

Humans-with-media: a theoretical construct to understand the role of mathematical learning in online environments

Marcelo C. Borba

GPIMEM – Technology other media and mathematics Education Research Group
Graduate Program in Mathematics Education
São Paulo State University, UNESP at Rio Claro, Brazil

In this talk I will discuss different models of online courses based on the notion that media are co-actors in the production of mathematical knowledge. In presenting the models, I will also discuss how different interfaces – chat, forum, videoconference - shape the way we come to know mathematics. I will show examples of online collaboration, inspired by a Freirean dialogical approach, in which inservice teachers construct different solutions to a problem posed to them by the university team proferring the online courses. In doing so I will discuss how teachers can know mathematics differently as they use online environments. This presentation will be based on a theoretical perspective that proposes an inter-shaping relationship between humans and technology, in the sense that technology shapes the way we know, and we also shape different technologies in different ways. Technology, including computer technology, should not be conceptualized in opposition to or entirely separate from human beings. Technology is impregnated by the humans who design it and shaped by those who use it. Human beings, in turn, are seen as historically conditioned, shaped by the technology available. The Internet has changed what it means to be human in a similar way that function software has changed how we perceive functions, a fundamental concept in mathematics and in other scientific areas. The examples presented in this talk will illustrate how aspects of the notion of function can be constructed online by collectives of humans-with-media, using function software and a platform that allows for deep interaction in a videoconference interface.