

The Loss of Intuition - A Lesson for the School Teacher?

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1. The study

Although there is a long tradition of research into concepts and intuitions regarding randomness and probability, few studies have been undertaken amongst United Kingdom university students. Thus the research done at Brunel University over the period 1984 to 1987 using a self-completion questionnaire to investigate the intuitive ideas concerning probability held by first year undergraduates was partly exploratory in nature. The 1984 study was a trial run and is not discussed in this paper. The questionnaires used in 1985, 1986, and 1987 were fairly similar to one another and took about fifteen minutes to complete during statistics tutorials taught by the author in the first few weeks of the university session.

The questionnaires started with an introductory note explaining what was expected, and ended by asking the respondent's sex and if probability had been studied before the start of the current university session "not at all", "a little", or "in considerable depth". The questions on probability were modelled closely on questions in Freedman et al. (1978), in Shaughnessy (1983), and on some used in studies reported in Green (1983, 1988). There were also variations on questions asked in the 1984 study on whether or not men have more sisters than women on average (Falk, 1982), and on the chance that the other child in a two-child family is a boy/girl. These will be discussed in a separate paper. The questions were presented in multiple choice format and many were followed by a question asking why the response given had been made. Care was taken to write in everyday language which meant that it was not possible to state the assumptions usually made in probability problems, such as independence of events.

Some details of the groups in the study are shown in Table 1. Most of the students were aged eighteen or nineteen years and 29 of the 136 students in the three years 1985 to 1987 were female. Very few students on the Computer Systems degree course had studied mathematics beyond the age of sixteen and students studying for

