



Two thinking skills assessment approaches: “Assessment of Pupils’ Thinking Skills” and “Individual Thinking Skills Assessments”

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ABSTRACT

This paper is linked to a previous paper outlining an evaluation of a thinking skills intervention (Burke & Williams, 2008). Following extensive requests for the assessment tools used in the intervention, this short paper presents the development and potential uses of two thinking skills assessment tools. The aim of the paper is simply to make these measures available for other researchers to use, adapt and extend them in future research. The Assessment of Pupils Thinking Skills (APTS) measure is a 14-item measure of a range of thinking skills and metacognition. The assessment can be used to provide a comparative measure across thinking skills or to provide a sum score of thinking skills and raise metacognitive awareness of thinking skills. It can be used to assess thinking skills interventions and to monitor change in thinking skills over time among 9 to 12-year-olds. The Individual Thinking Skills Assessments (ITSA) are six more in-depth measures of specific thinking skills that can be used before, during or after interventions to provide more detailed information on children’s individual thinking skills. The APTS and the ITSA can be used separately or in conjunction to assess thinking skills and change in thinking skills among older children.

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1. Introduction

The aim of this paper is to make available to other researchers, two assessment tools which were used in a successful thinking skills intervention project for children (Burke & Williams, 2008). The “Developing Young Thinkers” intervention was set in an 8-week timeframe. The intervention introduced children explicitly to a range of domain general thinking skills which were taught through three lessons a week in a range of curricular areas. The intervention was based on a widely accepted pedagogy of making the thinking explicit, fostering thinking dispositions, raising awareness of metacognition, encouraging collaborative learning and transfer of thinking skills across topics and contexts (McGuinness, 2000; Resnick & Klopfer, 1989; Swartz & Parks, 1994). The thinking skills selected for inclusion in the intervention were those highlighted by a range of theorists (Ennis, 1987; Kirkwood, 2005; McGuinness, 1999; Moseley et al., 2004; Swartz & Parks, 1994). This paper presents the background and function of two thinking skills assessment approaches which can be used, adapted and refined for other thinking skills intervention research. The measures are not standardised, psychological assessments, rather purpose-designed and trialled tools which can be used in conjunction with other measures.

One of the challenges of evaluating the “Developing Young Thinkers” intervention was to develop appropriate assessment measures, a difficulty which resonates with many theorists (Asp, 2001; Beyer, 1987; Burke, 2001; Costa & Kallick, 2001; Fisher, 2001; Kirkwood, 2005). The ‘Assessment of Pupils’ Thinking Skills’ (APTS) was created to monitor changes in children’s

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ability to define, apply and identify opportunities to transfer thinking skills that have been explicitly taught within a classroom setting. The APTS also highlight children's metacognitive awareness of each of the thinking skills. A number of thinking skills approaches have advocated explicitly teaching children about thinking skills, this includes defining and identifying the cognitive processes associated with each skill (Beyer, 1991; Swartz & Parks, 1994). Although there are some standardised tests that identify, for example children's critical thinking (e.g., Ennis & Millman, 1985) and many theorists have emphasised the importance of generating ideas as being an indicator of effective creative thinking (e.g., Cropley, 2001; Guilford, 1950; Nickerson, 1999; Osborn, 1953; Poole, 1979; Torrance & Ball, 1984), few tests measure individual thinking skills within those broad thinking types and are suitable for whole class testing (i.e., individually assessed in a group context within the classroom). Feuerstein's Instrumental Enrichment programme (e.g., 1980) utilises the Learning Assessment Potential Device (LAPD) to diagnose pupil's learning capacities and possible achievements, but these challenging cognitive pencil and paper tasks are conducted with individuals rather than whole class, and they are specifically designed to feed into an individualised Instrumental Enrichment programme. De Bono (1976) notes that it is extremely important that tests to examine change in thinking ability test specifically for the skills that have been taught. As a consequence, a format for assessing six different thinking skills was devised.

