



# Fidelity of Implementation in Educational Evaluation: A Review of Framework Applications



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## Study overview

### Background:

- Fidelity of implementation (FOI) concerns whether a program is delivered as planned (Durlak & DuPre, 2008; Nelson et al., 2010)
- FOI is of increased concern within the context of impact evaluations, specifically in educational settings.
- Shift from, “Did an intervention work?”, to “**How** was the intervention implemented”, or “What aspect of the intervention is **most essential?**”.
- Theorized to increase the internal validity of evaluation findings while also providing stakeholders with important information concerning implementation.

### Research Questions:

- How have evaluators of education interventions utilized pre-existing frameworks for studying fidelity of implementation? What commonalities exist across these evaluations?
- What are the limitations of current fidelity of implementation frameworks, and what approaches should evaluators consider when the existing FOI frameworks do not correspond well with programs and interventions being studied?

### Methodology:

- Systematic review of the literature
- Five studies selected as recent examples of interventions illustrating the use of a FOI framework.
- Synthesis of evaluations (see Table 1): description of intervention, FOI framework, fidelity indices, data collection, quantification of fidelity, and study findings
- Commonalities and challenges drawn from review
- Case study discussed to illustrate future considerations for FOI evaluation

## Findings

### Commonalities:

- Teachers considered program providers (responsible for implementation)
- Four evaluations measured curriculum interventions
- Adherence/dosage indices (dichotomous indicators of, “Was this component completed?”)
- Operationalized quality by indicating essential components of best pedagogical practice
- Observation ratings used to measure fidelity to instructional-pedagogical critical components

### Challenges:

- Lacking indices of *participant responsiveness*.
- Strenuous *data collection demand*
- Data accuracy** (e.g. extent to which one or two class sessions represent the entirety of a teacher’s fidelity to a curriculum; self-reporting)
- Lack of methodological link between fidelity and intended outcomes** (compliance to a program or curriculum is often endogenous to unobserved factors).

### Future considerations:

- Rethinking fidelity as integrity** by incorporating participant responsiveness to the spirit of the intervention (see Shakman et al., 2018 cited in two-page abstract summary)
- Tension between fidelity and teacher independence:** unclear how the FOI frameworks accommodate programs and interventions that seek to alter teacher practices while respecting context and teacher expertise. How should evaluators handle diversity in implementation when evaluating educational interventions, specifically when implementation is not intended to follow a structured pattern?

## Literature Synthesis

Table 1: Review of evaluation studies that incorporate fidelity of implementation framework

Citation	Description of program/intervention	Fidelity framework	Fidelity indices	Methods of data collection for fidelity measures	Operationalization of fidelity score	Findings
Crawford et al., 2012	RCT of a computer-based middle school mathematics curriculum (Help Math)	Fidelity to structure and fidelity to process	Total time in intervention  Concentration of time in intervention  Direct observation of intervention fidelity	Computer- generated time student spent on each lesson and module  Ratio of minutes each student used the intervention over time (in days) elapsed from pretest to posttest  Two observation, measured by four constructs: logistical, instructional quality, student engagement, and facility of use  Fidelity of process: quality of teacher’s implementation using seven constructs, each measured through three observation. Total score from 1 to 5.	Hierarchical linear model: each of the fidelity indices was entered into the model separately. There was no total fidelity score.	Four structural fidelity indices were statistically significantly correlated with student math outcomes. Fidelity to process was not significant.
Benner et al., 2011	Reading intervention for middle school students experiencing reading difficulties (Corrective Reading Decoding)	Adherence and quality of delivery	Teacher follows the lesson format, uses specific praise statements and feedback, monitors student responses, reteaches when needed, and uses established error correction procedures.	Observers rated each of the indices on a Likert scale ranging from 1 to 5	Scores across all five items were summed to create an overall score (0-25) and operated as a continuous independent variable. Separate models were run with each of the five items entered separately.	Students who experienced higher treatment fidelity were more likely to show greater gains in their basic reading and passage comprehension skills. Teacher actions that significantly contributed to gains include the lesson format and reteaching of lessons when necessary.
Hanita et al., 2020	State-wide beginning teacher induction program (TEAM)	Dane and Schneider – adherence and dose	Teacher met with mentor for minimum number of required hours  Teacher submitted expected number of reflection papers at end of each year  Teacher completed expected number of modules at end of each year	Teacher-reported logs of time spent with mentor  Internal system for uploading, reviewing, and approving reflection papers	Average proportion of required components completed by teacher (0 to 1 scale)	Increased average fidelity of implementation score of induction program correlated with beginning teacher retention after one and three years of teaching
Abry et al., 2015	RCT of a social-emotional learning intervention (Responsive Classroom) provided to elementary school teachers	Adherence and quality of delivery	Morning meeting  Rule creation  Interactive modeling  Academic choice	16-item observational measure and 46-item questionnaire administered to teachers regarding their fidelity to intervention components	Factor and total average observational and questionnaire scores were used as independent variables	Academic choice was the only of the indices associated with increases in math and reading achievement. The use of different fidelity composite indices varied slightly with regards to the results.
Zvoch, 2012	Summer literacy intervention for first and second grade students struggling to read	Dose, participant responsiveness , and quality of delivery	Dose: homework assignments and attendance  Student engagement as rated by teacher Quality of delivery: teacher’s quality of implementing intervention	Proportion of daily homework assignments completed  Proportion of days attended  10-point student engagement scale computed by combining teacher ratings within and across instructional days  Two observations of teacher use of intervention, rated using 13-item questionnaire of Likert-scaled questions	Each fidelity component was represented individually in a three-level hierarchical linear model	Engagement and attendance were associated with increased growth in reading outcomes, but quality of delivery was not.