

Utah Special Educator

Title: Collecting Instructional Fidelity Data – Where Do We Begin and How?

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*“Instructional fidelity is a measure of the degree to which a teacher’s instructional behaviors align with programmatic guidelines or principles of an instructional approach,” (Forbush, Milbank & Hughes, 2009).*

## Introduction

I worked constructing log homes to get myself through college. The summer work was wonderful, taking me to Jackson Hole, Lake Tahoe, Park City, and other beautiful places. Before a construction project began, “where and how do we begin” questions were asked, and answered by architects, engineers and other designers. Collective answers to these questions were embodied in “elevation shots,” or colorful scaled drawings of the project’s final image. Additionally, detailed floor, truss, and electrical plans fleshed out detail needed for successful production of the structure. These elevation and detailed plans provided concrete evidence of Stephen Covey’s direction to “*begin with the end in mind*” when organizing an effort, or project.

With “instructional fidelity,” before beginning, ask yourself, “*what is the end that I have in mind?*” The title from our previous installment on instructional fidelity (Forbush, Milbank, Hughes, December 2009), “*Maximizing Student Outcomes – What Does Instructional Fidelity Have to Do with It?*” clarifies, “our end,” is developing in students nimble use of relevant concepts and core skills (e.g. reading, written communication, and mathematical computation) in authentic settings and under high demand conditions (e.g. reading and following assembly instructions; comparing, contrasting and selecting from multiple home finance mortgage options...).

With a proper “end in mind,” you are still left to determine the activities (i.e. vehicles) for achieving “the end.” We suggest that collection and use of instructional fidelity data is one of several activities forming a “composite vehicle” to aide instructional interventionists (i.e. teachers and paraeducators) in producing in students, nimble use of valued concepts and skills.

Addressing this topic, we offer descriptions of six sequential activities, with the objective of providing *initial direction toward preparing to assess instructional fidelity*. With each step, we propose a primary focus for instructional teams and list several related tasks.

Step 1 - Developing Need for Instructional Fidelity Data

Step 2 - Agreement on Salient Instructional Features

Step 3 - Development of a Instructional Fidelity Tool

Step 4 - Refinement of the Instructional Fidelity Tool

Step 5 – Interpretation of Instructional Fidelity Data

Step 6 – Providing Supportive Intervention

In a follow up article we will offer *practical direction toward management, or day-to-day collection of instructional fidelity data*, and practices for effective uses of collected data.

### Step 1: Developing Need for Instructional Fidelity Data

*Focus:* collaboration toward deep and common acceptance of the importance of instructional fidelity and its measurement.

*Tasks:*

1. Identify, read, and discuss articles strengthening need for “instructional fidelity.”
2. Achieve consensus for assessing “instructional fidelity.”
3. Develop extended plan for assessing “instructional fidelity.”

In this preparatory stage, it strikes us as important that an instructional organization or team take time to become “steeped” in knowledge of the usefulness of instructional fidelity data for enhancing instruction and for properly fitting interventions to students’ needs. An instructional organization, or team, through a common diet of readings, and meaningful discussions should acquire a value for instructional fidelity data, and importantly, will develop a conceptual consensus and need for these data, and the capacity to begin laying out an extended plan. We recommend as an initial reading, our previous Utah Special Educator article “*Maximizing Student Outcomes – What Does Instructional Fidelity Have to Do with It?*” (Forbush, Milbank, Hughes, December 2009).

Learnings to be derived from this read include:

- Developing a conceptual knowledge of instructional fidelity.
- Discovering the relationship between instructional fidelity and strengthening instruction.
- Discovering the relationship between instructional fidelity and properly qualifying students as having IDEIA related disabilities.
- Discovering the need to increase the “degree of match” between local school-based instructional practices and practices described in peer reviewed research.
- Learning the value that instructional fidelity has for adding prescriptive instruction direction in responding to students’ learning difficulties.

### Step 2: Agreement on Salient Instructional Features

*Focus:* agreement on salient instructional delivery and management features.

