Running head: AN EVALUATION TRAINING

An Evaluation Training

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Since the passage of No Child Left Behind (NCLB) in 2001, there has been a vast shift to emphasis on accountability and data driven decisions. It is unfortunate, but, prior to NCLB, numerous educational decisions were made without regard to concrete data or impact on student learning. In the K-12 setting, there are numerous programs for increasing mathematical proficiency, writing across the curriculum, teaching character education, and boosting standardized test scores. Countless hours are devoted to these programs through teacher training and student instructional time; however, little to no effort is given to the evaluation of these programs. Is it worth the loss of instructional time to teach students how to diagram a sentence if the writing examination scores are not improving? This type of evaluation question is not addressed at the K-12 level.

Many evidence-based programs are demonstrated at various professional development venues; however, when implementation occurs, there is uncertainty about whether the program was effective because the program effectiveness was not evaluated in order to determine effectiveness. The purpose of this paper is to explain how to develop a plan for program evaluation without statistical jargon in order to evaluate instructional programs.

When planning for a program evaluation, a series of topics should be addressed prior to program implementation to assess the full impact on student learning. The steps include (a) meeting with all stakeholders, (b) identifying evaluation purpose, objectives, and questions, (c) determining the evaluation design, (d) collecting the data, (e) analyzing and interpreting the data, and (f) reporting the findings.

Meeting With All Stakeholders

If the evaluation team was external to a school system, the following procedure would be followed. For application purposes, each procedural step will be illustrated with a hypothetical secondary mathematics curriculum which the evaluation team has been hired to evaluate.

1. Meet with the superintendent of schools and the local school board during a caucus meeting to discuss curriculum implementation and evaluation.

2. Meet with the curriculum director at the local county office to discuss curriculum implementation.

3. Meet with school principal to discuss general school culture and plans for curriculum implementation (e.g., professional development and textbook adoption).

4. Meet with the assistant principals and registrar to discuss scheduling and personnel, which may pertain to curriculum implementation and evaluation.

5. Meet with the mathematics teachers to discuss curriculum implementation and evaluation.

6. After the initial meetings, contact the program developer to obtain a copy of the curriculum and other evaluations.

7. If available, contact persons at other school systems who have implemented the mathematics curriculum to get their perspective and possible program evaluations.

8. Search the literature for studies using the mathematics curriculum or similar curricula.

9. Review the curriculum, program evaluations, and literature. Determine if the curriculum aligns with the state and school system's standards and National Council of Teachers of Mathematics (NCTM) standards.

By following these procedures, the evaluation team can determine the target population, assess

the current needs, determine the rationale for the evaluation, clarify intended outcomes, and

assess stakeholders' reaction to the intended program (Killion, 2002).

Identifying Evaluation Purpose, Objectives, and Questions

Continuing with the illustrative example, the local school board and superintendent have

requested an evaluation of the mathematics curriculum. During the planning phrase, a logic

model will be created by the stakeholders. See Figure 1 for the logic model example. From the

logic model, the evaluation questions can be formulated (Fitzpatrick, Sanders, & Worthen,

2004). Using our curriculum implementation example, to assess the implementation activities,

one of the evaluation questions could be "Have professional development sessions, conducted

with the implementing teachers, promoted a successful curriculum implementation?" An

example of an evaluation question to assess one of the long-term outcomes could be "Have

Graduation Exit Examination: Mathematics Subtest scores changed in comparison to scores

before implementation?"

Figure 1

Logic Model for a Secondary Mathematics Curriculum Implementation
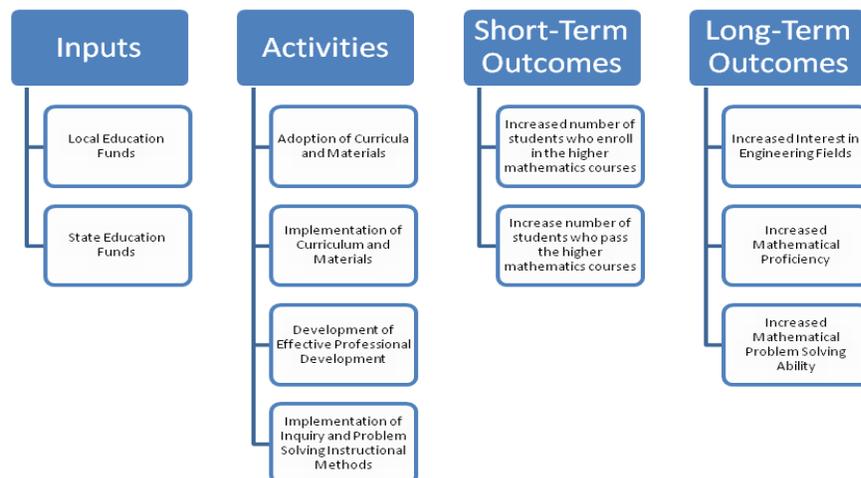
Determining The Evaluation Design

      Formative versus summative. Formative Evaluations are used to determine the quality of

a program or to improve a program by providing the program staff with feedback. With a

summative evaluation, the purpose is to determine the quality of the program; however, it also

serves as a method to make decisions about the future of the program. Usually, formative

evaluations are conducted by internal evaluators, and summative evaluations are conducted by

external evaluators (Fitzpatrick et al., 2004).

