Preparing to Collect Data

INFORMATION BRIEF:
Choosing evaluation methods and data sources

General

As you plan the evaluation of your school or district's project, you'll want to consider a variety of evaluation methods and data sources. Some of the most common and practical methods or strategies are interviews, focus groups, questionnaires, observations, analysis of teacher products, analysis of student products, and tests or other learning assessments. In the following sections, you'll find descriptions of each of these strategies including advantages, disadvantages, and examples. As you peruse the other web materials, you'll also find pointers for developing necessary data collection/analysis instruments and for actually carrying out the strategies. Table 1 summarizes some of this information.

As you plan your study and the methods you want to employ, it is very important to ***revisit and think carefully about your overall evaluation questions*** and which methods would actually provide the answers to these questions. For example, let's consider an overall question about improved student achievement in mathematics. Interviews or observations may yield opinions on the improved achievement or evidence of change in classroom teaching and learning activities in mathematics. But to really answer the desired question will require different data gathering strategies such as: analysis of student products, e.g., mathematics projects or journals; project-designed tests or other learning assessments; or results of standardized or state tests.

Likewise, it is important, as you plan your evaluation, to ***consider using multiple data collection strategies*** to answer a given evaluation question. This is generally referred to as triangulation. For example, let's consider that one of your evaluation questions concerns changes in the instructional use of technology by teachers of mathematics. One strategy might be to interview the teachers and the students to ask them about the changes in the use of technology. The interviews from these two different data sources will likely yield very useful information. However, actually observing the classroom activities and the ways in which technology is or is not used, will greatly enhance your understanding of changes in practice that are actually taking place.

Finally, in selecting the evaluation methods you wish to use, be sure to ***consider the school context***, the people power at your disposal, and the timeframe you must use.

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Personal and telephone interviews

General description. Interviews are an extremely valuable data collection method that many educators find fairly easy to plan and conduct. An interview consists of a one-on-one interaction between the data gatherer and the participant (interviewee). Interviews can be conducted face to face or by telephone and can last from a few minutes to an hour or longer, depending on the depth of information needed. Interviews generally remain confidential, with interviewees not identified in reports. Interviews are useful for gathering information about perceptions, attitudes, and intended actions or application of learning and can be used to gather such data from any group of stakeholders, e.g., teachers, administrators, parents, or students.

Preparation required. You'll need to select the sample of people to be interviewed, develop the interview protocol (a list of questions to be asked), inform interviewees of the purpose of the interview, arrange a time and place for the interview to take place, and arrange for tape recording of the interview if desired. See example interview protocol.

Advantages. Interviews are used when you need in-depth information from a relatively small group of people. Interviews generally:

- Require a minimal amount of time to develop protocols or questions that you want to ask.
- Provide the opportunity for the interviewer to probe for further explanation when an initial response is unclear or too brief.
- Provide the opportunity for the interviewee, likewise, to ask for clarification of questions.
- Yield in-depth, detailed information, with useful anecdotes and quotations.
- Allow interviewers to learn from body language and tone of voice of the interviewees.
- Provide useful qualitative data gathered from small numbers of people that serve to elaborate or explain less detailed responses received on questionnaires from a broader sample of people.
- Allow interviewees to feel comfortable responding honestly to questions, especially when confidentiality is guaranteed.
- Offer participants the opportunity to reflect on their work.
- Build buy-in and ownership of the project by interview participants.
- It is sometimes useful to gather questionnaire data prior to conducting individual interviews, as questionnaires may provide general patterns or highlight areas that you want to probe more deeply through interviews.

Disadvantages or Limitations. Interviews:

- Take considerable time to set up and conduct.

- Are often difficult to arrange during regular school hours.
- Do not allow the anonymity of participants.
- Yield data from fewer people generally than questionnaires.
- Sometimes yield minimal data if the interviewer fails to establish rapport or asks questions in a way that puts off the person being interviewed.
- Yield data that are limited to self-report, unlike observations or product analysis.
- Unlike focus groups, do not encourage sharing of ideas or building on other participants' thinking.
- Yield qualitative data that some people feel unprepared to analyze.