*Tasks:*

1. Review evidence-base for curriculum, attending closely to conditions upon which empirical-bases were established.
2. Read and discuss delivery and management guidelines of curricula you are interested in collecting treatment fidelity for.

3. Contextualize group discussions by reviewing curriculum lessons through lenses associated with curriculum guidelines and empirical bases.
4. Develop consensus on salient program delivery and management procedures.

Steeped in knowledge about instructional fidelity and its values, an instructional team or organization is ready for rounds of thoughtful discussions to “tease out” the “*salient*” elements of instruction. The term *salient* brings to mind a recent cold medicine shopping experience related by one of the authors. Standing in front of an expansive shelving system organized with many brands and types of cold medicine, he decided to consult the Pharmacist. Thankfully, the Pharmacist stepped out of his glass enclosure and offered training in cold medicine selection, which produced acquisition of two new important terms for the author (i.e. active and transportation ingredients). Transportation ingredients are substances which suspend, or aide in transportation of the “real medicine” or “active ingredient” to the targeted body location, and with as little discomfort as possible. From this experience, this author learned a single decision rule – buy medicines with as high a proportion of the *salient or vital “active ingredient”* as possible.

The concepts of “active” and “transportation” ingredients relate to curriculum and instruction. All curriculum and instruction consist of recommended procedures for teachers and for students. Some of these procedures serve to transport or support (e.g. roll calls, management of student behavior, review of expectations), and what remains is the active ingredient, or the salient element(s) relating directly to the acquisition of a targeted concept or skill (e.g. direct modeling of task, student responses...). The focus of a team’s efforts in this step is to engage in deep discussion in pursuit of discovery of the “salient” elements of instruction (i.e. vital to student learning), and to agree on these vital elements, with the express purpose of collecting instructional fidelity data on the degree of presence of these salient instructional elements in a teacher’s instructional delivery.

To tease out salient from transport elements, first understand, all good researchers attend to treatment fidelity, or work to ensure that the treatment or intervention is implemented with fidelity. Researchers prize claiming with as great of confidence as they can, that the observed effects of the intervention resulted from the intervention itself, versus a host of other unaccounted for, or uncontrolled variables, and including, simple failure to put the intervention in place, or implement the intervention as planned, or designed. If the curriculum or procedure has an evidence-base, and this evidence-base was developed under specific conditions of quality, then knowing and implementing the intervention under the same or very similar conditions of quality should hypothetically produce similar results. So, recommendation number one is to read the research supporting your particular intervention/curriculum to sift out the conditions under which evidences were achieved and then work to match the delivery conditions as best you can.

Recommendation number two is read the delivery guidelines associated with the curriculum or intervention you use. These guidelines should also offer direction to “salient” features of the program and proper implementation procedures. Final recommendation, as you identify salient features of instruction, contextualize these identified features by reviewing lessons within your curriculum looking through the lens of the salient features you identified. As a group, ask and answer questions like, “within

this lesson, how would the salient features of instruction we have identified look like?” “At what junctures in the lesson, will we see each salient feature?” “Does the lesson prompt for our identified features of instruction, or, does the presenting teacher have to modify delivery of the curriculum to include salient features of instruction?”

### Step 3: Instructional Fidelity Tool Development

Focus: Identify, or develop a tool to measure salient delivery and management procedures.

Tasks:

1. For each procedure, ask “how can we efficiently capture this salient instructional feature (e.g. clear and sufficient teacher models) in a way that produces meaningful and actionable data?”
2. Ask “how can we sequence measures of salient elements within our tool so they flow with instruction, and aide in observers’ data collection?”
3. Ask “Does our planned measurement of this procedure reflect gradations of “instructional fidelity” (i.e. % of presence)?

