Self-regulation strategies

Moderate impact for very low cost, based on limited evidence.

Self-regulatory skills can be defined as the ability of children to manage their own behaviour and aspects of their learning. In the early years, efforts to develop self-regulation often seek to improve levels of self-control and reduce impulsivity. Activities typically include supporting children in articulating their plans and learning strategies and reviewing what they have done. A number of approaches use stories or characters to help children remember different learning strategies. It is often easier to observe children's current self-regulation capabilities when they are playing or interacting with a peer. Self-regulation strategies can overlap with Social and emotional learning strategies and Behaviour interventions.

How effective is it?

The development of self-regulation and executive function is consistently linked with successful learning, including pre-reading skills, early mathematics and problem solving. Strategies that seek to improve learning by increasing self-regulation have an average impact of five additional months' progress. A number of studies suggest that improving the self-regulation skills of children in the early years is likely to have a lasting positive impact on later learning at school, and also have a positive impact on wider outcomes such as behaviour and persistence.

There are some indications that children from disadvantaged backgrounds are more likely to begin nursery or reception with weaker self-regulation skills than their peers. As a result, embedding self-regulation strategies into early years teaching is likely to be particularly beneficial for children from disadvantaged backgrounds.

More evaluation is needed to identify specific programmes or curricula that have a positive impact on academic outcomes through improving self-regulation for young children. However, the small number of studies that have been conducted in early years settings, and existing evidence from older age groups, suggests that promising approaches are likely to balance explicit instruction with providing scaffolded opportunities for children to practice new skills. For example, early years practitioners might talk to children about how to follow a "Plan, Do, Review" approach for a simple building activity.

How secure is the evidence?

The evidence related to self-regulation strategies in the early years is currently limited. Several studies have established the link between self-regulation and success in learning, but fewer have assessed the educational impact (for example on early mathematics or literacy skills) of approaches that sought to improve self-regulation. In addition, though many interventions include components that seek to improve self-management and self-regulation, it has not been possible to prove that it is these specific components that have been responsible for improvements.

Much of the evidence in existing syntheses of research relates to older children in primary and secondary school (age 5 and older). The evidence is strongest for immediate impact on behavioural outcomes (such as on interaction or persistence).

Overall, self-regulation is a promising area, but one that would benefit from more rigorous evaluation in early years settings to identify how to achieve benefit for young children's learning.

What are the costs?

The overall costs are estimated as very low. There are few, if any, direct financial costs associated with this approach. However, high-quality professional development is likely to enhance the benefits on learning. Additional resources such as books for discussion may also be required.

Self-regulation strategies: What should I consider?

Before you implement this strategy in your learning environment, consider the following:

1. Self-regulation strategies have high potential, but may require careful implementation. Have you set aside time for professional development prior to putting a new strategy in place?
2. How do you assess children's current capabilities in managing their behaviour, for example when they are playing or interacting with their peers?
3. How will you monitor the impact of developing children's self-regulation strategies?
4. How will you manage classroom time to balance explicit teaching with scaffolded opportunities for children to practice and explore new skills?

Technical Appendix

Definition

Self-regulatory skills can be defined as the ability of children to manage their own behaviour and aspects of their learning. They are related to meta-cognitive skills and knowledge and are sometimes referred to as executive function. In the early years, relevant activities usually involve supporting children to develop strategies to manage their own behaviour, particularly in relation to their learning, such as by planning what they are going to do, then reviewing their performance as well as exploring different ways they can try to be successful, so as to develop their learning strategies. For younger children the focus is often on managing impulsiveness and their behaviour towards other children.

Search Terms: learning strategies; self-regulatory strategies; self-regulatory skills; meta-cognition; meta-cognitive skills; executive function.

Evidence Rating

The evidence in the early years is currently limited. There is one meta-analysis with a subgroup analysis (containing only 9 studies) of Kindergarten pupils. Intervention studies tend to be small-scale and weak on causal inference. Although there is research investigating the relationship between self-regulation strategies and learning, the experimental evidence does not provide a clear picture about which elements or activities improve children's learning. By contrast the evidence about older children is much stronger. Overall, self-regulatory approaches are a promising area to support very young learners, but in need of more rigorous research.

Additional Cost Information

Costs are estimated as very low. There are few, if any, direct financial costs associated with this approach. However, high-quality professional development is likely to enhance the benefits on learning. Additional resources such as books or other resources such as puppets for discussion may also be required. Approaches to support individual children will be more expensive, particularly if expert professional support is used, such as from an education psychologist.

