

## Chapter 10: Helping At-Risk Pupils with Early Numeracy Development

The purpose of this chapter is to provide some preliminary guidance to teachers wishing to address the needs of pupils experiencing exceptional difficulty with the acquisition of early number competencies as identified by the DTEN-D. The DTEN-D is designed as a criterion-referenced diagnostic test of early number skills in which each skill or competency is tested by a set of either 2, 3, 4 or 5 items, depending on the importance and complexity of the skill. Pupils are expected to meet a preset criterion score to be deemed to have achieved mastery of the skill, e.g., 2 out of 2 items correct, or 3 out of 4 items correct, depending on the skill. The DTEN-D tests 15 inter-related skills across 3 key overlapping and interwoven strands of the PSMC for Junior and Senior Infants: Pre-Number, Numeration, and Addition and Subtraction. Where pupils do not achieve the mastery score for a skill, the teacher may wish to provide a sequence of appropriate activities on a learning trajectory specifically targeted to bring pupils up to a satisfactory level of performance on that skill. The following are brief guidelines for providing such activities based on analysis of the factors likely to contribute to the difficulty of tasks involving the skill and on available research findings (c.f. Chapter 9)<sup>5</sup>. For each skill, there are three headings under which information for generating and sequencing learning activities is provided – *materials* that may be used in the activities; *key vocabulary* to develop communication and understanding; and *principles* for sequencing activities based on analysis of task complexity and available research evidence. It should be noted that the complex and interrelated nature of early number skills and the often idiosyncratic development of them by children suggest that teachers need to design learning sequences tailored to individual pupils based on their DTEN-D results, including any notes on their methods, strategies or justifications recorded during testing. This does not exclude paired work or group work where similar activities are appropriate to different pupils based on their points of development in a learning sequence or path and pupil talk about tasks can be encouraged. Children should feel comfortable talking about their solutions whether in an individual or group setting.

### Section A: Pre-Number

This section relates to four skills which, when developed in the early years, provide a foundation for young children to be successful in later more formal work on numeration and number operations as well as in other areas of the PSMC such as measure, data, and algebra. It includes classifying, matching, patterning, and ordering objects by physical properties, and being able to describe outcomes.

#### A1: Sort Shapes

This relates to the ability to sort and classify objects into sets based on qualitative properties such as colour, shape, size, function or type. The development of this skill is considered to be an important foundation for later successful classification of groups or sets based on quantity and number and for the development of conservation of number.

*Materials:* collections of everyday objects or junk material, coloured attribute blocks, sets of toys (animals, people, cars, etc.). Labels for the different sets.

*Key Vocabulary:* Set, belongs, does not belong, same, different.

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<sup>5</sup> Further ideas and information may be obtained on the website:

[http://www.ncca.ie/en/Curriculum\\_and\\_Assessment/Early\\_Childhood\\_and\\_Primary\\_Education/Early\\_Childhood\\_Education/Aistear\\_Toolkit/](http://www.ncca.ie/en/Curriculum_and_Assessment/Early_Childhood_and_Primary_Education/Early_Childhood_Education/Aistear_Toolkit/)