

EDUCATION IN MATHEMATICS.

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Mathematics are formed by knowledge which is acquired by thinking. This is why understanding mathematics requires a thought capacity in the student who is going to acquire such a knowledge. This capacity is also developed in the student when he or she studies mathematics. So that thought capacity and mathematical knowledge are two ends feeding each other.

Not everyone we meet at class have a well formed thought capacity, which has several aspects:

- 1) Logical capacity.
- 2) Intuition.
- 3) Generalization capacity.
- 4) Usefulness capacity.

Therefore, it is necessary that the teacher, at the same time that he is stating mathematical knowledge would train thought capacity in the students by means of comments and questions.

Even though the direct objective in a mathematics course is to teach the results enunciated as lemmas, propositions and theorems, indirect objective is to develop the students' thinking, which helps to

- Understand what is around us.
- Carry out instructions being aware of what they are for.
- Increasing knowledge when they discover relations at the same time that they ask themselves new questions.
- Resolve actions with more freedom when they are familiar with reality.
- Innovate.

Mathematics lectures may be divided into theoretical classes and practical classes, although it is convenient to give also practical-theoretical lectures.

With respect to theoretical explanations, it may be useful to do:

1. Conceptual or historical motivation of ideas (both if they are possible).
2. Enumeration of steady applications to other pieces of mathematics or to other sciences.
3. Definitions.
4. Examples which facilitate definition understanding
5. Strict logical proofs of lemmas, propositions and theorems.

With respect to practical lectures it is convenient:

To propose problems related to the explained theory, ordered by progressive difficulty.

Make the students understand well the problem statements, making them to read the problems aloud, if necessary.

Make the students to express which ideas were useful, in the resolution of problems.

Write accurately and in detail the problem answers so that when they copy them, these problems and their solutions could be understood at home.

When different ideas arise and these ideas give different methods to solve a problem, it is convenient to verify that different methods give the same result.

If it is possible we will put into relation the different exercises

For the students to acquire, at the same time, mathematical knowledge and development thought capacity, it is necessary to make comments and questions needing the lecture. These comments and questions should

- Make them aware of what they know.
- Make them aware of what they ignore
- Encourage their interest in increasing their knowledge by studying, and encourage their desire of working in practical problems.

Throughout the course students should be increasing

- Understanding capacity of problems.
- Mathematical vocabulary and language.
- Grammar in exercise writing expressions.

At the end of the course it must be developed

- Scientific curiosity in general.
- Satisfactory spirit by the new acquired knowledge so much as their applications.
- The verifying desire.
- The generalization desire.
- Becoming aware of certain limits in the learnt theories, when exercises are not possible to realize with previous theories.

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