Example. A district project has provided professional development in five schools for middle school mathematics teachers in using technology applications to enhance student learning. Principals have participated in some of the professional development and are expected to support teachers in this area through instructional supervision. A series of in-person or telephone interviews of the principals might be a very useful strategy, given the in-depth, yet confidential nature of the information needed, especially that concerning the collegial context of their schools and progress and obstacles faced as the teachers actually apply their learning in classrooms. Interviews also might be the best choice of method as well because of the challenge of being able to bring together all principals for a focus group discussion.

See also sections on developing interview protocols and analyzing qualitative data.

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Focus groups

General Description. Focus groups are group interviews or discussions ideally involving 8-12 people for a period of about an hour and a half to answer and discuss a set of questions focused on a common experience. Focus groups are useful for gathering information about perceptions, attitudes, and intended actions or application of learning and can be used to gather such data from any group of stakeholders, e.g., teachers, administrators, parents, or students. They are particularly effective in determining underlying issues and concerns that can later be addressed in broader data gathering efforts such as questionnaires.

Preparation required. You'll need to select the sample of people to be invited to the focus group, develop the focus group protocol, arrange a time and place for the focus group, invite participants, and arrange for tape recording or a note taker if desired. See example focus group protocol.

Advantages. Focus groups are used when you need in-depth information from a relatively small group of people. Focus groups:

- Require a minimal amount of time to develop protocols or questions that you want to ask.
- Provide the opportunity for the focus group facilitator to probe for further explanation when an initial response is unclear or too brief.
- Provide the opportunity for the focus group participants, likewise, to ask for clarification of questions.
- Encourage sharing of multiple perspectives from a variety of participants.
- Yield in-depth, detailed information, with useful anecdotes and quotations.
- Allow the facilitator to learn from body language, tone of voice, and reaction to other participants.
- Provide useful qualitative data gathered from small numbers of people that serve to elaborate or explain less detailed responses received on questionnaires from a broader sample of people.
- Provide an opportunity to gather in-depth data from 10 or so people in the same time that it takes to conduct one or two individual interviews.
- Allow participants to build on each others' ideas and experiences.
- Allow participants to share learning and ideas.
- Provide an opportunity to build communication and trust among participants in a school community.

- Encourage buy-in to the project work and the evaluation through communication, sharing of experiences, and a sense of being heard.
- Identify key issues, needs, or concerns that can then serve as the basis for construction of questionnaires that address the issues that matter to respondents.
- Monitor progress as projects proceed.

Disadvantages or Limitations. Focus groups:

- Take considerable time to arrange.
- Sometimes require extra incentives for participants.
- Are often difficult to arrange during regular school hours.
- Do not allow the anonymity of participants and allow only limited confidentiality.
- Yield data from fewer people generally than questionnaires.
- Can yield less valuable information if the facilitator is unskilled.
- Yield data that are limited to self-report, unlike observations or product analysis.
- Yield qualitative data that some people feel unprepared to analyze.

Example. An example of when focus groups are very useful is to bring participants together at the conclusion of a teacher professional development activity. For example, after an all-day technology training, participants welcome an opportunity to talk about what was learned, how it will be used, and what value they see for students. At this time, it is also good to encourage participants to bring up challenges, issues or ongoing concerns, thus raising the awareness of all involved and obtaining important data for planning of future professional development or to use when constructing questionnaires for the larger population.

See also sections on developing focus group protocols and analyzing qualitative data.

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Questionnaires

General Description. Questionnaires are an evaluation method very familiar to most educators. Questionnaires, paper or electronic, consist of a set of questions or items that are designed for a selected group of people, such as teachers, administrators, parents, students, or others. Questionnaires vary in length, focus, and types of items, such as checklists, scaled items, or open-ended questions and are particularly useful in gathering data from large groups of people about perceptions, attitudes, intended actions or application of learning. See section on Developing Questionnaires for examples.

