ICMI Activities in East and Southeast Asia: Thirty Years of Academic Discourse and Deliberations

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Some thirty years ago, the countries of Southeast Asia and East Asia began to have cross national exchanges on mathematical education issues through the various ICMI activities. This was the period when Southeast Asian nations had come of age after two to three decades of post-colonial independence and the East-Asian Confucian Heritage cultures had developed to become strong economies which were more open to international influence. Beginning educational reform tended to be influenced by western constructivist perspectives although education was still firmly anchored in traditional Asian cultural practices. There was the need for regional discourse and academic exchange to enrich the development of each nation's mathematics education for its pupils. This presentation will describe some of the ICMI regional activities and the benefits of such activities to the nations in the region.

1. Introduction

Southeast Asia's connections with ICMI began with the founding of the Southeast Asian Mathematical Society (SEAMS) in 1972 and the founding of national mathematical societies in Southeast Asia. The ensuing activities should be understood against the backdrop of the socio-political developments in the region. Many of these Southeast Asian nations (Indonesia, Malaysia, the Philippines, Singapore, and Vietnam) were under colonial rule until after World War II. With post-war independence and some initial unrest, greater cooperation and promotion of economic growth and peace were formally endorsed with the establishment of the Association of Southeast Asian Nations (ASEAN) forty years ago in 1967. While Thailand which went through governmental changes was held intact through its strong monarchy, countries like Vietnam and Cambodia had also to deal with further wars and internal struggles before nation building could proceed.

In the northern East Asian region, the nations of China, Japan, North and South Korea were all engaged after World War 2 in working out their international relationships within the context of communism and capitalism and building or re-building their economies in this context. In these past decades, the economies of Japan and in more current years, China, are important players on the world stage. All these nations, together with Taiwan and Hong Kong share similar oriental heritages known today as the Confucian Heritage Cultures and this common heritage appears to have much influence on the development of their mathematics education practices which will be discussed subsequently. Again, the development of ICMI activities in the region should be seen within such a context.

This paper will discuss the history of the ICMI activities in the Southeast and East Asian region since the 1970s. The expansion of ICMI activities from Europe and North American towards the east has made important contributions to the development of mathematics education in the region.

2. The SEACME Series

While the SEAMS was formed in 1972, the focus of the national mathematical societies has been on mathematical activities rather than on Mathematics education. The national societies were housed in mathematics departments of universities and members were in a sense the mathematical elite of the countries concerned. It would be quite accurate to say that in the region, mathematics education, as a significant and different branch in the mathematics world together with its own form of research and theories, was yet in infancy in the Southeast Asian region. This is not surprising considering that the education systems of the countries were grappling with literacy problems and the education of masses to meet the workforce needs of slowly developing economies.

The Southeast Asia Conference on Mathematical Education (SEACME) series began in 1978 with the inaugural conference in Manila. This series of conferences was initiated by Professor Yukiyoshi Kawada (secretary of ICMI, 1975 – 78) with the impetus and pioneering spirit provided by Professor Lee Peng Yee of Singapore and Professor Father Bienvenido Nebres of the Philippines. This first regional conference was a resounding success in the following ways:

(a) It was not just a conference but a series of activities leading up to the conference'
(b) There were over a thousand participants including primary school teachers;
(c) There were follow-up actions after the conference.
(d) A great deal of learning took place.

The basic philosophy of the SEACME series which contributed to the success of the conferences hinged on the principle that each conference was a national conference with regional and perhaps some international participation. The objective was to primarily benefit the host country and this engendered a sense of ownership and shared interest in the issues discussed and therefore better focus and relevance.

The tone of having a national conference with regional participation was thus set for the SEACME series and subsequent venues "toured" the Southeast Asian countries, taking place triennially as follows:

Year	City
1978	Manila, the Philippines
1981	Kuala Lumpur, Malaysia
1984	Haad Yai, Thailand
1987	Singapore
1990	Brunei
1993	Surabaya, Indonesia
1996	Hanoi, Vietnam
1999	Manila, the Philippines

Each conference was organized by the hosting nation which chose its own theme, invited speakers and encouraged attendance by teachers of mathematics. The host country benefited, not only through mutual learning on relevant issues within the local

mathematics education community, but also through providing their teachers and other participants the opportunity to learn from the regional and international speakers and participants. If the conference had remained totally national, the academic discourse may have suffered from parochialism. Thus, the principle of having focused national issues but with regional and even international perspectives provided for stronger discussions and the generation of new ideas. As reported in Lee (1992), "we found we could learn a lot from each other perhaps even more so than from the developed countries" and "this was something that a regional conference could accomplish that no international conference could do."

