Title

Supporting Self-Regulation and Practitioner Enquiry: An Evaluative Study

What did we ask?

1. What impact does participation in the 'Self-Regulation in Action' practitioner enquiry course have on practitioner knowledge and understanding of Executive Functions, Self-Regulation and effective support?

2. What impact does participation in the 'Self-Regulation in Action' course have on practitioner ability to support self-regulation for children in their context?

3. What impact does participation in the 'Self-Regulation in Action' course have on the self-regulation of children in their context? Is the impact greater for children from areas of deprivation?

4. What impact does participation in the 'Self-regulation in Action' course have on participant confidence to lead practitioner enquiry further in their school?

What is the evidence base?

Executive Functions (EF) are widely recognised as a series of brain processes associated with activity in the prefrontal cortex. EFs are employed during times of concentration, with the result that behaviour is deliberate and conscious. The EFs include 1. Working memory 2. Inhibitory control and 3. Cognitive Flexibility (Diamond 2013). EF development is part of normal development and their use is required for self-regulated behaviour. Where children are limited in their ability to use EFs, they will be limited in their ability to self-regulate and will instead behave in more reactive, automatic ways. Limitations in children's EF development could be a result of many factors including disrupted early childhood experiences, lack of adult role model or developmental conditions (Diamond 2013).

Effective EFs and self-regulating behaviours have been found to be critical for school success and predictive of a number of outcomes including mathematics and reading competence, student-teacher relationships and overall academic outcomes (Diamond, 2013; Diamond & Ling 2016; Center on the Developing Child at Harvard University 2011).

Adults can provide key support in the development of executive function skills in many ways. It is important children have the chance to practice their own developing EF skills and self-regulating behavior, initially with support ('coaching') from adults and then more

independently (Centre on the Developing Child at Harvard University 2011). There is also now the demonstration that interventions to support the development of EFs have greater gains for children living in poverty than those who do not (Diamond, 2013).

Further evidence of the importance of supporting self-regulated behavior includes:

- Promotion by Education Scotland of the "Teaching and Learning Toolkit" (2017) which, from meta-analysis of most common educational approaches, consistently estimates self-regulation support as the second most effective intervention a school can provide to raise the attainment of those children facing disadvantage, behind effective feedback, and that these strategies lead to 8 months learning progress.
- 'Closing the Attainment Gap in Scotland' (Joseph Rowntree Foundation, 2014) includes self-regulation strategies as an evidence-based effective pedagogy to close the attainment gap.

In addition, several pieces of national guidance highlight the importance of effective professional development models to support sustainable change and implementation:

- Education Scotland (2015) has proposed Practitioner Enquiry as an effective model for professional learning (cited Gtcs.org.uk, 2017).
- The National Improvement Hub has asked local authorities to demonstrate *'interventions for equity'* which include Social and Emotional Wellbeing, Using Evidence and Data, Professional Learning and Leadership and Research and Evaluation to Monitor Impact. The National Improvement Framework (Scottish Government, 2016) has outlined Teacher Professionalism, School Leadership and Performance Information as key drivers within Education.

The Educational Psychology service has supported schools to through self-regulation practitioner enquiry since 2012. The materials and learning stimuli used in these courses is based on work by Mark Ylvisaker and Tim Feeney (see Ylvisaker, M., & Feeney, T., 2008) following their direct support to schools in Scotland, specifically Fife, several years ago.

Ylvisaker and Feeney's work aims to support the development of self-regulated young people through modelled or formalised teaching of key self-regulation frameworks and language, with associated visuals where appropriate. To be used mainly in a situation of new learning or when something is hard, the scripts aim to make automatic a process of:

- Goal identification (*e.g. 'What's your Goal?' 'What would you like to do here?'*)
- Prediction of potential barriers to goal achievement (e.g. '*Do you think this will be hard or easy?' 'Are you ready or not ready?*')

- Generation of a plan to meet the goal (e.g. *'ok, we might need a plan' 'what's your plan?'*)
- Support to work through the plan (e.g. *'ok, let's do it', 'there's always something we can do'*)
- The plan is then reviewed to ascertain whether the worked (e.g. '*did the plan work?' 'did you reach your goal?*'). Supporting soundbites included 'Big Deal/Little Deal', 'Hard/Easy Task', 'Choice/No Choice' and several others.