Preparation Required. You will need to select the samples of people who need to respond to the questionnaire, develop or select the actual questionnaire, pilot test the questionnaire, and plan the distribution process and timeline. See example questionnaire protocol.

Advantages. Questionnaires:

- Yield data from a broader range of people generally than interviews or focus groups.
- Provide both quantitative and qualitative data.
- Can be used to compare responses among identified subgroups.
- Can include a wide variety of question formats, depending on the focus of the evaluation.
- Increase buy-in from stakeholders when the questionnaire reflects their own experiences and issues.
- Enhance credibility of the evaluation data when well-constructed and when large numbers of potential respondents complete the questionnaire.
- After analysis of data, allow broad sharing of the perspectives of large samples of stakeholder groups.
- Provide a learning experience for respondents as they take the time to reflect on their experiences in order to answer questionnaire items.
- Can provide anonymity for respondents, sometimes encouraging more candid responses.
- Allow respondents a window of time in which they can respond.

Disadvantages or Limitations. Questionnaires:

- Require a significant amount of time to either select or to develop and pilot test.
- Yield data that are limited to self-report, unlike observations or product analysis.

- Unlike focus groups, do not encourage sharing of ideas or building on other participants' thinking.
- Unlike focus groups and interviews, do not allow the evaluators to probe further when a response is unclear or incomplete.
- Yield quantitative and qualitative data that some people feel unprepared to analyze.
- Sometimes yield minimal or skewed data if the questions are not well designed, if communication about the questionnaire has not been clear, or if only certain groups of people respond.

Example. A district project has provided optional professional development for teachers at all levels in integration of technology into their curriculum and instruction. Participation, however, has been mixed, varying by subject matter and grade level taught. Focus groups have raised issues about the location, format, and timing of professional development offerings as well as the relevance to other curriculum and instruction initiatives under way in certain schools. Questionnaires administered to all teachers may provide critical information about these concerns that will inform project planning of future professional development.

See also sections on developing questionnaires, analyzing quantitative data, and analyzing qualitative data.

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Observations

General Description. Observation as an evaluation method provides another level of information, reaching beyond the self-report of interviews, focus groups, and questionnaires. Observation means that evaluators are actually viewing important activities, perhaps classroom teaching and learning, professional development sessions, or community meetings. Observations can be extremely focused, e.g., the number of students who respond to a teacher's questions or the type of questions asked by the teacher. Conversely, observations can be fairly open-ended, e.g., examining the type and quality of teacher collaboration in small groups during professional development. Observations are especially useful in documenting learning activities, classroom interactions, application of teacher and student learning to new tasks, engagement of students and teachers in discussions involving higher order thinking, teacher questioning techniques, or student time on task.

Preparation Required. You will need to select the activities, individuals, or groups to be observed, develop the observation protocol, communicate with those to be observed about the purpose of the observation and its use, and arrange a time and location as needed. See example observation protocol.

Advantages. Observations:

- Provide data that reach beyond self-report and thus add credibility to the study.
- Provide essential triangulation of data gathered through interviews, focus groups, or questionnaires.
- Can be designed with a very narrow focus or not, depending on the need of the evaluation.
- Can be designed to yield both quantitative and qualitative data.

Disadvantages.

- Observation protocols can be difficult and time-consuming to develop.
- Reliability of observation protocols across observers can be questionable.
- Teachers and others can feel threatened and "personally evaluated" by observations.
- Observations are time-consuming to arrange and conduct.
- Observers often have at least a minor impact on the event being observed, e.g., quality of facilitation.

