

THE IREM NETWORK

irem

INSTITUTES FOR RESEARCH IN MATHEMATICS EDUCATION

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The 3 fundamental missions of an IREM

since the creation 50 years ago

The first IREM were created by the French government in 1968

- ▶ of the conjunction of
 - ▶ a great disarray of the teachers, following the so-called "modern mathematics" curricular reform,
 - ▶ and the events of May 68, shaking among others the academic world,
- ▶ and after the solicitations of
 - ▶ the Association of Mathematical Teachers of Public Education (APMEP)
 - ▶ faculty-researchers aware of their responsibilities

to develop **research** in Mathematics education, **in-training** and produce **teaching documents**.

Principles of work in an IREM

Since the origins and underpinned by the conditions of their creation,

- ▶ the currently 27 IREM are original structures, created **inside the universities** that support them
- ▶ supported by **local education authorities** (rectorates, inspectorates)
- ▶ and **national authorities** (Ministries of Education and Higher Education and Research).
- ▶ they have a great heterogeneity of statutes, due to the local contexts,
- ▶ some **constants** can be found in their functioning: they are based on the fundamental importance of **collaborative and non-hierarchical work** between
 - ▶ field teachers from any level of schooling
 - ▶ researchers in mathematics or mathematics education or history.

Research-action groups

There are currently 281 groups of research-action, involving 2074 members

- ▶ 57,5% are secondary teachers
- ▶ 10% are primary teachers
- ▶ 27,5% are researchers
- ▶ 5% are management staff

They can work on a mathematical thematic or/and a level (numbers at pre-school, probabilities, high school-university liaison) as well as on transversal subjects (special needs students, mathematical games, didactics, mathematics and languages)...



Testimony by Anne Dusson, 2ndary school teacher
member of the group junior high school,
IREM de Normandie (Rouen),
who explains how the work is done in her group.

Training

- ▶ Usually, following the work of a group, **in-service training** is proposed to other teachers
- ▶ Generally uses the reflection in the group, or other resources produced in the IREM network
- ▶ Proposed to teachers by the services of local education authorities ("académies")
- ▶ Unfortunately often too short (average 1.5 day)

- ▶ Some more consistent training for promotion competitions

Per year, around 200 sessions, 8 000 trainees, 36 000 half-days of trainee training.

Publications, seminars and conferences

Groups are committed to write or produce

- ▶ documents for teaching, experimentation reports, any document that could be online on the IREM site
- ▶ articles for journals (network or friendly organizations journals)
- ▶ brochures or books
- ▶ videos.

More than 100 documents are published each year.

The IREM organize local seminars, conferences, congresses where the groups can present their productions.

12 regular seminars and around 10 congresses and 60 conferences are organized per year within the IREM network (around 6 000 attendees).

The synergy in the network: the ADIREM

ADIREM: Assembly of the IREM Directors

- ▶ gathers 4 times a year
- ▶ the directors, the president of the scientific committee, representatives of the teachers association APMEP, of the SMF (French Mathematical Society), and the president of the CFEM
- ▶ coordinates administrative and political aspects of the network
- ▶ distributes the (few) collective resources: hourly fees (4 555 hours) and functioning funds (20 000 euros a year).
- ▶ represents the network to national authorities or other interlocutors.

The synergy in the network: the Scientific Committee

- ▶ 20 people
 - ▶ one half representing the network
 - ▶ the other one external observers (including non-mathematicians)
- ▶ it observes the network's activity, evaluate its work,
- ▶ it generates perspectives through its debates, gives recommendations to the network
- ▶ and contributes to the IREM's voice.

Inter-IREM Commission (CII)

There are currently 13 Inter-IREM Commissions

- ▶ 4 associated with a sector of the educational system: CII Collège (junior high-school, grade 6 to 9), CII Lycée (highschool, grade 10 to 12), CII Lycée Professionnel (vocational high school), CII University;
- ▶ 2 dedicated to pre-service (and in-service) training: CORFEM (for 2ndary school), COPIRELEM (for primary school)
- ▶ 3 working on transversal themes: CII Epistemology and History of Mathematics, CII Didactics of mathematics, CII Information and communication Technologies for teaching (TICE);
- ▶ 1 specialized in informatics (CIII) (teaching in charge of math teachers)
- ▶ 2 dedicated to the network resources sharing: CII Publimath, CII Repères-IREM (see below)
- ▶ the International Inter-IREM Commission

CII - Aim and functioning

They bring together members from different IREM to work on given themes, compare the work of IREM groups, encourage specific research, produce common resources, organize conferences and meetings, and reflect and anticipate curricular developments. They are a source of proposals thanks to their expertise for national or international actions.



Testimony by Maëlle Jouran,
2ndary school teacher
in charge of the CII Collège

she presents this CII

Journals

3 interface journals are supported by the network

- ▶ *Repères IREM*: generalist journal and special thematic issues; 123 issues, 4 per year, 1 178 articles (since 1990)
- ▶ *Grand N*: for primary school teachers and their trainers (edited by the IREM of Grenoble); 107 issues, 2 or 3 per year, 750 articles, (since 1973).
- ▶ *petit x*: for secondary school teachers and their trainers (edited by the IREM of Grenoble); 113 issues, 3 per year, 650 articles (since 1983).

Resources in French language on math education are reviewed on the



server (co-managed with the APMEP) by

- ▶ creating reading sheets (32 000 available)
- ▶ linking them to available digital versions of the resources
- ▶ saving available pdf versions on the IREM publication server (10 000).



Popularization activities

The IREM have progressively developed activities of popularization

- ▶ towards the students, and the general public
- ▶ and often serve as an organ of popularization for research laboratories in mathematics
- ▶ or as a regional partner for associative activities (MATH.en.JEANS)

Around 150 diffusion events are held each year, **involving teachers and researchers**, towards 67 000 participants.



Testimony by Stéphanie Prunier,

2ndary school teacher, IREM of Bourgogne
presents her participation in a group in charge of preparing a
mathematical rally.

Professional development

For a French teacher, participating to the IREM network is thus a way to globally strengthen one's professional development:



Testimony by Vincent Paillet,

2ndary school teacher, IREM of Center-Val de Loire

CII Collège,

CII Repères

Scientific Committee

Openings

- ▶ In recent years, the network has tried to extend its activities to **other sciences**
 - ▶ 22 groups welcome 40 physicists or chemists
 - ▶ 10 groups welcome 20 biologists or geologists
- ▶ The network is **wide open to the international**:
 - ▶ The first african IREM were born in the 70's: Dakar (Senegal), Niamey (Niger). Recently in Kinshasa (Congo)...
 - ▶ There are IREM in South America: Lima (Peru); the IREM of Anhanguera, Pernambuco, São Paulo form the Brazilian IREM network
 - ▶ projects in Algeria, Madagascar...
 - ▶ The International Inter-IREM commission allows exchanges between IREMs all around the world, or with colleagues from other countries, e.g. by its international monthly seminar.