The inaugural conference had the best attendance, perhaps due to the accumulated hunger of the past. The subsequent conferences had respectable attendances in the hundreds. One possible reason could the ability of mathematics educators to go further abroad as the economies developed. For example, just as Australian and New Zealand mathematics educators attended the conferences in SEACME from 1987 onwards, Southeast Asian Mathematics educators began to attend MERGA (Mathematics Education Research Group of Australasia) conferences and ICME, supported by their own universities, governments and even schools. Moreover, within the region, there were non-SEACME local or regional conferences organized by universities or other organisations such as the regular Science and Mathematics Education conferences in Brunei, the Asian Technology in Mathematics Conference series and so on. It seems that compared to other subject areas, mathematics education conferences are far more common in the recent decades and thus have to "compete" for participants. In fact, such developments are an indicator of the maturing of the mathematics education activities in the region.

In the earlier years, as SEAMS' constituent national mathematical societies tended to be based in mathematics departments of universities, some mathematicians also attended these conferences. This was very useful in raising the mathematicians' level of understanding of mathematics education issues at lower educational levels while the general mathematics teaching community benefited from the perspectives which mathematicians bring to the discussions. It would also be true to attribute the growth of mathematics education research in the region through the 1980s to the interest and impetus generated through the early SEACME conferences.

3, The EARCOME Series

While the Southeast Asian countries are rather diverse and had come under the influence of colonial masters, the northeast Asian countries of China, Japan and the Koreas had longer histories and greater homogeneity within each country. Formal collaboration among these north East Asian countries began in the later part of the 1980s after China joined the IMU and ICMI.

Professor Lee Peng Yee of Singapore had extremely good relationship with counterparts in China and worked closely with the Beijing Normal University to organize and host the first ICMI-China Regional Conference on Mathematics Education in Beijing in 1991. A large delegation of Japanese Mathematics Educators attended this conference and in fact, the presentations were all conducted in three languages: English, Chinese and Japanese with the help of very capable translators.

A second ICMI-East Asian conference was held in Shanghai three years later in 1994 with active participation from Japan and South Korea. To some extent, the Southeast Asian countries also participated in these two conferences. This was especially the case for Singapore, where the majority of the population, being of Chinese ethnicity, had few cultural and language barriers.

After these two ICMI-China Regional conferences, it was felt that the time had come for the series to move out of China to be more inclusive. Korea agreed to host the first of these conferences in 1998 and the series morphed to become the ICMI-East Asian Regional Conference on Mathematics Education or ICMI-EARCOME. Although there were some language difficulties, the official language of the conference was English and the Koreans provided their teachers with translated conference papers prepared prior to the conference. This first EARCOME was a relatively long conference of a full five days with 11 plenary keynote speakers, five of whom were from "western" countries (USA, UK and Australia) and six from the East and Southeast Asian region.

After the first EARCOME, the SEACME series completed a full circle of countries and the Eighth SEACME was back in Manila in 1999. Since Southeast Asians had participated in the ICMI-China conferences and first EARCOME, instead of having two competing series of conferences, Singapore offered to host the next EARCOME combined with SEACME, thus merging the two series. As a country with similar Confucian Heritage Culture as China, Japan, South Korea, Taiwan and Hong Kong and yet situated centrally within Southeast Asia, it seemed ideal for the merging of the two conferences to take place in Singapore. Australia and New Zealand have always been strong supporters for conferences in East and particularly Southeast Asia. Moreover, with the first ICME held in Tokyo in 2000, it was no longer unusual or rare for Europeans and Americans to participate in conferences in Asia. Thus in 2002, the Second EARCOME cum Ninth SEACME was held in Singapore with more than 500 local participants and more than 130 foreign particiapnts from 18 countries, including Australia, New Zealand, USA, Canada and European countries.