Example. A school district project is focused on improving reading achievement of elementary level students. Teachers are participating in ongoing professional development to prepare them for using new instructional materials and strategies. Midway through the first year of implementation, teacher focus group discussions and interviews indicate that many teachers are trying the new materials and strategies, but are becoming disheartened by the student reaction and learning results. Classroom observations at this point in time would provide critical information on the extent to which the teachers are implementing the new materials and strategies as designed, how students are engaging with the materials and strategies, and the extent to which the culture of the classroom is compatible with the new instructional strategies.

See also sections on developing observation protocols, analyzing quantitative data, and analyzing qualitative data.

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Analysis of teacher products/artifacts

General Description. Analyzing teacher products is an evaluation strategy that can yield helpful information and potentially serve to extend the learning and reflection of educators in the process. This strategy involves selection and analysis of teacher products that will shed light on the progress or impact of a school initiative. These products may range from reflective journal entries, focused professional portfolios, videotapes, lesson or unit plans, or student project designs, to designs for courses or presentations. Analysis is generally achieved with the use of a collaboratively designed rubric that addresses agreed upon criteria, or, in the case of written reflections, through basic content analysis. This method is good for measuring teacher attitudes and perceptions; teacher questions, concerns; teacher problem-solving techniques; teacher plans for action or implementation of learning; or teacher application of learning.

Preparation Required. You'll need to identify the products or artifacts to be analyzed and the sample to be used, develop an analysis process, develop a rubric for analysis, prepare educators involved in how to use the rubric, and arrange a time for group discussion/debriefing. See example rubric.

Advantages. Analysis of teacher products is often selected as a way to provide additional information to corroborate data gathered through interviews, focus groups, or questionnaires. Analysis of teacher products:

- Provides data that goes beyond teacher self-report.
- Reveals teacher learning and intentions to apply learning.
- Can be structured and made more understandable through the use of rubrics.
- Can be imbedded in the actual work of the educators, e.g., within professional development sessions.
- If effectively structured in a collegial setting, can model essential openness to feedback and sharing with other educators.
- Can extend the learning of the educators involved in analysis, set high expectations for their work, and promote reflection on practice.

Disadvantages or Limitations. Analysis of teacher products can also be challenging. For example, analysis of teacher products:

- Can be threatening to teachers if the purposes of the project evaluation are not clearly communicated and if they feel that others, including their colleagues, are judging them.
- Development of effective rubrics can be difficult and time-consuming.

- Analysis may be very time-consuming, especially if the quality and organization of products is extremely variable.
- Educators may balk at taking the time to complete reflective writings or logs.
- Analysis of teacher products often provides data about transfer and application of learning as well as intention to apply their learning in ways that may involve significant change in practice; however, such analysis does not yield data about what the teacher actually does in the classroom with students, as would classroom observations.

Example. If a school project is providing professional development for teachers to use technology to enhance student learning in a particular content area, products to be analyzed may include:

- Reflective journals in which teachers share progress, questions, obstacles, successes, and additional professional development needed;
- Lesson or unit plans or descriptions of student projects that illustrate the extent to which and how effectively the teachers are at least planning to apply their learning in the classroom.

See also sections on developing rubrics, analyzing quantitative data, and analyzing qualitative data.

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Analysis of student products/artifacts

General Description. Analyzing student products is an evaluation strategy that can yield helpful information and potentially serve to extend the learning and reflection of educators in the process. This strategy involves selection and analysis of student products that will shed light on the progress or impact of a school initiative. These products may range from content area notebooks, tests, portfolios, to group or individual projects, presentations, or performances. Analysis is generally achieved with the use of a collaboratively designed rubric that addresses agreed upon criteria (ideally shared with or developed with the students). This method is good for providing evidence of student application of learning and skills, use of problem-solving techniques, performance to standards, and use of higher order thinking skills.

Preparation Required. You'll need to identify the products or artifacts to be analyzed and the sample to be used, develop an analysis process, develop a rubric for analysis, prepare educators involved in how to use the rubric, and arrange a time for group discussion/debriefing of findings. See example rubric.

