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Modeling, Projects and Internet: Alternatives to undergraduate basic mathematics courses

Since the late 1970s, applied mathematicians brought to Brazilian mathematics education the notion that working with "real problems" could be an alternative to mathematics education at different levels. Specifically, some aspects of mathematical modeling were introduced into undergraduate calculus courses offered to non-math majors. Some mathematics educators have transformed this idea and have encouraged students to choose themes for project work. This approach became known in Brazil as modeling and has changed curriculum since the teacher and the institution alone no longer choose all the contents and topics to be studied. Over the last fifteen years, I have developed research using such an approach in basic calculus courses proffered to Biology majors at UNESP. In this talk, I will discuss the educational underpinnings of such an approach and present results from research about the kind of mathematics that emerge (or not) from such projects. I will also show how the availability of the Internet and computer technology in general has shaped the work with such a pedagogical approach.