With this merger, the SEACME series was subsumed into EARCOME series and the subsequent two conferences of the EARCOME series were held in Shanghai, China in 2005 and in Penang, Malaysia in 2007.

4. Changes through the Years

As mentioned in the introduction, during the two decades after World War 2, many of the Southeast Asian nations were much occupied with early independence and nation building. The withdrawal of the European colonials meant some political upheaval and turbulence before self-government could mature and stabilize. These nations had to grapple with newly established educational systems which sought to educate the masses rather than the elite. Taking Singapore as a case in point, the need to educate her population to meet the needs of industry was imperative if she was to attract foreign investment to grow the economy. Although the problem was not as life-threatening for her neighbouring countries with natural resources, all these countries faced the need to raise the literacy and numeracy of their people, especially those in the rural regions. In the 1960s and early 1970s, mathematics curriculum was affected by the new mathematics movement and on hindsight, it does seem strange that such

abstract approaches to mathematics could have been adopted at a time when there was mass education with common syllabus for all. It was good that the first SEACME helped to put us back to basics.

During the first two or three SEACME, mathematics education in the region was still largely traditional in the sense of learning basic concepts and computational skills. Concerns were more with raising the level of the basics for all the population. At times when survival was of foremost concern, aspects such as enjoyment of mathematics or out-of-syllabus mathematics enrichment activities were not on anybody's mind. I personally recalled, as a mathematics doctoral student and attending my first mathematics education conference in 1981, being enchanted at SEACME-2 by a talk on interesting enrichment activities such as relationship between Art and Mathematics which seemed to me to be luxuries which were unheard of in those days. During this period, the few mathematics educators in the region who received their education in Western or Australian universities began to bring back and teach the constructivist theories. Finding our own brand of mathematics education was a slow process since these theories had to be applied in cultures and contexts which were very different from those in which the theories were developed. Moreover, the number of mathematics education PhD holders with strong understanding of the theories and capability to carry out mathematics education research in context were very few and their influence had to be through student teachers as most of them were in institutions of teacher education.

However, the development of mathematics education research and greater understanding of mathematics learning in a larger context grew steadily and, as the world entered the digital age in the late 1980s and with the advent of the internet, the boom of the knowledge-based economy with its quick communication enforced quicker growth in terms of the evolution of education systems and within them, the learning of mathematics. Also, such developments in education were enabled as the nations became more developed economies and moved away from survival status. Some of the changes are:

(a) Mathematics became more widely applied, not just to traditional science and engineering but also to economics and business
(b) Learning mathematics became more and more for utilitarian purpose and hence not restricted at tertiary level to the mathematically talented.
(c) Better education and information available to parents and students meant that teachers had to earn respect through stronger professionalism especially in terms of their knowledge and skills. (This is very different from the traditional unquestioning respect accorded to teachers in Eastern cultures.)
(d) As the nations became more developed, more teacher educators were also better qualified in their field and mathematics educators were no longer mathematicians with interest in education but doctorate holders with research capabilities and good grounding of educational theories.

All these changes resulted in the learning of Mathematics becoming, within each nation, hybrids between western learning theories and eastern cultures. It needs to be stressed that while there are similarities, especially among the Confucian Heritage Cultures, each hybrid is yet different. For example, Japanese lessons on mathematical problem solving are very "constructivist" in stimulating mathematical thinking

processes through questioning and in fact, far more mathematically engaging than those in the USA as shown in the TIMSS video study. In China, students are also engaged in problem-solving tasks of high mathematical level, with computations or algebraic manipulations performed almost effortlessly so as not to distract from the main task. Drill and practice for these "basics" is advocated in China in order to do this and the discipline of the students in large classes of 50 or more must be seen to be believed. In Singapore, mathematics learning tends to be pragmatic and, while the problem-solving tasks may not be as challenging as those in Japan and China, the "basics" are well covered and understood by the majority and such "basics" may be at higher levels than equivalent age-level classes in the west.