Advantages. Analysis of student products is often selected for triangulation purposes, or to provide additional information to corroborate data gathered through teacher or student interviews, focus groups, or questionnaires. Analysis of student products:

- Provides data that goes beyond teacher or student self-report.
- Reveals student learning and application of learning.
- Can be structured and made more understandable through the use of rubrics.
- Can be imbedded in the actual work of the educators, e.g., within professional development sessions.
- If effectively structured in a collegial setting, can model essential openness to feedback and sharing with other educators.
- Can extend the learning of the educators involved in analysis, set high expectations for achievement of their students, and promote reflection on practice.
- Makes a direct and explicit connection between the project work, often including professional development, to student learning.

Disadvantages or Limitations. Analysis of student products can also be challenging. For example, analysis of student products:

- Can be threatening to students' teachers if the purposes of the evaluation are not clearly communicated and if the teachers feel that others, including their colleagues, are judging them based on their students' achievement.
- Development of effective rubrics can be difficult and time-consuming.

- Analysis may be very time-consuming, especially if the quality and organization of products is extremely variable.
- Analysis of student products often provides data about student application of learning, but does not yield data about what the teacher and students did together in the classroom to lead to that application of learning, as would classroom observations.

Example. If a school project is providing professional development for teachers to use the inquiry process in teaching science, with the goals of increased student learning of essential concepts, use of the scientific process, and development of documentation skills, products to be analyzed might include:

- Results of written tests or oral questioning during student presentations;
- Student notebooks in which individuals are to document initial observations, variables identified, questions or hypotheses developed, data gathered through experimentation, well-labeled diagrams, and conclusions drawn.

See also sections on developing rubrics, analyzing quantitative data, and analyzing qualitative data.

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Student achievement scores and project-developed assessments

General Description. Analysis of student achievement scores is a strategy used more and more by educators with the federal and state accountability systems. For project evaluation purposes this strategy most often involves identifying available and future student data that actually reflect student learning that can be linked to the project work. For example, if teachers are being trained in using mathematics curricula focused on statistics at a particular grade level, you'll want to identify sets of items that reflect the work and track student achievement on these or similar items. Analysis of student test data is used as one measure of student learning resulting from a school improvement endeavor. If existing tests do not adequately reflect the content and structure of what local educators are trying to achieve with students, it may be necessary to devise project-specific tests or other student assessments. It's always wise to have multiple measures of achievement, and to make sure that assessments are consistent with ways students have learned and worked in the classroom.

Preparation Required. You will need to select the appropriate student tests or other assessment tools; ensure access to standardized scores as well as timing of tests and score reporting when necessary; develop and pilot customized student assessments; and determine student samples to be used over time.

Advantages. Student achievement scores and project-developed assessments:

- Provide data that reach beyond self-report and thus add credibility to the study.
- Provide measures of student learning.
- Can be designed with a very narrow focus or not, depending on the need of the evaluation.
- Can be designed to yield both quantitative and qualitative data.

Disadvantages.

- Available student achievement scores may not adequately address student learning targeted through the project.
- Identifying specific test items appropriate for measuring impact of the school project can be difficult and time-consuming.
- It is often difficult or impossible to track individual cohorts of students over time using standardized test scores.
- Examining improvement on yearly tests using a different student cohort each year creates limitations to the claims that can be made about improvements in student learning.

- Customized student assessments can be difficult and time-consuming to develop.
- Reliability of scoring of customized student assessments can be questionable.

Example. A school district project is focused on improving mathematics achievement of middle level students in the area of statistics. Teachers are participating in ongoing professional development to increase their own content knowledge in statistics and to prepare them for using new instructional materials and strategies. Project-developed student assessments may provide useful feedback to teachers as they enhance their statistics work with students. The middle school educators and the district will also be able to track student progress by selecting statistics items on grade 8 state mathematics tests to compare over a period of several years.