

**Abstract:**

Human and country relations, uncontrollable diseases, science, and technology are advancing, and societies are developing with new needs, flooring the way for new possibilities.

Students' backgrounds are often different since students arrive at universities/polytechnics from professional courses while others arrive from the regular learning/teaching system. When engineering students take a mathematics course because they are interested in the subject then they are normally motivated to study it. If the students study mathematics because it is a mandatory subject, usually it is necessary for educators/teachers to create or foster motivation.

Expecting that engineering students can understand and dedicate themselves to mathematics in the same way as mathematics students usually do, is high levelling engineering students' motivation to learn mathematics. Nevertheless, the professional engineer must acquire not only empirical but also abstract understanding of mathematics concepts and their applicability.

One of the objectives, if not the most important, of teaching mathematics to engineering students is to find the right balance between practical applications of mathematical concepts together with their in-depth understanding and rigour.

The pandemic led to huge reflection among the teacher community on what we really want to achieve and in which ways are we, as teachers, able to effectively transfer knowledge in mathematics and increase students' motivation. Forced by the existent conditions recorded lectures, video clips explaining concepts are now available. Possibilities of visualizing abstract mathematical concepts with the help of computer programs for educational purposes were by teachers intensively developed. Technological tools like Geogebra, MatLab, R and various other software were in several courses used and students got familiar with these tools.

These digital offerings increase the flexibility of learning and were by students appreciated. Particularly for students who have problems to attend lectures on campus (working students for example) for whatever reason can make use of these offerings. At the same time some facets of teaching and learning that were no longer valued, or at least no attention was paid to them, are now more valued, for example time for students to socialise with each other, the possibility of reading student behavioural in

class (the way students react to the learning contents that is being proposed, their actions), direct verbal and non-verbal communication and the possibility of direct feedback and interaction.

Activities that develop students mathematical modelling competences and understanding can enable students to bridge the theoretical knowledge of applied mathematics with the solution of practical problems. The process of in-depth exploration of mathematical knowledge and individual appropriation of the abstract concepts 'meaning will then, fortunately happen and the students will realize the value and the scientific nature of applied mathematical knowledge in specific fields.

In this paper we will address the previous two points that were stated above: 1) online and onsite teaching and learning opportunities; 2) the right balance between practical applications of mathematical concepts and in-depth mathematics understanding and rigour.