

**Children Articulating Thinking (ChAT) Project**  
**Effective Interventions and Classroom Contexts that Promote**  
**Self-Regulated Learning (SRL)**

The positive effects of interventions designed to encourage students' SRL have now been well established. Intervention studies in the area of reading, mathematics and science have shown significant gains in terms of students' verbalization and use of strategies as well as improvements in their performance in curriculum-based and standardized assessments (Adey & Shayer, 1993; Brown, Pressley, Van Meter & Schuder, 1996; Palincsar & Brown, 1984; Perry & Winne, 2006; Verschaffel et al., 1999). These positive outcomes are reflected in the results of two meta-analyses of SRL interventions conducted with primary- and secondary-aged students (Dignath, Buettner & Langfeldt, 2008; Hattie, Biggs & Purdie, 1996). These studies have provided clear evidence of the positive effects of SRL instructional programmes on children's academic achievement, showing effects sizes higher than 0.50.

Beyond proving their effectiveness, researchers have been increasingly interested in exploring the specific features that have contributed to make these intervention programmes so successful. This interest has developed in conjunction with a growing awareness of the contextual character of SRL. As stated by Pintrich and Zusho (2002) "Self-regulation is not just afforded or constrained by personal cognition and motivation, but also privileged, encouraged, or discouraged by contextual factors" (p. 279). A growing number of studies have been recently conducted in real classrooms with the aim of identifying types of activities, instructional practices, and classroom arrangements that afford opportunities for children to engage in SRL (Meyer & Turner, 2002a; Nolen, 2007; Perry, 1998; Perry & Vandekamp, 2000).

The aim of this brief review is to provide a summary of critical features of intervention programmes and classroom environments that have been associated with children's self-regulated learning. Given that one of the aims of this project is to explore relationships between SRL and dialogic teaching, and given the significant overlap between these two areas of research when it comes to the identification of effective classroom practices and arrangements, exemplary studies on children's talk and group collaboration have also been taken into account.

For the purpose of this review, SRL promoting features have been grouped into three categories: Type of Activities, Instruction and Classroom Ethos & Organisation.

## **Type of Activities**

The following characteristics of learning activities have been identified as enhancing children's opportunities to engage in self-regulatory behaviours and the articulation of thinking:

- Activities that allow children to control the level of challenge and to self-assess the quality of their performance (Perry, 1998; Perry & Vandekamp, 2002).
- Problem-solving activities that encourage children to explain their reasoning and to enquire about the reasoning of others (Mercer, Wegerif & Dawes, 1999; Tolmie, Howe, Mackenzie & Greer, 1993).
- Problem-solving activities that encourage group consensus and rule generation (Howe, Tolmie, Greer & Mackenzie, 1995; Tolmie et al., 1993).
- Activities that encourage children to find their own ways of solving problems (individually or in collaboration with others) (Whitebread & Coltman, 2007).

## **Instruction**

The following instructional or pedagogical practices have proven to be particularly effective in fostering children's SRL:

- Explicit teaching and modelling of cognitive and metacognitive strategies (Palincsar & Brown, 1984; Verschaffel et al., 1999).
- Explicit teaching and modelling of forms of dialogue in the classroom that encourage thinking (Littleton et al., 2005).
- Gradual transition from external regulation (by the tutor) to self-regulation (by the students) (Palincsar & Brown, 1984; Brown et al., 1996; Verschaffel et al., 1999).
- Provision of informative feedback, focusing on success criteria (Dawes & Sams, 2004; Palincsar & Brown, 1984).
- Provision of opportunities for children to elaborate, discuss, and assess the effectiveness of their own strategies (Brown et al., 1996; Littleton et al., 2005).
- Instruction that explicitly links the quality of performance with the strategies used (Hattie et al., 1996).

- Opportunities for children to transfer their metacognitive knowledge across areas of the curriculum (Hattie et al., 1996).

### **Classroom Ethos & Organisation**

Finally, researchers who have conceptualised SRL as a dynamic process subject to contextual influences (Boekaerts & Corno, 2005) have identified a series of classroom features that can contribute to the generation SRL-enhancing environments. These are as follows:

- Giving children opportunities for decision-making. This involves setting up a variety of learning activities, including different formats such as whole-group discussions, small-group activities and individual work (Perry, 1998).
- Encouraging children to work in small groups (Howe et al., 1995; Mercer et al., 1999; Palincsar and Brown, 1984; Tolmie et al., 1993; Whitebread et al., 2007).
- Encouraging children to collaborate with each other, seek agreement, and show respect for different views (Littleton et al., 2005).
- Promoting emotionally supportive learning environments. This involves: encouraging positive feelings towards challenging tasks; emphasising personal progress rather than social comparisons; encouraging children to interpret mistakes as valuable opportunities for learning; responding to and retraining children's negative emotions and helpless beliefs (Meyer & Turner, 2002b; Perry, 1998; Nolen, 2007).

