Dick Bateman Research Findings - ICT and Learning

Over the last two years I have conducted two pieces of research into students learning geographical concepts with and without use of ICT.

The aim of both pieces of research was to see if one group of students learned better using ICT in the classroom compared with another group who learned "conventionally" with textbooks and chalk and talk. A key objective common to both research tasks was to find a method of measuring any differences in learning between the two groups.

From December 2001 to December 2002 I worked with the then 7P and 7l. First, would 7P be able to answer a land use assessment better if they used on-screen land use maps and an on-screen exam than 7L who had laminated colour printouts of the map and did a handwritten exam? Second, would this vary across the ability range?

Both assessments generated NC levels e.g. 3a, which I converted into numbers as shown below

7A	15	6A	12	5A	9	4A	6	3A	3
7B	14	6B	11	5B	8	4B	5	3B	2
7C	13	6C	10	5C	7	4C	4	3C	1

These numerical results were then correlated against TMGs within and across the two classes.

Three hypotheses were created and the research conclusions were:
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1. "Is it true that the higher the TMG, the higher the ICT assessment scores will be?"
Conclusion: The hypothesis that "Is it true that the higher the TMG, the higher the ICT assessment scores will be?" was **rejected** on this exercise.

2. "Is it true that the higher the TMG, the higher the handwritten assessment scores will be?"
Conclusion: The hypothesis "Is it true that the higher the TMG, the higher the handwritten assessment scores will be?" was also **rejected.** There was a slight trend that way but it was not statistically significant.

3. "Is it true that the students will perform better on the ICT assessment than the handwritten assessment?" *As this could have "led" the investigation the null-hypothesis, "Is it true that the students will perform better on the written assessment than the ICT assessment?" was used*
Conclusion: The null-hypothesis, "Is it true that the students will perform better on the written assessment than the ICT assessment?" was **rejected**. The evidence is that the trend was the other way, that students did better learning with ICT and taking the test using ICT as well.

In the Autumn Term of 2002 I used the same technique to see if the present 9P would learn better than 9E if 9P used PowerPoint on-screen information and tasks in M1, whereas 9E used textbooks in G27.

The conclusions were that

1. The evidence from arithmetical technique suggests that 9P, the dominantly ICT-using class, did a little better than 9E, the dominantly "conventional-learning" class.

2. But - there is no definite evidence that 'Hand-on E-learning' in this research programme was responsible for 9Ps better results.

Overall – Teaching and learning is affected by a multiplicity of factors, some environmental, some pedagogical and some personal to that day, so results are difficult to predict and explain. It is difficult to isolate any one causal effect. With these provisos the research showed that ICT classes did marginally better than conventionally-taught classes. Dick Bateman 09.05.03