The nations in the East Asian region are thus developing quickly with a strong impetus for learning from others while, at the same time, retaining those aspects which are strongly rooted in their own cultures. An example of this is the parents' high expectations of their children's educational performance. Stemming from two common characteristics of Confucian Heritage cultures, firstly, strong family bonds and secondly, the respect for education and its usefulness as a stepping stone to greater opportunities, East Asian students do not have to enjoy the subject to be motivated to learn or excel in the subject since making their parents proud is sufficient motivation. Thus the TIMSS finding that the East Asian countries which performed very well were also those where the students do not claim to enjoy mathematics is of no surprise to Confucian Heritage cultures. The intertwining of constructivist teaching approaches coupled with high expectations seems to be a formula which has worked well for these cultures. However, what has worked well in the Confucian Heritage cultures will not work for the other cultures in Southeast Asia and each nation must work out what works best for them.

In view of the historical developments in the region and the world, by the time of the first EARCOME, the mathematics education conferences had taken on a format rather similar to other mathematics education conferences, with a substantial number of foreign and local keynote speakers and paper presentations organized along various strands such as ICT in Mathematics Education, Teacher Education, Mathematics Learning, Mathematics curriculum, etc. The earlier SEACME format of focusing on a few local issues was no longer as strong. Through various strands, the participants could widen their discussion and learning according to their own needs.

While there is an increase in international participants from outside the East Asian region, local participation was still predominant. Moreover, with stronger academic strength and research, about 60 – 70 % of the paper presentations would be from local participants, discussing issues of local concern. For example, in the most recent EARCOME in Penang, Malaysian mathematics educators' concern about student difficulties in learning mathematics through English was a recurring theme. Nonetheless, there is certainly a move towards internationalisation in the EARCOME conferences. As nations become more inter-connected with an increasing globalization, this is only a natural outcome and not unwelcome since it enables the academic discourse to be enriched with wider perspectives and to stay relevant and up-to-date.

With more international collaborative research studies, it is not unusual to have researchers from various countries meeting at these conferences to present their

papers. Also special interest groups could use such conferences for their own meetings to discuss common issues. For example, the first meeting of Chinese mathematics educators which took place at ICME-9 (Tokyo, 2002) met again in EARCOME 2 in Singapore in 2002.

Nevertheless, the principle of a national conference is still applicable in all the conferences. One example of the working of the principle is having concurrent workshops running parallel with the conference. Such opportunities enable for practitioners who do not wish to attend research presentations to learn new ideas and skills from local and foreign experts and such features in the conferences are to be treasured.

One of the less welcome changes is the decreasing participation of mathematicians in SEACME and subsequently EARCOME as mentioned earlier. This is perhaps an inevitable consequence of the establishment and recognition of mathematics education as a discipline different from the discipline of mathematics, as the body of active mathematics education research in the region grew and developed. With the steadily growing number of mathematics education academics and the separation of the two disciplines, mathematicians decreased their involvement in what was seen as purely education conferences. It would be interesting to check on mathematicians' participation in ICME congresses over the years to see if the trend was not just in the region. As the discourse between mathematicians and mathematics educators is valuable, ICMI may consider giving some attention to this phenomenon.

As we move ahead, the academic discourse can move to a deeper level of exchange even as the world gets smaller through globalization and some issues become more common across countries. Even so, some issues are particular to one or a few countries or the same issue could be problems to different degrees in different contexts. For example, teacher education or teacher shortage may be common issues but the concerns (knowledge, skills, attitudes, shortage in particular areas, etc) and solutions of different countries are definitely going to be different.

5. Conclusion

East Asia and Southeast Asia have come a long way in Mathematics Education and this is in no small way attributable to the ICMI activities begun thirty years ago. Compared to the century of ICMI activities, the East Asian region is a latecomer on the scene but with the support of the mathematics community and the fast pace of development, the region is becoming an important contributor and player in ICMI activities. The holding of the ICME-9 in Tokyo in the millennium year 2000, the first ICME in Asia, was a very welcome signal of Asian participation on the world mathematics education stage. Towards the future, ICMI activities should spread to the South Asia and Middle Eastern regions to be truly global and international.

References

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