

## A PILOT STUDY ON NOVICE PASCAL PROGRAMMERS ON VOCATIONAL COURSES IN FURTHER EDUCATION IN NORTHERN IRELAND

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The development of programming skills in computing courses in Further Education is important both as a curriculum requirement and as a response to expectations from industry. However, student participation in this area may be affected by phenomena not of their own making, such as perceived level of mathematical competence, gender stereotyping or socio-economic group. These phenomena may be major factors in the enrolment of students, and reflect their representation in the profession. It is necessary to address these issues in order to optimise the role of Further Education in ensuring that students who are capable of studying such courses are not discouraged from doing so by prejudicial attitudes on the part of career advisors and inherited beliefs.

In response to this a pilot study was carried out in order to establish student attitudes to programming and the perceived necessity and relationship with mathematical competence; and also, if possible, to explore the pronounced gender imbalance that exists in vocational computing courses. The study compares and contrasts data collected from two groups of students studying Computer Studies and Business Information Technology, respectively, at Higher National Diploma level. Students were circulated with questionnaires in order to assess students' perceptions regarding programming and required level of mathematical competence, as well as probing to explore gender biasing and stereotyping. This was later followed by a series of programming comprehensibility tests. Each student, in both groups, was issued with 4 tests, two at an elementary level and two at a more advanced level. The two elementary tests consisted of a mathematical bias program and one with a business bias, similarly with the more advanced tests. CLOZE tests were used to assess their understanding of the programs, in time constrained periods, and were scored verbatim and synonymic. The tests were structured accordingly to establish if business-type problems were more easily understood than maths-type problems or if no real difference existed, and also to ascertain if Computing students were more capable of understanding the programs than Business students, thus examining the hypothesis that mathematical competence and programming ability are closely linked.