What did we do?

Three members of the EPS led a practitioner enquiry course named 'Self-Regulation in Action' for school practitioners. The course was offered as part of EPS contribution to help schools 'Close the Attainment Gap'.

Schools were required to 'bid-in' to the course following a supported needs analysis process where they identified self-regulation support as that which would be most beneficial to their children living in highest levels of deprivation. Practitioners involved had been identified by their school managers as those likely to support sustainable improvements beyond the course.

In total, eleven primary school practitioners from three schools took part. Practitioners included school managers, teachers and support staff. The key aim for participants was to have an impact on the self-regulation of children from their most deprived areas. Consistent with Perth and Kinross recommendation, schools used ACORN categories as their primary data source to determine deprivation (ACORN categories include: 1. Affluent Achievers; 2. Rising Prosperity; 3. Comfortable Communities; 4. Financially Stretched; 5. Urban Adversity). Participants were required to ensure that any intervention implemented included, though was not necessarily exclusive to, pupils from categories 4 and/or 5.

The course involved a series of five practitioner enquiry sessions between September and December 2016. Each session involved peer and EP coaching to reflect on previous learning, time to plan for activity between sessions and then beyond the course, as well as course input. Input included the theoretical basis of EFs and self-regulation, effective supports (based around Feeney and Ylvisakers work), examples of practitioner implementation and practitioner enquiry processes. Priority was also given, especially at the beginning of the course, to support practitioner reflection on their own self-regulation strategies before focussing on the implementation of key ideas in their school contexts. Sessions were led by the EPs with some input from teachers who had previously participated. All participants were required to feedback on their experience at a plenary event in December 2016, where their school managers and other interested parties were invited. A further update on progress was required by each school involved at a Headteacher Development day in May 2017.

The aims of 'Self-Regulation in Action' for the EPS were to:

1. Increase teacher knowledge and understanding of EFs, self-regulation and effective language based interventions.
2. Increase teacher skills in applying effective language based interventions to support the development of children's ability to self-regulate.
3. Provide further evidence of the impact of 'Self-Regulation in Action' on children's Executive Functions.
4. Improve practitioner confidence in leading practitioner enquiry to support sustainability beyond this course.

The evaluation strategy included:

Quantitative data

- **Pre-post scaled (1-10) questions** with eleven items related to: 1. Participant knowledge and understanding of Executive Functions, self-regulation and effective models to support the development of them 2. Participant ability to apply their learning for children in their context 3. Participant confidence in leading Practitioner Enquiry in their context.
- **Pre-post measures of children's Executive Functions**, as a measure of self-regulatory skills. The Behaviour Rating Inventory of Executive Function 2 (BRIEF 2) teacher rating component was used. This scale was recommended by colleagues at the University of Edinburgh as a standardised, well-cited measure of Executive Function and self-regulation in academic literature. Teachers were required to score frequency of behaviours across the 63 items, organised across nine domains of Executive Function. These were: Inhibition, Self-Monitoring, Shifting, Emotional Control, Initiation, Working Memory, Planning/Organizing, Task-Monitoring and Organization of Materials. Scores from items in each of these domains were combined to give final measures for Behaviour Regulation Index (BRI), Emotional Regulation Index (ERI), Cognitive Regulation Index (CRI), which were then combined to create a Global Executive Composite (GEC). The EPS provided consent forms for parents and those that were returned provided the sample. All schools were supported to collect data by the EPS. The sample size included 44 children (25 male: 19 female) across three schools, age range P1-P7. Twenty four pupils were from ACORN categories 1-3 and 20 from ACORN 4-5. Support to analyse the data was provided by the Research and Information Service within Perth and Kinross and Dr Josie Booth (University of Edinburgh).

Qualitative data

- **EPS analysis between sessions of practitioner Driving Questions and coaching discussions** with practitioners. Doing so provided information about the success of

the session related to intended outcomes, progress of the practitioners in relation to their practice development and formative information to aid planning for the next session. This data was not collated at the end of the course.