With a clear sense of the “salient” instructional features you want to observe in a lesson, an observational tool is needed to take “snap shots” of instruction, so that instruction can be teased apart into its component parts and analyzed for the degree of presence of salient instructional features. Important initial questions to pose include the three above. For examples, as a group ask, “how can we efficiently capture this procedure or salient instructional feature in a way that produces meaningful and actionable data?” There are two key points here, for instructional fidelity data to be useful, it must attach to salient instructional elements, or elements divined to produce student learning, and the data must clearly specify the degree of presence or absence of the salient instructional feature. Ask, “How can we sequence measures for salient elements within our tool so they flow with instruction, and aide observation?” Finally, ask, “does our planned measurement of this salient instructional feature reflect gradations of “instructional fidelity” (i.e. % of presence)? In other words, does the observation tool produce data offering information about the degree to which a salient instructional feature is present in instruction, or simply that it was, or was not present? Tools that produce data “snapshots” with gradations of the presence of various instructional features provide for substantial discussion and action toward achieving higher levels of a salient feature (e.g. discrete verbal praise for correct student responses, percent of student reading errors corrected...). The outcome objective of this step is the production of an observation tool for capturing the degree of presence or absence of salient instructional features.

#### Step 4: Instructional Fidelity Tool Refinement

Focus: refine tool to better capture salient instructional behaviors.

Tasks:

1. Train observers and practice with video tape.
2. Compute interobserver agreement (IOA) percentages.
3. Where IOA percentages fall below 85% agreement either retrain, refine observation descriptions, or alter tool until IOA meets or exceeds 85%.

With your newly developed instructional fidelity tool in hand, the objective of this step is to test the tool to determine if it is a valid measure (i.e. measures what you desire it to measure – salient features of instruction) and a reliable measure (i.e. repetitively, in the hands of persons trained, the tool produces accurate representations of salient instructional features) and to refine the tool improving on its ability, in the hands of its users, to validly and reliably capture the salient instructional elements of interest.

To begin this authentication and refinement process, identify 2-3 persons who you desire to train as observers. Review the tool in its entirety and including the rationale for its production, design, and sequence of observation items. Next, show instructional video footage, and simultaneously, using an overhead projector, model data collection (i.e. I do it) using the tool copied to acetate. Next, talk about what your trainees observed in your model and answer questions, and then model data collection again. Next, observe the video together (i.e. we do it), collecting data and finally, provide trainees with multiple opportunities to view the video and collect data independently (i.e. you do it). After each independent viewing, compare trainees collected data with verified data, and address questions which arise, and re-teach as necessary. Next, if possible, send each trainee home with a DVD recording of multiple instructional video segments that they can use to practice collecting instructional fidelity data.

With ample practice under your trainees' belts, in the next training, collect "interobserver agreement" data. Interobserver agreement (IOA) data is a measure of the degree to which observers independent from each other produce similar observational outcomes. If IOA data is high  $\geq 85\%$  (i.e. 85% of the content observed is agreed upon by independent observers) then you have some assurance that the tool is sufficiently simple in its design, and the skills being targeted, are sufficiently clear, that with minimal training, multiple observers, looking through the lens of the tool collect similar data. If IOA data is lower than 85%, look to: a) the simplicity of your tool; b) the clarity of descriptions of instructional behaviors to be observed; c) improve the quality of your training; or d) address all three potential problem areas, and work through this same process again.

#### Step 5: Interpretation of Instructional Fidelity Data

Focus: Summarize instructional fidelity data, determine overall presence of fidelity, and consider what data may mean for student learning.

Tasks:

1. Review data and discuss how a low or high instructional fidelity score on a salient instructional element may impact a student's learning (e.g. instructor identifies and addresses 37% reading errors).
2. Analyze data across students in instructional groups (responders and non-responders), looking in a broad way, for differential outcomes which may arise from varying gradations of instructional fidelity.
3. Non-experimentally determine if high instructional fidelity scores produce outcomes different from low instructional fidelity scores, and finally, begin constructing formats for actionable feedback to instructors.

With instructional fidelity data being collected, and summarized, it is important to “keep the end in mind,” or that the data are simply a vehicle to aide you to produce in students nimble use of relevant concepts and core skills. Coupled with this reminder, one of the authors recently read on a principal's wall, “a pig doesn't get fatter just because you weigh it.” To that end, the objective of this step is to begin using collected data to enhance student learning. The tasks offered above are initial steps for beginning to “use” collected instructional fidelity data.

