

Understanding the Implementation of the Peer Assisted Learning Strategies (PALS) Program through the Consolidated Framework for Implementation Research (CFIR)

Background

Knowledge mobilization remains a relatively new concept in public education and the overall research enterprise in education remains small and weak, especially relative to the size of the sector (Levin 2011). Studies on implementation are generally scarce in the education literature. When our Knowledge Mobilization Lab (KM Lab) was looking for a model that might guide our understanding of implementation in a public school setting, we examined several models developed in healthcare.

The Consolidated Framework for Implementation Research (CFIR), a “meta-model” developed by researchers at the Veteran’s Administration (Damschroder 2009), was identified as the most suitable model, as it contained elements we had identified as important in previous classroom implementation projects. Selection of this model was due both to the lack of models developed in the education field, as well as familiarity by KM Lab participants with models from health care.

This model synthesizes constructs from 19 different published models into five major domains (the intervention, inner and outer setting, the individuals involved, and the process by which implementation is accomplished). With the substitution of “educator” for “clinician” and “student” for “patient”, the model was adapted for use in a public education setting.

The Intervention

The Peer Assisted Learning Strategy (PALS) (Fuchs 1997) is a systematic class-wide reading program for students in kindergarten to grade 6. PALS builds reading fluency and comprehension skills through a set of activities that students are engaged in for 35 – 45 minute sessions, 3 – 4 times a week. The classroom teacher provides the initial lesson followed by a prescribed lesson with materials provided. This is followed by students working in pairs to practice and reinforce the skills taught.

In PALS, students work in pairs to help each other improve their reading skills. In partner reading, the higher level reader is called the “first reader” and the lower level reader is called the “second reader” who coaches and monitors the first reader. If the first reader makes a mistake, the second reader uses a special “correction procedure” to help the reader fix the

mistake.

The roles of reader and coach are switched for each activity throughout the lesson. Students working in pairs help to motivate each other by awarding themselves 'points' for completing activities. As the students work in these pairs, the teacher's role is to monitor and provide assistance to help the students improve their reading.

The Implementation

A team of five psychological associates from the Leadership and Learning Team of the Hamilton-Wentworth District School Board (HWDSB) worked with five schools who had expressed an interest in implementing the PALS program. This team (dubbed the IMPALAS for "Implementing Peer Assisted Learning Across Schools) met weekly as a team to plan the implementation as well as meeting individually with the single school at which they led the implementation.

Initial training was provided by an expert trainer from Vanderbilt University in January 2012, and the implementation was launched shortly after training. All schools also provided some degree of support to teachers in implementation, ranging from occasional meetings to discuss implementation issues, to having volunteers photo-copy materials for teachers. Some schools grouped their students across grades and classrooms to improve the student pairings.

Methodology

Students completed a number of reading measures before the January implementation, and again at the end of the second semester in June 2012. The measures included the Dibels Oral Reading Fluency Test (DORF), the Developmental Assessment of Reading (DAR), the Sound Symbol Test (SST), the Sound Combination Test, and the DIBELS Phoneme Segmentation Fluency Test. These measures were chosen for brevity and the ability to be routinely administered in a classroom setting by a teacher. Initial and follow-up data was collected by the Evidence-Based Education and Services Team (E-BEST), the research department of HWDSB, with some assistance from teachers and university students.

Teachers, Principals, and Learning Resource Teachers (LRT's) were individually interviewed about their experience of implementation. The scripted questions did not specifically address elements of the CFIR but were general in nature, in order to reduce social-desirability bias that might be introduced by direct questions about the CFIR model. Interviews were transcribed and scored for positive or negative mentions on 14 different elements from the CFIR (Figure 1).

Consolidated Framework for Implementation Research (CFIR)

Intervention Characteristics	Intervention Source Evidence strength & quality Relative advantage Adaptability Trial-ability Complexity Design quality and packaging Cost
Outer setting	Student/Teacher needs and resources Cosmopolitanism Peer pressure External policies and incentives
Inner setting	Structural characteristics Networks and communication Culture Implementation climate Tension for change Compatibility Relative priority Organizational incentives and rewards Goals and feedback Learning climate Readiness for implementation Leadership engagement Available resources Access to information and knowledge
Characteristics of individuals	Knowledge and beliefs about the intervention Self-efficacy Individual stage of change Individual identification with organization Other personal attributes
Process	Planning Engaging Opinion leaders Formally appointed internal implementation leaders Champions External change agents Executing Reflecting and evaluating