References

1 *Aubrey, C., Ghent, K. & Kanira, E.*

Enhancing thinking skills in early childhood

International Journal of Early Years Education, 20:4, 332-348

(2012)

2 *Barnett, W. S., Jung, K., Yarosz, D. J., Thomas, J., Hornbeck, A., Stechuk, R., & Burns, S.*

Educational effects of the Tools of the Mind curriculum: A randomized trial

Early Childhood Research Quarterly, 23(3), 299-313

(2008)

3 *Bierman, K. L., Nix, R. L., Greenberg, M. T., Blair, C., & Domitrovich, C. E.*

Executive functions and school readiness intervention: Impact, moderation, and mediation in the Head Start REDI program

Development and Psychopathology, 20(03), 821-843

(2008)

4 *Blair, C., & Raver, C. C.*

Closing the achievement gap through modification of neurocognitive and neuroendocrine function: Results from a cluster randomized controlled trial of an innovative approach to the education of children in kindergarten

PloS one, 9(11), e112393

(2014)

5 *Flook, L., Goldberg, S. B., Pinger, L., & Davidson, R. J.*

Promoting prosocial behavior and self-regulatory skills in preschool children through a mindfulness-based kindness curriculum

Developmental Psychology, 51(1), 44

(2015)

6 *Ford, R. M., McDougall, S. J., & Evans, D.*

Parent-delivered compensatory education for children at risk of educational failure: Improving the academic and self-regulatory skills of a Sure Start preschool sample

British Journal of Psychology, 100(4), 773-797

(2009)

7 *Hong, S. Y., & Diamond, K. E.*

Two approaches to teaching young children science concepts, vocabulary, and scientific problem-solving skills

Early Childhood Research Quarterly, 27(2), 295-305

(2012)

8 *Klauer, K. J., & Phye, G. D.* *(Abstract   )*

Inductive reasoning: A training approach

Review of Educational Research, 78(1), 85-123

(2008)

9 *Miech, R., Essex, M. J., & Goldsmith, H. H.*

Socioeconomic status and the adjustment to school: The role of self-regulation during early childhood

Sociology of Education, 102-120

(2001)

10 *Taggart, G., Ridley, K., Rudd, P., & Benefield, P.*

Thinking skills in the early years: a literature review

Slough: National Foundation for Educational Research

(2005)

11 *Whitebread, D., Bingham, S., Grau, V., Pino Pasternak, D., & Sangster, C.*

Development of metacognition and self-regulated learning in young children: Role of collaborative and peer-assisted learning

Journal of Cognitive Education and Psychology, 6(3), 433-455

(2007)

Summary of effects

Meta-analyses	Effect size	FSM effect size	
Klauer, K. J., & Phye, G. D., (2008)	0.47	-	Inductive reasoning

Single Studies	Effect size	FSM effect size	
Barnett, W. S., Jung, K., Yarosz, D. J., Thomas, J., Hornbeck, A., Stechuk, R., & Burns, S. (2008)	0.11	-	Vocabulary
Bierman, K. L., Nix, R. L., Greenberg, M. T., Blair, C., & Domitrovich, C. E. (2008)	0.24	-	Executive function
Blair, C., & Raver, C. C. (2014)	0.13	-	Self-regulation
Flook, L., Goldberg, S. B., Pinger, L., & Davidson, R. J. (2015)	0.54	-	Executive function
Ford, R. M., McDougall, S. J., & Evans, D. (2009)	0.64	-	
Hong, S. Y., & Diamond, K. E. (2012)	0.55	-	Science concepts
Effect size (median)	**0.43**		

The right hand column provides detail on the specific outcome measures or, if in brackets, details of the intervention or control group.

Meta-analyses abstracts

8 *Klauer, K. J., & Phye, G. D. (2008)*

Researchers have examined inductive reasoning to identify different cognitive processes when participants deal with inductive problems. This article presents a prescriptive theory of inductive reasoning that identifies cognitive processing using a procedural strategy for making comparisons. It is hypothesized that training in the use of the procedural inductive reasoning strategy will improve cognitive functioning in terms of (a) increased fluid intelligence performance and (b) better academic learning of classroom subject matter. The review and meta-analysis summarizes the results of 74 training experiments with nearly 3,600 children. Both hypotheses are confirmed. Further, two moderating effects were observed: Training effects on intelligence test performance increased over time, and positive problem solving transfer to academic learning is greater than transfer to intelligence test performance. The results cannot be explained by placebo or test-coaching effects. It is concluded that the proposed strategy is theoretically and educationally promising and that children of a broad age range and intellectual capacity benefit with such training.