#### Step 6: Supportive Intervention

Focus: incrementally enhance instructional fidelity.

Tasks:

1. Agree on feedback formats and practice delivering feedback.
2. Establish interobserver feedback agreement (IFA).
3. Conduct instructional fidelity observations, provide feedback and schedule follow up observations to either sustain high levels of instructional fidelity, or to shape to higher levels of instructional fidelity.
4. Assess degree to which feedback, and follow up alter instructional fidelity over time (i.e. increasing gradations of instructional fidelity).

To ensure that collected data leverage actions affecting student outcomes, it is imperative to work as a team to develop “supportive interventions” to sustain or enhance instructional fidelity. Data can only be acted upon by instructional interventionists (i.e. teachers and paraeducators) if the data is shared, and preferably in a verbal format that invites discussion between the observer and the interventionist. It is important to note, that few educators possess training or extended experience offering observational feedback to other adults or professional colleagues. These limitations in training and experience may provoke in observers feelings of discomfort as they grasp for the skill set required. Some portion of the discomfort can be reduced when the data collected quantify actual instructional behaviors (e.g. rate of praise for correct responses, number of teacher modeled mathematical problems, percentage of student response errors corrected...). Restraining conversation to directly observed instructional behaviors, and the degree of instructional fidelity present in these instructional behaviors paves for a more comfortable experience than conversations about broad esoteric instructional labels which do not tie directly to observed instructional behaviors (e.g. organizing for effort,

scaffolding, instructional differentiation...). Our recommendations are to design tools which quantify actual teaching behaviors, and then restrict conversations to the absence or presence of salient teaching, management or assessment behaviors.

To begin developing a skill set for discussing observational data, consider the following training sequence. First, show the video footage used previously, and have all trainees collect and summarize their data. Next, select one trainee to act as the person observed, and acting as the observer, model how to share observational data. Next, describe or “unpack” the format you worked through to share observational data. For example, your format may be:

1. Greet the person, and share pleasantries allowing time to transition from teaching and observing to discussing the presence or absence of instructional fidelity.
2. Share and discuss the instructional behaviors demonstrated at high levels of instructional fidelity.
3. Share and discuss instructional behaviors demonstrated at lower levels of instructional fidelity. (Model for your trainees two mental notes useful at this point in the conversation: a) “remember, objectively share the data and where the data lie in relationship to the standard!” b) “remember, share data in a positive unapologetic tone). Note that it is recommended that you prioritize the instructional behaviors to address. There are two approaches here. The first is to address instructional behaviors of greatest consequence to student learning. The second is to select instructional behaviors which you believe are most easily altered, and thereby serve to build behavioral momentum toward improvement of more difficult to impact instructional behaviors.
4. Commend person for the specific areas of fidelity in their instruction, and mention that they shouldn’t hesitate to contact you, if you can offer to them, additional support in enhancing specific areas requiring greater instructional fidelity.
5. Let the person know that you will be back in touch to schedule another observational visit.

Next, place trainees in teams of two and allow them to practice with each other giving feedback, and encourage them to offer evaluative feedback to each other in terms of the feedback format you develop. Finally, share other pieces of video footage, with trainees collecting and summarizing data, and then without the trainees sharing the information with one another, have them write down the instructional behaviors they observed that met a high level of instructional fidelity, and those that were displayed at lower levels of instructional fidelity. Working together, determine the degree of interobserver feedback agreement (IFA) existing between trainees. Work this process until you have high levels of agreement of the information to be shared, and not shared with persons observed.

## Conclusion

Collection and use of instructional fidelity data has direct bearing on interventionists' skill in wringing from evidenced-based programs the student outcomes reported in peer reviewed research. The great challenge is getting started, and to ensure that once collected, instructional fidelity serves as a "vehicle" transporting you to the end you had in mind from the beginning (i.e. students' nimble use of valued concepts and skills). Remember, "A pig doesn't get fatter just because you weigh it!"