When selecting the thinking skills for use in the APTS and ITSA, various frameworks and categorisations of thinking skills were considered (e.g., Anderson & Krathwohl, 2001; Bloom, 1956; Marzano, 2001; Swartz & Parks, 1994). Ashman and Conway (1997) believe that the majority of programmes designed to teach thinking focus on developing metacognition, critical thinking, creative thinking, core thinking skills, cognitive strategies (such as problem solving and decision making) and emphasis the role of content knowledge. A synergy exists therefore between these broader thinking types noted by Ashman and Conway and the frameworks of Swartz and Parks (1994) and McGuinness (2003). Due to the lack of a widely accepted and promoted model of thinking, the thinking frameworks of Swartz and Parks (1994) and McGuinness (e.g., 2003) were therefore used as a basis for the thinking skills selected for these assessments. The skills focused on in these assessments cover a range of different types of thinking; comparing and contrasting (information processing skills); classification/grouping (information processing skills); finding reasons and conclusions (critical thinking); coming up with ideas (creative thinking); and the thinking strategies of decision making and problem solving.

In addition to these specific thinking skills, metacognition is a fundamental component of the thinking skills assessments presented in this paper. Due to the internal nature of thinking, and despite attempts being made to assess aspects of metacognition, at present there is no standardised method or approach to assessing children's metacognitive abilities (Israel, Block, Bauserman, & Kinnucan-Welsch, 2005; Schraw & Dennison, 1994). However, a metacognitive component was included in these assessment tools to gauge whether children move from engaging in thinking skills without metacognitive awareness, to achieving awareness and knowledge of the cognitive processes involved in individual thinking skills. These assessments therefore do not attempt to measure metacognition or developmental changes in metacognitive ability. Rather, a metacognitive element has been incorporated into the thinking skills assessments which focus specifically on children's metacognitive awareness of individual thinking skills. The inclusion of this element is important as, although teachers believe they foster the ability in learners to reflect on their thought processes and cognitive skills, these opportunities are perhaps currently more teacher-led than pupil-centred (Burke, Williams & Skinner, 2007). Therefore, the importance of developing the ability in learners to become aware of the cognitive skills they are applying is widely accepted to be one of the most fundamental aspects of intelligence and effective thinking (Beyer, 1987, 1997; Fisher, 2003; Grotzer & Perkins, 2000; McGuinness, 2005a,b; Moseley, Elliot, Gregson, & Higgins, 2005). A strong emphasis should be placed on encouraging learners to be metacognitively aware of their thinking at the three crucial stages; before, during and after tasks (Beyer, 1987; Borkowski & Thorpe, 1994; Brown, 1987; Costa, 2001). Current research (gathered from the APTS) indicates the inability of the majority of older children to state any steps involved in their thinking processes prior to explicit teaching (Burke & Williams, 2008).

2. History of the APTS and ITSA

A variety of programmes exist designed to enhance children's thinking skills. Attempts have been made to assess the impact of integrating thinking skills into core pedagogy, yet clear messages for future interventions and the assessment of thinking skills have yet to emerge due to the wide variety of thinking skills programmes and approaches implemented. The issue addressed by this paper is how we might effectively evaluate the impact of including domain general thinking skills into the core curriculum and classroom pedagogy on children's thinking skills use and knowledge.

Part of the difficulty in developing assessment tools is the lack of a widely accepted definition of the elements involved in effective thinking, this "leads to confusion about how good thinking might be assessed; assessment and evaluation of critical thinking has been sorely neglected worldwide" (Pithers & Soden, 2000, p. 239). Whilst opinions on the effectiveness of specific evaluation methods vary, the majority of theorists agree that thinking skills are inherently difficult to measure. It therefore remains contested as to how to assess the impact of thinking skills interventions. For example, tests of general cognitive abilities or I.Q. tests are often used as tools to assess change as a result of explicitly teaching children thinking skills. However, these tests typically are not sensitive enough to detect potential change in children's knowledge, understanding and application of specific thinking skills (or even more general thinking types) (Asp, 2001; Beyer, 1987; Burke, 2001; Costa & Kallick, 2001; Fisher, 2001; Kirkwood, 2005), or to measure differences in children's metacognitive awareness as a result of direct instruction. The majority of research therefore supports the view of many theorists who believe that tests of general

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