

## HAS PME-NA BECOME SUPERSIZED? WHAT CAN WE DO ABOUT IT?

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This year marks the 27<sup>th</sup> annual conference of PME-NA. Since the 1980 meeting in Berkeley, California, we have grown considerably as a group, reflecting the incredible expansion that has taken place in the field of mathematics education research. It seems appropriate to review the organization of the conference's scientific program at this time and to consider whether the present format meets the present needs of PME-NA. The purpose of this discussion group is to examine data from past conferences, debate the issues, and make recommendations for constructive changes to the Steering Committee. One motivation for this discussion can be found in our present level of success. At the 2004 conference in Toronto there were a total of 139 Research Reports, organized into 8 time slots, of 18 parallel sessions. In addition, there were 92 Short Oral Reports organized into two time slots of 16 parallel sessions each. With this large number of choices, it was difficult to make a selection. Could it be that we are getting too large? This discussion group provides an opportunity to seek a balanced resolution to scheduling problems and to consider issues related to the quality of the presentations, as well as the review process. Alternative venues for information exchange besides those of paper presentation and working groups will also be examined. It is important to the on-going vitality of the annual conference that we engage in this discussion at this time.

### Participation Growth

PME-NA has grown since the last time the conference was hosted by Virginia Tech in 1991. At that meeting, 56 research papers were scheduled into 13 different time slots consisting of no more than six parallel sessions. In addition, three non-concurrent "symposia" provided opportunities for group discussions (there were no working groups). The symposia, as well as two non-overlapping poster sessions, were scheduled concurrently with the research reporting sessions, providing the approximately 180 participants with up to seven choices at any one time.

Attendance and participation has increased since 1991. Table 1 shows the location, total number of presentations, and attendance (where figures were available) for all PME-NA conferences from 1999 to 2005.

	Location	# presentations	Attendance
1999	Cuernavaca, Mexico	133	
2000	Tucson, Arizona	191	
2001	Snowbird, Utah	158	390
2002	Athens, Georgia	246	
2004	Toronto, Canada	288	391
2005	Roanoke, Virginia	214	
`03	PME/PME-NA: Hawaii (July)	358	
`05	PME: Melbourne, Australia (July)	226	

Table 1. Recent PME-NA and PME Conferences

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Lloyd, G. M., Wilson, M., Wilkins, J. L. M., & Behm, S. L. (Eds.). (2005). *Proceedings of the 27<sup>th</sup> annual meeting of the North American Chapter of the International Group for the Psychology of Mathematics Education.*

Although there is some variation in the numbers from year to year due to the location, there is a noticeable upward trend in the data. Information for the 2003 conference in Hawaii, which was held in July concurrently with PME, and the 2005 PME conference in Melbourne, Australia are included. (It should be noted that presentations are spread out over five days at PME, as opposed to two and a half days at PME-NA.)

Table 2 shows the distribution, across all eight conferences, of the number of presentations broken down by Research Reports (RR), Short Orals (SO), posters (Post), and working and discussion groups (WG, DG).

	1999	2000	2001	2002	2004	2005		03 Ha.	05 Aus.
RR	83	75	85	122	139	104		176	131
SO	37	54	29	70	92	55		81	61
Post	13	51	34	40	48	43		87	24
WG		8	6	6	8	7		6	2
DG		3	4	8	1	5		8	8

Table 2. Distribution of Types of Session for both PME-NA and PME Conferences

Not only has the number of presentations increased over the years, but the number of papers that are submitted for consideration has risen as well. Table 3 presents acceptance rate data for several conferences. These data must be interpreted with caution since some Research Report proposals that are not accepted in that category are recommended and accepted later as Short Orals. The following table reflects some of this “passing along” from one category to another. Note the similarity in submission levels between PME-NA and PME for these conferences.

	2002		2004			`03		`05	
	subm	accept	subm	accept		subm	accept	subm	accept
RR	199	122	250	139		280	176	184	131
SO	24	70	50	92		92	81	78	61
Post	32	40	91	48		44	87	34	24

Table 3. Number of Papers Submitted and Accepted for each Presentation Category

The increase in the number of papers that are submitted over the years can be interpreted as an indication of growth both in interest in the conference and in the number of professionals in the field. At the same time, constraints of time and available meeting rooms place upper limits on the number of papers that can be accepted each year. The growing success of PME-NA has implications both for reviewing guidelines and for a participant’s realistic expectations for presenting a paper at a conference.

