Appendix 10 : Challenging Mathematics - The Mathematics Houses in Iran[1]

In this appendix, we briefly present the goals and main activities developed by the Mathematics Houses, a structure created in the last decade in Iran. These perfectly illustrate what can be done in the framework of non-formal education, when the different communities interested in mathematics and mathematics education develop a productive collaboration.

As recalled in (Barbeau & Taylor, 2009, p.88), the origin of Mathematics Houses in Iran results from the creation of a high commission headed by the President of Iran for the observance of the 2000 World Mathematical Year set up in 1997. This commission indeed took as a goal the creation of Mathematics Houses. The first one opened in Isfahan in 1999. To date mathematics houses exist in Isfahan, Neishabour, Tabariz, Yazd, Kerman, Khomein, Kashmar, Sabzevar, Babul, Zenjan, Gazvin, Gonbad and Najafabad, and a specific commission has been established for organizing the cooperation between these.

Mathematics Houses have six main goals**:**

1. popularizing mathematics;
2. investigating the history of mathematics;
3. investigating the applications of mathematics, statistics and computer sciences;
4. developing information technology;
5. expanding mathematical sciences among young students;
6. promoting team working among young students and teachers.

These goals are achieved through**:**

- procuring facilities for non-conventional education;
- introducing new instructional techniques;
- establishing scientific data banks;
- encouraging joint and collaborative research;
- modeling and applying mathematical sciences;
- welcoming relevant novel ideas.

A diversity of activities serving the general public, students of all levels and their families, teachers and even university professors, graduate students, researchers and artists, are organized by the mathematics houses. We list these in the following paragraph, relying on the presentation made in (Barbeau & Taylor, 2009, pp. 88-92) and on a text written by Ali Rejali for the ICMI Bulletin on the occasion of the tenth anniversary of the Isfahan Mathematics House (IMH) (Rejali, 2009). This very active mathematics house is an especially insightful example. More information can be found in its website: www.mathhouse.org

---

[1] This is the appendix of "Les de'fis de l'enseignement des mathe'matiques dans l'education de base" published by UNESCO, 2011.

Activities organized by IMH include:

1- Lectures (both on popular and special topics in mathematics and mathematics education). For instance, every year, there are 5 or 6 public expository lectures and many special talks for special groups of students, teachers and members of the house.
2- Mathematics and information technologies exhibitions. Special "days" and "weeks" are regularly organized around such exhibitions. More generally, the mathematics houses provide computer facilities where participants can use and develop software, access the Internet and benefit from electronic resources for learning mathematics.
3- Activities for high school students. These are quite diverse and include research groups which present the results of their investigations in annual festivals or in publications, mathematics team competitions for instance in the frame of the International Tournament of Towns, the Isfahan school net which establishes electronic communication for schools and provide information technology for education and research, robotics workshops, camps and problem-solving workshops.
4- Activities for university students: statistics day, research groups involved in collaborative research through electronic communication with Iranian researchers abroad, entepreneurship for giving students the opportunity of designing web pages and software , introductory workshops to the use of mathematics and statistics software.
5- Activities for teachers: research groups in various educational fields, information technology workshops to train teachers in the use of modern educational devices and familiarize them with information technology, workshops on goals, standards and concepts of mathematics education for elementary teachers, on new secondary courses and information technology for secondary teachers.

At IMH, moreover, a group of researchers is developing specific activities for teaching mathematics and computer sciences to blind students. Beyond that IMH and some other mathematics houses maintain specialized libraries providing access to resources of interest regarding mathematics education available in the country.

Mathematics houses cooperate between themselves, but they also collaborate with various Iranian institutions such as the Adib Astronomy Centre, the Iranian Mathematical Society, the Iranian Statistical Society, the Isfahan Mathematics Teachers' Society, the Iranian Association for Mathematics Teachers' Societies, the Scientific Society for Development of Modern Iran; the Isfahan Society of Moje Nour for the blinds, and the Science and Art Foundation. New forms of cooperation are emerging with some other foreign institutes such as Fontys and the Freudenthal Institute in the Netherlands, or in France the association Animath coordinating the diversity of existing non-formal educational activities in mathematics and the IREM network (Instituts de Recherche sur l'Enseignement des Mathématiques)[2].

---

[2] For more information about Animath and non-formal educational activities in mathematics in France, see (Zehren & Bonneval, 2009). For information about the IREMs, see appendix 9.

In no more than one decade, mathematics houses in Iran have already achieved a lot, and they are receiving increased international recognition.

Zehren, C. & Bonneval, L.M. (Eds.) Dossier : Mathématiques hors classe. <u>Bulletin de l'APMEP,</u> N° 482, p. 337-403, 2009.

Barbeau E.J., Taylor, P.J. (eds.) <u>Challenging Mathematics In and Beyond the Classroom. The 16th ICMI Study.</u> New York: Springer Science, 2009. 336 p.

Rejali, A. Isfahan Mathematics House. <u>ICMI Bulletin</u> (to appear).