Calculator changes

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Approach: Station Level: Year 4 and year 8

Resources: Macintosh Powerbook 5300cs laptop computer with specially written Hypercard® programme. Cue card for using the programme. Prompt card containing initial instructions.

Before attempting this task, students confirmed that they knew how to use the computer by working through the Hypercard® programme MacMoves. They then followed these written instructions: You have 7 minutes to do this activity. It is timed on the computer. In this activity you will see a calculator on the computer screen. The instructions for the activity are given on the computer. Remember to try solve the problems with as few taps on the keys as possible. **Demonstration Screen** Change 6 to 2 7 8 9 ÷ 5 6 + 2 3 i The students were guided through a demonstration problem step by step and introduced to the help buttons, before beginning the questions.

| pt card containing initial instructions. | | | | | |
|--|--|--|---|--|---|
| minimum | | | ne | not | |
| | | keystrokes | | attempted | |
| % correct | | % correct | | % | |
| | | | 0 | y4 | <i>y</i> 8 |
| 55 | 84 | 36 | 65 | 0 | 0 |
| 62 | 92 | 7 | 43 | 2 | 0 |
| 65 | 89 | 3 | 32 | 5 | 0 |
| 68 | 91 | 60 | 84 | 8 | 1 |
| 43 | 80 | 34 | 68 | 14 | 1 |
| 39 | 86 | 6 | 44 | 20 | 2 |
| 31 | 69 | 17 | 50 | 25 | 2 |
| 18 | 56 | 2 | 21 | 35 | 9 |
| 10 | 61 | 2 | 23 | 44 | 12 |
| 7 | 55 | 0 | 3 | 52 | 16 |
| 4 | 26 | 2 | 11 | 58 | 23 |
| 2 | 26 | 1 | 12 | 65 | 30 |
| 0/ | | | | | |
| | | | | | 1011ses 118 |
| Number correct: 10-12 | | | | | 38 |
| 7-9 | | | | 20 | 37 |
| 4-6 | | | | 33 | 18 |
| 1-3 | | | | 22 | 4 |
| 0 | | | | | 3 |
| | % co y4 55 62 65 68 43 39 31 18 10 7 4 | % correct y4 y8 55 84 62 92 65 89 68 91 43 80 39 86 31 69 18 56 10 61 7 55 4 26 2 26 | mini keyst % correct % co y4 y8 y4 55 84 36 62 92 7 65 89 3 68 91 60 43 80 34 39 86 6 31 69 17 18 56 2 10 61 2 7 55 0 4 26 2 2 26 1 | minimum keystrokes % correct y4 y8 y4 y8 55 84 36 65 62 92 7 43 65 89 3 32 68 91 60 84 43 80 34 68 39 86 6 44 31 69 17 50 18 56 2 21 10 61 2 23 7 55 0 3 4 26 2 11 2 26 1 12 umber correct: 10-12 7-9 4-6 1-3 | minimum keystrokes wy4 y8 y4 y8 y4 y8 36 65 0 62 92 7 43 2 65 89 3 32 5 68 91 60 84 8 43 80 34 68 14 39 86 6 44 20 31 69 17 50 25 18 56 2 21 35 10 61 2 23 44 7 55 0 3 52 4 26 2 11 58 2 26 1 12 65 minimum keystrokes attem 9 24 25 26 27 26 28 29 20 20 20 20 20 20 20 20 20 20 20 20 20 |

Commentary

Ouestions/instructions

Year 8 students were much more successful than year 4 students, with 75 percent of year 8 students completing 6 or more items successfully, compared to only 24 percent of year 4 students. Many students tended to use addition or subtraction for items which could be solved most efficiently using multiplication or division. A surprisingly high percentage of year 4 students reached the decimal items, on which they were not expected to be able to succeed.

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