### Schedule Comparisons

A key measure of the size of a conference is the number of parallel sessions that are required to schedule all accepted papers. The following table shows the number of time slots allocated for Research Reports and Short Orals and the number of parallel sessions scheduled within each time slot for four recent conferences. Also indicated are the number of separate slots allocated for Working and Discussion Group sessions and the time allotted for these special sessions. (The total number of presentations for each year is shown in parentheses in the first row of the table.)

	2000 (180)	2001 (148)	2002 (232)	2004 (279)
	# slots // sess.	# lots // sess.	# slots // sess.	# slots // sess.
RR	12 5-8	10 8-10	9 13-16	8 18
SO	12 <sup>a</sup> 1-4	9 <sup>a</sup> 1-3	3 <sup>a</sup> 3-4	2 16

	# slots time/slot	# slots time/slot	# slots time/slot	# slots time/slot
WG	2 2 hrs	2 2 hrs	3 1.5 hrs	3 1.5 hrs
DG	2 <sup>a</sup> 1.5 hrs	1 1.5 hrs	2 1.25 hrs	3 <sup>b</sup> 1.5 hrs

<sup>a</sup>Sessions ran concurrently with RR sessions. <sup>b</sup>DG ran concurrently with WG sessions.

Table 4. Number of Time Slots and Parallel Sessions Scheduled in each Slot

The trend in Table 4 not only reflects the growing success of PME-NA but also the increasing challenge of concurrently scheduling all of the accepted presentations. As long as the conference remains two and a half days long, participants will have to make choices among many alternatives. It can, indeed, be frustrating to be forced to pick only one session out of eighteen, especially when several cover the same research area. (For example, at the 2004 conference in Toronto, 49 Research Reports touched on some aspect of teacher education, knowledge, or beliefs.)

Even with a large focus on teacher issues, the research that is reported at each conference covers a wide range of interests. Table 5 shows the distribution, by percentage of total Research Reports, for these papers across the different research categories. (The absence of papers in a particular category may reflect the fact that different conferences used slightly different categories to classify the presentations.) Information in each row reflects the relative popularity of a topic across time. The numbers in each column indicate the concentration of interest, within any one year, among the different research categories.

	99	00	01	02	04
Adv. Math. Thinking	10.8	4.0		10.7	8.6
Algebraic Thinking	13.3	14.7	4.7	9.0	7.9
Assessment	2.4	2.7		4.9	2.9
Geometry	4.8	8.0		6.6	2.2
Learning & Cognition	2.4	9.3	31.8	16.4	
Probability & Statistics	9.6	2.7	5.9	4.9	
Problem Solving	12.0	2.7	12.9	4.1	7.9
Reasoning & Proof			3.5	4.1	10.8
Research Methods		1.3		0.8	1.4
Social-Cultural Issues	9.6	8.0	7.1	7.4	12.9
Teacher education	24.1	17.3	24.7	23.0	23.7
Teach. Knowledge/Beliefs	1.2	17.3	5.9	6.6	11.5
Technology	1.2	1.3	3.5		8.6
Whole #. Rational #	8.4	10.7		1.6	1.4

Table 5. Percentage Distribution of Research Reports by Topic and Conference Year

The table indicates several small shifts in research interests over the years. Most noticeably, there has been a decrease in presentations on whole and rational numbers and a growth in those

covering technology. On the other hand, the papers with a teacher-centered focus continue to maintain a high proportion of the total number of conference presentations, varying from 25 to 35 percent each year.

### **Things to Consider**

This discussion group is intended to be an open forum for a constructive evaluation of the existing scientific program of the annual PME-NA conference. Participants are expected to contribute to a vigorous exchange of ideas and engage in imaginative thinking. This group will also make recommendations to the Steering Committee on how to continue the work begun by the discussion group, with the goal of implementing future changes.

### ***Large Numbers of Presentations***

The data from the past six years indicate some of the ways in which PME-NA has changed. One of the most salient aspects is the proliferation in the number of parallel sessions. At the same time as the opportunity increases for more people to present papers, attendees find it more difficult to choose among the many presentation options. A goal of this discussion group is to consider ways to maximize the former while minimizing the latter situation.

If the number of parallel sessions is set at a reasonable limit, this puts an upper bound on the number of Research Reports and Short Orals that can be accepted. At issue here is the notion that any and all reports that meet a certain standard of reporting should be included. However, limiting the number of presentations may limit the potential for many individuals to participate. Should the conference be a venue in which any quality report may be presented – giving opportunities for more to participate, or should it become a more manageable vehicle with selected presentations? If the criteria for acceptance become more stringent, does this push for higher standards of presentation, and is this a good thing?

