

Practical Examples of Handheld Use in K-12 Classrooms

Abstract

Handhelds are becoming more commonplace in K-12 classrooms. This session provides attendees with practical examples of handheld use in K-12 classrooms in subject areas such as math, science, language arts, and social studies.

Handhelds are becoming more commonplace in K-12 classrooms, aided by initiatives such as the Palm Education Pioneer (PEP) project. In 2001, the Research Center for Educational Technology (RCET) at Kent State University became a research hub for this national project, conducting an evaluation of the use of handhelds in eleven K-12 classrooms in collaboration with SRI International.

RCET staff also provided instructional and technical support to the teachers participating in the project, and as a result, a wide variety of curriculum was created that integrates the use of handheld technology. Examples of this curriculum include a fifth grade science unit on polygons and nature, a fifth grade integrated curriculum unit about the stock market, an eighth grade oral history project for language arts, and a 1-4th grade math unit that taught special needs students how to construct and use spreadsheets.

Students in fifth grade science set out to find polygon-shaped artifacts outside of their school building, using digital cameras attached to their handhelds to capture their findings. They used the software program *Go 'n Tell* to take notes about their pictures as they were taking them. In addition, keyboards were used to aid in more extensive writing back in the classroom, and *Tesselation* was used to put the polygons they had found to the test.

The same students also used their handhelds to study the stock market, using a simulated town. Each student created and maintained a business providing goods or services, using the handheld's built-in calculator to keep track of their financial records and *PalmBasket* to keep track of customer expenses in their stores. One student ran the local bank, using *LoanCalc* to calculate interest rates and amortization schedules. In addition, students used the Memopad to do their journaling and *FlingIt* to download web pages related to the stock market. They tracked real stocks on Wall Street and created their own stock market by issuing stock for their local businesses. Everything went fine until the teacher crashed the students' stock market, providing the students with an opportunity to investigate real-life stock market crashes going back to 1929, and looking for indicators in the current stock market that may indicate potential stock market crashes in the future. All this happened within the context of the simulation.

Eight grade language arts students used their handhelds to gather data for an oral history project. Students took interview notes using the Memopad, and attached PalmPix cameras to take pictures of relatives and artifacts. In the classroom, students took advantage of the handhelds' beaming capabilities to give each other feedback on their writing.

Finally, first through fourth grade special needs students learned how to create and understand spreadsheets using *Sheets to Go*. Together they designed a garden and did online research to get prices on seeds and bulbs. The teacher taught them what the various parts of a spreadsheet are used for and showed them how to create a spreadsheet that keeps running totals. Students used the Memopad to do their journaling throughout. Once they created the spreadsheet students entered the prices for the materials they needed and the spreadsheet calculated the total cost. Finally, students bought supplies and planted the garden outside of their school building.

The examples above are just some of the many applications of handhelds in K-12 education, as seen by the researchers of the RCET PEP research hub. The evaluation showed that handhelds can be a powerful learning tool in the hands of children, because due to their low cost and ease of use they provide all students with immediate access to a variety of tools for writing, math, data collection, access to a wide range of information sources, and collaboration. In addition, students were more motivated, organized, and independent in their learning, and were exposed to real-life applications of technology. In contrast, issues of concern include game play, inappropriate use of beaming, and syncing problems due to outdated classroom computers or network restrictions, as well as text input problems.