



***Research in East Renfrewshire Psychological Service
Summary Report No. 8***

The Power of 2 / Plus 1 Pilot

An individualised mathematics programme designed to support pupils having significant difficulties acquiring core concepts in numeracy.

The Power of 2 and Plus 1 books offer an individualised programme to help pupils acquire core skills in numeracy, based on a methodology which incorporates a highly structured approach to learning, with a key element of it being delivered in the context of paired learning involving a coach and student working together to complete the exercises. This approach is consistent with the aims of Curriculum for Excellence - to enable each child or young person to be a successful learner, a confident individual, a responsible citizen and an effective contributor. Power of 2/ Plus 1 also articulates well with the identification of Mathematics in Curriculum for Excellence as one of the eight key curricular areas and also the promotion of numeracy across all areas of the curriculum by all teachers/practitioners (*Curriculum for Excellence: Building the Curriculum 1 (2006)*).

The pilot study was also an attempt to respond to some of the recommendations by HM Inspectorate of Education (HMIe), which identified improving achievement in mathematics as a key priority, particularly the quality of attainment from P7 to S2, and at all stages for the lowest attaining groups (*Improving Achievement in Mathematics in Primary and Secondary schools (2005)*).

Pilot Study

In order to support pupils to develop core skills in numeracy a small scale pilot project was launched in two secondary schools and seven primary schools in East Renfrewshire. A sample of pupils was selected by schools to take part as a member of the experimental group, which used either the Power of 2 or Plus 1 books, or as a member of the control group for statistical comparison, which completed assessments but did not use the books. The final evaluation of the pilot was based on data obtained on a total of 55 pupils. The pilot commenced in August 2009 and was completed in June 2010.

Research aims:

1. Formal evaluation of a specialised resource designed to help young people who have persistent difficulties in acquiring core skills in mathematics
2. Training for teachers and pupil support assistants in a particular methodology designed to help young people who have persistent difficulties in acquiring core skills in mathematics.
3. Improvement in the acquisition of core skills in numeracy by pupils with persistent difficulties in mathematics.
4. Improvement in pupils' academic self-perceptions eg confidence and attitude to aspects of numeracy.
5. Improved knowledge and understanding of mathematical difficulties by all participants.

Research Method

A combination of quantitative and qualitative evaluation information was gathered to evaluate the impact of the pilot. Quantitative data was collected by administering standardized tests, consisting of the *WIAT II* subtests on mathematics and the *Myself as a Learner* questionnaire to assess academic self-perceptions, to all pupils in the control and experimental groups both before and after using the books. In addition, quantitative and qualitative information was gathered through questionnaires and group discussions with teachers and Pupil Support Assistants who used the Power of 2 and Plus 1 books with pupils.

Key Findings

- Pupils obtained small but not statistically significant gains in mathematics.
- Pupils obtained small but not statistically significant gains in academic self-perceptions.
- Staff gave a very positive mean rating of 8.6 out of 10 for their overall evaluation of the Power of 2 and Plus 1 books.

Staff feedback

Quantitative and qualitative feedback received from the staff on the books was evaluated under the following headings: Methodology, Design/Presentation, Ease of Use/Implementation, Content, Effectiveness in improving numeracy skills and Effectiveness in improving pupil's confidence. The feedback across each of these headings was very positive. The mean ratings given for all of these areas were 8 out of 10 or higher apart from Effectiveness in improving numeracy skills, which was given a mean rating of 6.9. Additional comments from staff were overwhelmingly constructive and encouraging and reinforced the positive evaluation of the books. Examples included comments on pupil enjoyment and improved confidence as well as statements highlighting the clarity, variety and range of content and strategies employed in the books.

Conclusions

The research aims were mostly achieved and although statistically significant gains by pupils in mathematics or academic self-perceptions were not obtained this may have been due to a variety of factors. Examples might include that the WIAT II assessment was not completely appropriate or sensitive enough to measure numeracy skills in this context. There was also variability in the consistency of when and how the books were used by staff and the length of time given to pupils although guidance was given. The Power of 2 / Plus 1 books and their content and methodology were generally liked by staff and could be easily administered by a range of staff including Pupil Support Assistants. Hence, it could be recommended as a valuable resource for use with a carefully selected group of pupils to help them acquire core skills in numeracy.

Further information

Please contact the Psychological Service for further information.