Evaluation in DRK-12 Projects: Options

First-draft paper, for discussion and feedback, June 2012

Brenda Turnbull bturnbull@policystudies.com
CADRE/ Policy Studies Associates

Summary

The Discovery Research K-12 (DRK-12) Program of the National Science Foundation (NSF) supports research and development (R&D) on innovative resources, models, and tools for use by students, teachers, administrators, and policy makers. Each project has formative and summative evaluation, which should make a distinctive contribution separate from the project's own R&D activities. In this context, options for effective evaluation could include the following, which are discussed below:

- Use evaluation tools such as logic modeling, identification and use of existing instruments and analytic techniques, and developmental evaluation
- Think outside the project: negotiate a plan for gathering or interpreting some data independently; attend to the context in which the project is operating
- Take a longer-term perspective, documenting project processes and, if feasible, conducting a retrospective analysis or looking across projects

NSF Requirements

The current solicitation, NSF 11-588, requires that each funded DRK-12 project incorporate (1) formative evaluation, providing feedback to project leaders; and (2) summative evaluation, substantiating the credibility of the project's evidence for its findings or claims, and thus evaluating the project's success in meeting its objectives. It states that evaluations should assess progress, recommend adjustments to plans, determine the effectiveness of project outputs, and attest to the integrity of reported outcomes.

Exploratory projects may be evaluated by an individual or an advisory board, and their evaluations should be primarily formative. Full R&D projects must have both formative and summative evaluation, and they can use different evaluation teams for these two functions.

Challenges in DRK-12 Evaluation

While a host of practical problems arise in every evaluation, those conducted under DRK-12 are especially prone to the following challenges related to the program's purposes and design:

- ***Disentangling evaluation from the R&D enterprise.*** Project leaders may assume in some cases that gathering and weighing evidence is the evaluator's job, yet in DRK-12 the project itself is expected to include an evidence-based investigation that draws research conclusions or that uses data from the field to inform the development process. And in evaluating an R&D project, the evaluator typically brings questions and methods that closely resemble those of the project itself. Thus, the division of labor between R&D and evaluation may need ongoing review and negotiation.

- ***Working on a small scale.*** Although some DRK-12 projects are quite large in scope, some are not. An evaluation that is proportionate in size to a small R&D project must very strategically identify key activities that will add value, will not overburden participants, and can feasibly be completed with high quality.

- ***Working with adaptations.*** Because DRK-12 aims to support ground-breaking, relatively high-risk projects, few if any projects will proceed exactly as planned. The evaluation must remain true to essential project goals while recognizing that changes in project plans may reflect sensible adaptations to new circumstances and new understandings. Just as important, when a project is developing innovative resources and tools for students and educators, these products are likely to undergo extensive adaptation as they are tested and refined in the field. The evaluation framework must be sufficiently flexible to anticipate product adaptations and assess their quality and results.

Options

The options suggested here fall into three general categories: ways of using the evaluator's toolkit; ways of exploiting the evaluator's position outside the project; and ways of taking a longer-term perspective. Some (such as logic modeling and independent data collection) are already common in DRK-12 evaluations, while others (such as follow-up data collection and analysis beyond the project period) would require new arrangements.

Using Evaluation Tools

- ***Logic modeling.*** The evaluator can play a major role in developing a sound logic model that displays the path from project activities to the desired outcomes, and also (for development projects) the path by which a resource, model, or tool contributes to outcomes for students or educators. In this way, evaluation contributes to project design—and, very likely, redesign, since project teams have new insights and adjust their activities as they go along. Moreover, using the logic model, the evaluator can identify key strategic junctures for the project or its products. This not only can help focus evaluation resources at these junctures, but also can draw project leaders' attention to them.

- ***Data collection instruments and techniques.*** Although a DRK-12 research project will ordinarily develop its own instruments, a knowledgeable evaluator may help find existing instruments that can be adapted for inclusion, thus helping the project connect its findings to those of analogous work. Similarly, a development project may want to adapt existing surveys, interview guides, or observation protocols for use in field testing. Evaluators may also bring valuable experience in accessing and using administrative data from schools and districts for projects that are seeking effects on attendance, course taking, achievement, or other student outcomes.

- ***Analysis planning.*** Evaluators' standard tools include statistical power analysis (i.e., designing studies with samples large enough to detect effects of the expected size) and ways of anticipating and testing rival hypotheses that might account for observed outcomes. These and similar tools can help an R&D project in the design stages and in making design adjustments when circumstances change.

- ***Developmental evaluation.*** R&D on highly innovative educational approaches brings many uncertainties. Because the projects themselves often cannot be tightly scripted in advance, the evaluation cannot presume that fidelity to an original design is entirely desirable. Developmental evaluation (Patton, 2011) offers a philosophy and techniques geared to assessing innovative projects that adapt to changing, dynamic conditions. Since Patton contends that developmental evaluation is an alternative to both formative and summative evaluation (which are required in DRK-12), its use might push the boundaries of permissible evaluation activities for the program, but it offers a different model worth considering.

Thinking Outside the Project

- ***Gather or interpret data independently.*** A core activity in DRK-12 project evaluation is to review the data collection and analysis carried out by the project team, assessing the timeliness, thoroughness, and quality of the work. To varying degrees, depending in part on the size and stage of the project, evaluators may also make their own forays into the field and may take a different slant on data analysis. Teachers and other participants may offer more candid comments to evaluators than to members of the project team with whom they have been working. In data analysis, evaluators may be more alert to problems and unintended consequences than members of the project team. Using the evaluator's time strategically, so that it adds value to the project and does not supplant the R&D work of the project team, is important here.

- ***Attend to context.*** In a field site, researchers rightly focus on their research questions, developers on the intervention they are testing. The evaluator can bring a more detached perspective and may more readily see distinctive features

of the site context. In other words, while the project team looks at the "figure," the evaluator may be better able to notice the "ground."

Taking a Longer-Term Perspective

- ***Document project processes.*** Beyond the basic purpose of checking on the implementation of intended project activities, an evaluator can contribute to knowledge of R&D processes by documenting the work. The field can benefit from systematic study of such processes as cross-disciplinary collaboration on project teams, decision making in innovative inquiries, approaches to product design and adaptations, and development of human capital on the project team. Evaluators who are knowledgeable about education R&D can investigate how it is carried out in the project and with what results.

- ***Conduct a retrospective analysis.*** If the evaluation can extend beyond the period of the project itself, evaluators can test for the persistence of the project's results. For example, how durable are changes in teaching behaviors or student results that were identified in a research project? What aspects of a new resource or tool, if any, does a test site continue to use beyond the test period?

- ***Look across projects.*** Although NSF funds single projects and a single evaluation for each, some evaluators work on multiple projects, and some project teams interact around shared challenges. To the extent feasible, evaluators could pool questions, instruments, and findings across projects, building a shareable knowledge base to strengthen the quality and efficiency of evaluation work in the program.

Reference

Patton, M.Q. (2011). *Developmental evaluation: Applying complexity concepts to enhance innovation and use.* New York: The Guilford Press.