- **Content of plenary presentations** (the presentations are held by the EPS and have been used to guide 'next steps' for practitioners involved).
- **Collation of evaluative comments** from practitioners 6 months after the cessation of the course, at a Closing the Gap headteachers' feedback day.

Results

Results have demonstrated impact on both pupils and staff.

Quantitative Data

Impact on participants

Pre-post measures demonstrate improvements in practitioner reports of their:

- Knowledge and understanding of Executive Functions, Self-Regulation and effective support (pre: 4; post: 9.6)
- Ability to support self-regulation for children in their context (pre: 3.5; post: 9.7)
- Confidence to lead practitioner enquiry further in their school (pre: 5.5; post 9.8)

Impact on pupils

Accounting for natural maturation effects:

- Statistically significant improvements in overall Executive Function (GEC) were made for all children across the intervention period.
- Improvements were greater for pupils from higher levels of deprivation (ACORN 4 and 5) in that these children showed significant improvements in all BRIEF 2 subcategories, including their Emotional Regulation Index (ERI). Children from ACORN 1,2,3 households improved across all EF areas except the ERI.
- Interestingly, further statistical analysis highlighted that the intervention impact was strongest where pupils were recorded as having Additional Support Needs (ASN).

Qualitative data

Qualitative data supported the above. Comments from the plenary event indicated that participants had organised their learning by collating resources, undertaking further reading, implementation and work to support other colleagues understanding and practice. Each participant made reference to how their knowledge of the Executive Functions and the scripted language had had an impact on their practice and often personal life as well. Several schools reported both direct impact on the frameworks children were now using to organise their experiences (e.g. *"I can now say that all the children in the class can now differentiate between what is a big deal and what is a little deal")* as well as the indirect impact that this also had for teaching in the class *(e.g. "one of the impacts of this has been that they are now more able to do something else about it first before coming to me, (big*

deals) are having less of an impact on my teaching time so I'm more able to teach").

This impact was still being seen 6 months after the course had ended. Qualitative comments from each school after 6 months included:

"ACORN 5 children are more able to self-regulate, yes. There is a daily difference in their ability to talk about self-regulation and the impact this has on behaviour. It is particularly noticeable in relation to peer outbursts".

"Children are definitely more able to self-regulate, particularly with a familiar adult. Children reporting big deals less often than previously and there are fewer outbursts in the playground. The children are using the language".

"Children write a post it if something has gone wrong, look at big/little deal chart and refer to strategies next to it as part of their plan. The teacher is now doing it as part of small scale project for her probationary year. It is embedded, the children now expect this process and are going through it independently. It has helped children be more accountable. Children check their work against the plan on the board, becoming so much more independent."

The results presented here bring further local evidence to demonstrate the impact of 'Self-Regulation in Action' and now also the specific benefits this might have for some of our most vulnerable children living in areas of deprivation and those with identified ASN.

Further local evaluation is needed to explore the potential for this course in supporting adolescents and further data to indicate the impact this has on learning outcomes would also be helpful.

What do we plan to do next?

The EPS have now been commissioned to lead 'Self-Regulation in Action' to a wider group of schools in Perth and Kinross. Two parallel groups are being led (n = ~28 participants). Schools 'bid-in' via a similar process to that described in this paper but this time have used Pupil Equity Funding (where available) to secure participation (with these funds being used to resource EP time). The EPS are leading further BRIEF 2 data collection, this time sampling young people in S1 – 3. Analysis of this will be undertaken in May 2018.

Previous participants are now a more formal part of the course 'training team' and there is greater emphasis for participants on evaluation methods to indicate impact on learning outcomes.

Support from senior managers, the PKC Research and Information Service and Dr Josie Booth have been key features in the successful delivery of the course outlined here and

gratitude is extended to them.

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For further information contact

Gillian Horribine: GHorribine@pkc.gov.uk
Jonathan Godson: JGodson@pkc.gov.uk
Kim Fraser: KAFraser@pkc.gov.uk
Susie Turner: STurner@pkc.gov.uk