EXCITING NEW OPPORTUNITIES TO MAKE MATHEMATICS AN EXPRESSIVE CLASSROOM ACTIVITY USING NEWLY EMERGING CONNECTIVITY TECHNOLOGY

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We aim to display the integration of the dynamic features of SimCalc MathWorlds Software (www.simcalc.umassd.edu) on both hand-held devices (e.g. TI-83+ graphing calculators) and desktop computers integrated using the TI-Navigator classroom learning. We also wish to demonstrate how MathWorlds software can incorporate latest hand-held applications to extend the learning space of the mathematics classroom.

Recent developments of the SimCalc project has expanded the design space of classroom learning to include the passing and sharing of students' individual constructions from the dedicated Calculator environment of MathWorlds to the desktop Java-version of MathWorlds via the latest connectivity technology from Texas Instruments through their Classroom Learning System (Navigator). Building on recent reports of new curriculum activities developing understanding of core algebraic ideas such as slope as rate and linear equations which exploited such forms of connectivity (Kaput & Hegedus, 2002) we have begun to develop the learning space and potential of standard algebra classrooms. Incorporating the potential of visually creative dynamic simulatory environments such as MathWorlds with other applications on the TI-hand held calculators we see great potential in enhancing the mathematics learning environment into a social workspace incorporating quantitative reasoning and literal expressiveness.

A standard introductory activity of the SimCalc connected classroom reported above is to ask students to build a piece-wise defined position function relating qualitatively to exciting episodes in a sack race which ends in a tie with a target function (e.g. Y=2X for 10 seconds) and to write an associated script. These are then aggregated into MathWorlds on the teacher's computer via the TI-Navigator system and projected for public examination. Races aim to exploit ideas of slope as rate with qualitative descriptions such as faster, slower, and stationary (e.g. falling down and not moving equals zero slope) leading to graphically interesting and socially emphatic student work. We can now ask students to type in their sack-race scripts in a dedicated TI-Application called NoteFolio (using a peripheral keyboard to assist input) which can be harvested by the teacher using Navigator along with the student's graphical construction of a sack race in MathWorlds. We aim to illustrate the integration of each of these elements in an electronic poster. This poster will be projected from a laptop to depict the various dynamic elements of the integrated technologies described above allowing interaction with the constituent parts. We will segregate the projected space to also include video vignettes of students and teachers recently working with these new technologies.