Damschroder L.J., Aron D.C., Keith R.A., Kirsh S.R., Alexander J.A., Lowery J.C. (2009) Fostering implementation of health services research findings into practice: a consolidated framework for advancing implementation science *Implementation Science*, 4:50 doi:10.1186/1748-5908-4-50 This article is available from: <http://www.implementationscience.com/content/4/1/50>

The five implementation coaches were asked to rank each classroom as “high” “average” or “low” in their implementation, based on classroom observations and educator participation. The process was repeated to rank each school as “high”, “average” or “low” implementation. We then calculated the correlation between both individual and school implementation scores and the teacher mentioned elements of the CFIR derived from the teacher interviews.

We then calculated an average improvement score in the DORF for each student during the initial 5 months of implementation. These scores were grouped to produce an average improvement score for each classroom and for each school. These group averages were again used to calculate the correlation between both the classroom and school change in DORF scores from January to June, and the scoring of individual elements of the CFIR. The Pearson correlation coefficient was used to evaluate all correlations.

Results:

Based on the implementation scores assigned by the implementation coaches (IMPALAS) and the scoring of implementation elements mentioned by teachers in the interviews, we found that different items were correlated with high-implementation schools than with high-implementation classrooms.

High-implementation schools were positively correlated with formal engagement of school Principals in the implementation process, clear intervention goals and progress monitoring, and opportunities to reflect and evaluate program progress.

High-implementation classrooms were positively correlated with a clear implementation plan, ease of implementation of the program, and clear, easy-to-understand information about the program. There was a weaker correlation between high-implementation classrooms and opportunities to reflect and evaluate program progress.

School-level correlations with coach’s implementation scoring *		
	Engaging- Formally appointed implementation leaders (Principal)	0.911
	Goals and feedback	0.897
	Reflecting and evaluating	0.772
Classroom-level correlations with coach’s implementation scoring *		
	Complexity	0.520
	Planning	0.519
	Design quality and packaging	0.406

Student change on the DORF was calculated on a school-wide basis and a classroom basis. These outcome measures were then correlated to the elements of the CFIR identified in teacher interviews.

High-outcome schools (as measured by increases in student outcomes on the DORF) were positively correlated to the same school-level implementation elements identified previously. These elements included clear intervention goals and progress monitoring, formal engagement of school Principals in the implementation process, and opportunities to reflect and evaluate program progress.

School-level correlations with student outcomes *		
	Goals and feedback	0.981
	Engaging- Formally appointed implementation leaders (Principal)	0.970
	Reflecting and evaluating	0.833

Examining classroom level correlations between high, average, and low achieving classrooms (based on change in DORF) and the various implementation elements is more complex. Some implementation elements show step-wise increases with improved achievement, while others appear to have little difference in their correlation across the different classroom groupings. Some elements show negative correlations. For instance, low achieving classrooms were more likely to have teachers who reported that the intervention was compatible with their current practice, but this was negatively correlated with student improvement on the DORF.

Correlations across classrooms *	Low achieving classes (n=4)	Average achieving classes (n=5)	High achieving classes (n=4)
Goals and feedback	0.663	0.772	0.845
Engaging- Formally appointed implementation leaders (Principal)	0.512	0.799	0.887
Reflecting and evaluating	0.722	0.623	0.628
Complexity	-0.691	0.626	0.257
Compatibility	0.474	-0.413	-0.02

Discussion:

Our results point to different elements of implementation being more important at the school level than those that are most important at the classroom level. At the school level, engagement and support from the Principal, clear and measurable goals for implementation, and an opportunity to reflect on the intervention and evaluate student progress were correlated with high-implementation schools and high-outcome schools. At the classroom level, characteristics of the intervention are more strongly correlated with high-implementation schools and high-outcome schools.

Understanding which elements of implementation are important at these levels may help us to improve implementation, and produce better outcomes. Principals and other members of the implementation team should ensure that they are engaged and supportive of the implementation, work together to set goals for the implementation and provide opportunities for reflection and evaluation. Educators are directly affected by both the characteristics of the intervention, such as ease of use and design quality and packaging, as well as a clear plan for implementation within their classroom.

Further analysis of the data, and continued monitoring of this implementation will likely provide additional insights into this complex process.

References

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