Instead of limiting the number of presentations, an alternative is to increase the number of separate sessions that can be scheduled. A possible suggestion is to limit each Working Group session to three 40 minute periods. (At present the groups meet twice for two hours each.) Limiting the sessions to 40 minutes each would force the groups' organizers to make them more efficient, i.e., spend little time on individual presentations and maximum time on group participation. It is also appropriate to consider whether a conference that lasts only two and a half days can have the luxury of dedicating such a large proportion of its time to working and discussion groups at the expense of the many overlapping paper sessions.

Other ways to increase the number of available sessions include scheduling Short Oral presentations concurrently with Research Reporting sessions, and cutting the number or duration of Plenary Presentations. Past conferences have increased the number of available time slots by scheduling evening sessions. There may be innovative solutions to deal with the growing size of each conference that can maximize participation by the members, not only through presentations but also via scheduled free time for collegial exchanges. Lengthening the conference beyond its present two-and-a-half-day format is also an option.

### ***Different Types of Session***

It is important to consider the general goals of those who attend the conference. For some, attendance depends on having a paper accepted. For others, a paper is presented in order to solicit constructive critique from experts in the field. The conference may be viewed as an opportunity to listen and learn new ideas about a particular area of research. Groups of colleagues may use the opportunity for cooperative work in an area of shared interest. The

conference is also a time in which to renew professional contacts and exchange ideas. PME-NA has always been a very graduate-student friendly organization and the needs of this group must also be kept in mind. It is important to include opportunities for students to meet with each other as well as interact with researchers established in the field.

The alternative modes of presentation at each conference have solidified over the years into plenary sessions and panels, research reports, short orals, posters, working groups, and discussion groups. Given the size of the conference, it may be appropriate to consider other types of information exchange, especially those adopted by larger conferences such as AERA and the joint mathematics associations' winter meeting. For example, research presentations could be organized, in a way similar to the present Short Oral organization, into parallel thematic sessions that run for several hours. Less total time than the present 40 minutes would be allocated for each presentation and its follow-up questions, with the idea that interested persons could engage in further discussions one-on-one during conference breaks.

How effective are the present formats used by working and discussion groups? Are there alternative ways that the needs of the organizers and participants of such groups can be met? Asking the question, "Who benefits, and in what ways?" may allow us to design different modes of information exchange that better fit the time constraints and scientific goals of a PME-NA conference.

Going "electronic" may have implications for the conference organization. With proceedings available electronically before the annual meeting and available on CD after the conference, reporting opportunities may change. If more information about each presentation can be downloaded before the conference, less time may be necessary during the actual meeting for public processing of the report. If this is the case, Research Reports and Short Orals could become more information exchange sessions with less time allocated to a formal presentation. In a similar way, the working and discussion groups could require less meeting time, due to electronic pre-conference networking.

### ***Goals of PME-NA***

At present the goals of PME-NA are:

1. to promote international contacts and the exchange of scientific information in the psychology of mathematics education;
2. to promote and stimulate interdisciplinary research in the aforesaid area with the cooperation of psychologists, mathematicians, and mathematics educators;
3. to further a deeper and better understanding of the psychological aspects of teaching and learning mathematics and the implications thereof.

It is appropriate for the discussion group to consider these goals, as well as to question whether they adequately reflect the reality that the annual conference has become. Perhaps a refined set of goals better meets the present needs of the membership.

The way in which this discussion group approaches its work is affected by how participants view the goals and aims of PME-NA. By thinking about the purpose of the annual conference in a different way, innovative alternatives to the status quo may become more evident. PME-NA is more than simply a venue that allows participants to add to their bibliography. The organization needs to feel a sense of mission. For example, the premise that students should, and can, do better than they do at present – and, in association, how can research help? What should the

researcher's role be in mathematics education? How does, or should PME-NA facilitate important goals of the field?

What type of research should be presented at the conference? Should papers be accepted because they exhibit sound methodology, but little else? It may be that reports should be valued for reasons other than simply their content - for instance, papers that provide examples of exemplary research for beginners, that push the envelope of what is acceptable, that provide new insights, or new ways of looking at established research. Thinking deeply about what we are and where we want to go are important in order for this organization to maintain, and even expand, its significant role in the area of mathematics education research.