### **Final Comments**

One issue that must be taken into account is that the majority of the intervention studies conducted so far have been carried out with older children (late primary or secondary school). One of the potential contributions of this project will be to assess the extent to which the features outlined above equally apply to Year 1 classrooms. A second innovation involved in this project is the assessment of Arts & Music as potentially suitable curriculum areas for SRL enhancement. As illustrated in this review, the large majority of curriculum-based interventions in SRL have been carried out in the areas of language (with emphasis on literacy), maths and science.

## References

- Adey, P. & Shayer, M. (1993). An exploration of long-term far-transfer effects following an extended intervention program in the high school science curriculum. *Cognition and Instruction*, 11, 1-29.
- Boekaerts, M. & Corno, L. (2005). Self-regulation in the classroom: A perspective on assessment and intervention. *Applied Psychology: An International Review*, 54, 199-231.
- Brown, R., Pressley, M., Van Meter, P. & Schuder, T. (1996). A quasi-experimental validation of transactional strategies instruction with low achieving second-grade readers. *Journal of Educational Psychology*, 88, 18-37.
- Dawes, L. & Sams, C. (2004). *Talk Box: Speaking & Listening Activities at Key Stage 1*. London: David Fulton.
- Dignath, C., Buettner, G. & Langfeldt, H. P. (2008). How can primary school students learn self-regulated learning strategies most effectively? A meta-analysis on self-regulation training programs. *Educational Research Review*, 3, 101-129.
- Hattie, J., Biggs, J. & Purdie, N. (1996). Effects of learning skills interventions on student learning: A meta-analysis. *Review of Educational Research*, 66, 99-136.
- Howe, C.J., Tolmie, A., Greer, K & Mackenzie, M. (1995). Peer collaboration and conceptual growth in physics: task influences on children's understanding of heating and cooling. *Cognition and Instruction*, 13, 483-503.
- Littleton, K., Mercer, N., Dawes, L., Wegerif, R, Rowe, D. and Sams, C. (2005). Talking and thinking together at key stage 1. *Early Years*, 25, 165-180.
- Mercer, N., Wegerif, R. & Dawes, L. (1999). Children's talk and the development of reasoning in the classroom. *British educational Research Journal*, 25, 95-111.
- Meyer, D. & Turner, J. C. (2002a). Using instructional discourse analysis to study scaffolding of student self-regulation. *Educational Psychologist*, 37, 17-25.
- Meyer, D. & Turner, J. C. (2002b). Discovering emotion in classroom motivation research. *Educational Psychologist*, 37, 107-114.
- Nolen, S. B. (2007). The development of motivation to read and write in young children: Development in social contexts. *Cognition and Instruction*, 25, 219-270.
- Palincsar, A. S. & Brown, A. L. (1984). Reciprocal teaching of comprehension-fostering and comprehension-monitoring activities. *Cognition and Instruction*, 1, 117-175.
- Perry, N.E. (1998). Young children's self-regulated learning and contexts that support it. *Journal of Educational Psychology*, 90, 715-729.

- Perry, N.E. & Vandekamp, K. O. (2000). Creating classroom contexts that support young children's development of self-regulated learning. *International Journal of Educational Research*, 33, 821-843.
- Perry N.E. & Winne, P.H. (2006). Learning from learning kits: gStudy traces of students' self-regulated engagements with computerized content. *Educational Psychology Review*, 18, 211-228.
- Pintrich, P.R. & Zusho, A. (2002). The development of academic self-regulation: the role of cognitive and motivational factors. In A.Wigfield & J. Eccles (Eds.), *Development of Achievement Motivation* (pp. 249-284). San Diego: Academic Press.
- Tolmie, A., Howe, C., Mackenzie, M. & Greer, K. (1993). Task design as an influence on dialogue and learning: primary school group work with object flotation. *Social Development*, 2, 183-201.
- Verschaffel, L., De Corte, E., Lasure, S., Van Vaerenbergh, G., Bogaerts, H. & Ratinckx, E. (1999). Learning to solve mathematical application problems: A design experiment with 5<sup>th</sup> graders. *Mathematical Thinking and Learning*, 1, 195-229.
- Whitebread, D., Bingham, S., Grau, V., Pasternak, D. P., & Sangster, C. (2007). Development of metacognition and self-regulated learning in young children: Role of collaborative and peer-assisted learning. *Journal of Cognitive Education and Psychology*, 6, 433-455.
- Whitebread, D. & Coltman, P. (2007) Developing young children as self-regulating learners. In J. Moyles (Ed.) *Beginning Teaching Beginning Learning in Primary Education* (3<sup>rd</sup> ed). London: Open University Press/McGraw Hill Education.

**Dr Deborah Pino Pasternak**

**Research Associate**

**16<sup>th</sup> April, 2009**