to avoid is ‘academic throat clearing’. This is the listing of other researchers who consider your topic worth discussing, definitions of terms you will later use a few times, and so on. For some reason, academic writing often includes such material towards the beginning, before finally getting to the point some

paragraphs (or pages) later. One feedback I often give authors is along the lines of ‘delete everything on pages 2-5’. As with giving a speech, do your throat clearing in private, and then start talking when you are ready.

For the reader, it is helpful to know what an article is about quite quickly and without making much of an effort. I myself know the temptation to spring a surprise, to bring something unexpected in at the end, but the danger is that no one reads to the end, and so no one is surprised. As an editor, I read many articles out of obligation, not out of interest, so I stick it out to the end, and sometimes find myself pleasantly surprised. If that happens then my advice is always to at least hint strongly at the surprise early on.

### **An essay**

The word ‘essay’ comes from ‘essayer’ and an essay is a trying or testing of an idea. It can take many forms, but importantly, it should be *about something*. This can be a critical take on a common assumption, a reinterpretation of a well known phenomenon, a questioning of theoretical assumptions, interrogation of a surprising event, reflection on the nature of learning, or many other topics. Whatever it is about, that idea should be tested, argued, questioned and interpreted in multiple ways. It should be put on trial.

In *Reification as the birth of metaphor*, in issue 14(1), Anna Sfard puts the concept of ‘understanding’ on trial. She begins with an interesting quote, states the topic of her essay in one sentence, and then relates a brief anecdote that sets the stage. She clearly says what she plans to do:

I soon discovered that, as far as the issue of understanding is concerned, current developments in the psychology of mathematics go hand-in-hand with some of the most significant recent advances in linguistics and in philosophy. [...] In this paper I will show how the idea of reification—the basic notion of the conceptual framework on which I have been working for quite a long time now—combines with the new general theories of understanding. I hope to make it clear that the theory of reification is perfectly in tune with the latest philosophical and linguistic developments. (p. 44)

She spends some pages describing “the latest philosophical and linguistic developments”, which is fine as we know how this will be relevant. She brings in some empirical results, but always in the service of her quest to explore ‘understanding’. The quotes from the mathematicians she interviewed illustrate and elaborate the points she is making and are connected to the theory she has already introduced and other concepts as they become relevant. In the last page and a half she brings it together, showing an illustrating with her data, how the theory of reification connects with the embodied metaphors of Lakoff and Johnson.

### **A narrative**

A narrative tells a story. It should have a beginning, middle and end, and characters we care about. And like an essay it should be *about something*. My favourite example of this genre is *Norman*, by Jennifer MacPherson, in issue 7(2). On rereading it now, I find that the first paragraph amounts to academic throat clearing. I think it would start very well without it.

But then, it gets going. It says right away what it is about: “the conceptual gulf that may exist between cultures [...] which may allow a teacher to [...] pursue goals that are conceptually incompatible with those of her students” (p. 24). That is a topic that should interest us all. And then the story starts. The stage is set. The context is described in no more detail than we need.

The writing is engaging. More academic articles should have a paragraph, on the first page, that begins “The guinea pigs did not flourish”. In the next paragraph we meet the main character, Norman. He is building a sled out of Lego. Then the story takes a surprising turn, and the writing becomes more detailed, giving us the ‘data’ we will need for the later ‘analysis’.

The narrative part of the essay is now over, and the discussion continues, ranging over topics such as language, gender, the relationships between humans and non-human animals, mathematical competencies, cultural relevance, and the goals of education. All this in less than 2500 words, without any (explicit) references.

### **Genres**

‘Not-research-reports’ aren’t restricted to these two forms. There are many others: conversations (between authors), (fictional) dialogues, vignette-based thinking, short comments reacting to

something, graphic articles, poetry, commentaries (e.g. on the field) and more. A look back over a few issues of FLM will give you some ideas.

## **NEWS FROM THE EXECUTIVE / DES NOUVELLES DE L’EXÉCUTIF**

### **CMESG elections 2019:** Call for nominations

The two-year terms of Lisa Lunney Borden and Manon LeBlanc on the Executive Committee will be ending May 31, 2019.

You are invited to submit names of candidates for these positions to Viktor Freiman (viktor.freiman@umoncton.ca), chair of the Nomination Committee, or Richelle Marynowski (richelle.marynowski@uleth.ca), member of the Nomination Committee, no later than January 31, 2019. For each nomination, please indicate whether it is for the position of Treasurer of the CMESG Executive or a general member of the executive. It is not necessary at this time to verify if the individuals you wish to nominate are willing to run for these positions.

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### **Élection 2019 GCEDM:** Appel de candidatures

Les mandats de deux ans de Lisa Lunney Borden et de Manon LeBlanc au sein de l’Exécutif viennent à l’échéance le 31 mai 2019

Vous êtes invités à soumettre, avant le 31 janvier 2019, les noms des candidates et des candidats pour ces postes à Viktor Freiman (viktor.freiman@umoncton.ca), président du comité de nomination ou à Richelle Marynowski (richelle.marynowski@uleth.ca), membre du comité de nomination. Pour chaque nomination veuillez indiquer s’il s’agit d’une mise en candidature pour le poste de trésorier du GCEDM ou un membre général de l’exécutif. Il n’est pas nécessaire, à cette étape, de vérifier si les personnes que vous nommez acceptent d’être candidate ou candidat pour ces postes.

## CMESG EXECUTIVE / L'EXÉCUTIF DU GCEDM

The members of the executive extend an invitation to you to contact us about any item of interest. If you have something you want to suggest, if you have a concern you wish to raise, if you want more information, etc., please let one of us know. In order to be of service to the membership, we need to be aware of what your interests are.

Les membres du Comité exécutif vous invitent à leur faire part de votre point de vue concernant n'importe quel aspect de la vie du GCEDM. Que ce soit pour transmettre suggestions ou commentaires, ou encore pour être mieux informé, n'hésitez pas à entrer en contact avec l'un d'entre nous. En nous faisant connaître vos intérêts, vous nous aidez à mieux vous servir.

### **Peter Liljedahl**

President / Président  
Faculty of Education  
Simon Fraser University  
email: liljedahl@sfu.ca

### **Lisa Lunney Borden**

Vice President / Vice-présidente  
School of Education  
St. Francis Xavier University  
email: lborden@stfx.ca

### **Manon LeBlanc**

Treasurer and Membership Secretary / Trésorier  
et aux membres  
Faculté des sciences de l'éducation  
Université de Moncton  
email: manon.leblanc@umoncton.ca

### **Taras Gula**

Member-at-large/Membre extraordinaire  
George Brown College  
email: tgula@georgebrown.ca

### **Ami Mamolo**

Secretary / Secrétaire  
Faculty of Education  
University of Ontario Institute of Technology  
email: Ami.Mamolo@uoit.ca

### **Sarah Dufour**

Member-at-large / Membre extraordinaire  
Department of Mathematics  
Université du Québec à Montréal  
email: dufour.sarah.2@courrier.uqam.ca

## CMESG EDITORS / LES ÉDITEURS DU GCEDM

Proceedings editor / l'éditeur des actes: Jennifer Holm, jholm@wlu.ca

Webpage editor / responsable du site sur l'hypertoile : Peter Liljedahl, liljedahl@sfu

Newsletter editor / l'éditeur du bulletin : Carly Rozins, crozins@berkeley.edu