      For example, with our implementation of the mathematics curriculum, a formative

evaluation could assess the attitudes and instructional methods of the teachers by monitoring

professional development workshops and weekly classroom observations. The midterm

benchmark examinations could provide formative evaluation information during the academic

year. All of these examples could provide ongoing feedback about the curriculum

implementation process. A summative evaluation could include assessment of the students'

mathematical proficiency with the final benchmark examinations. Other summative evaluations

could include the results of the state's graduation exit examinations and the Advanced Placement

Calculus Examination. These assessments evaluate the long-term outcomes of the curriculum

implementation or the impact on student learning.

Designing The Evaluation Plan

      Design. There are various designs, both causal and descriptive, can be considered when

designing an evaluation plan. These designs include time series, cross-sectional, and case study.

A time series design may show trends in the data over a period of time. A cross-sectional design

may be used to assess the public opinion of the program. A case study may be used to describe

and analyze a targeted program, process, or procedure. Often, evaluation teams use the data to

determine if changes occur as a result of an intervention. With the mathematics curriculum example, a student sample with similar characteristics will be selected to serve as a comparison with the intervention group (Fitzpatrick et al., 2004).

Collecting the data

Using the curriculum evaluation model as an example, the longitudinal study will occur over a 5-year period and will have a time series and cross-sectional design. The secondary curriculum will be implemented in phases, which begin with Geometry and continue through Advanced Placement Calculus. To determine the amount of mathematical proficiency, the students who enroll in the course during the year prior to curriculum implementation will take both of the benchmark examinations (mid-term and final). The scores from these students will be compared with the scores from the intervention students. For example, Tables 2 and 3 display the timeline for assessment and data collection.

Beginning with Year 1, the new curriculum will be implemented in all Geometry classes. For summative evaluations, a final benchmark examination will be given every 9 weeks to assess mathematical proficiency based on course content and performance standards. As a source of comparison, the students who are enrolled in Algebra II will be assessed using the two benchmark examinations (mid-term and final). For Years 2, 3, and 4, the same assessments and information will be collected as the curriculum is phrased into the remaining high school courses. Other data collections from the Registrar's Office will include 9-week grades and attendance for each implemented course.

One of our evaluation questions was "Have professional development sessions, conducted with the implementing teachers, promoted a successful curriculum implementation?" To collect data for these activities, at each professional development workshop, all participants

will complete an exit survey to determine the effectiveness of the session and to determine future

professional development needs. To monitor the application of information gained during the

professional development workshops, weekly informal observations using a checklist will

monitor the implementation process in the classroom. One of the following people will conduct

these observations: School Principal, Assistant Principal, Curriculum Director, or Assistant

Curriculum Director.

A formative, or process, evaluation will be conducted to assess the attitudes and

instructional methods of the teachers throughout the implementation process. A demographic

survey will collect information regarding education level, certification areas, and years of

experience in public education. Qualitative interviews with the implementing teachers will

ascertain their perceptions and gather feedback for program improvements. The series of

interviews will be conducted during pre-planning, mid-term, end of the course, and post-

planning. Since adults are more likely to reject the new knowledge that contradicts their beliefs,

the information gathered during these interviews will evaluate existing knowledge, beliefs, and

motivations and will determine the extent to which the implementing teacher have ownership in

the curriculum implementation process (Klingner, Ahwee, Pilonieta, & Menendez, 2003).

Table 2

Implementation Schedule and Evaluation Instruments for Each Year by Course.

	Geometry	Algebra II	Pre-Calculus/ Trigonometry	AP Calculus
Year 0	**Comparison Assessments:** Benchmark Examinations			**Data Collection:** Results of AP Calculus Examination
Year 1	**Implementation:** Geometry Curriculum **Assessments:** Benchmark Examinations	**Comparison Assessments:** Benchmark Examinations		**Data Collection:** Results of AP Calculus Examination
Year 2	**Assessments:** Benchmark Examinations	**Implementation:** Algebra II Curriculum **Assessments:** Benchmark Examinations	**Comparison Assessments:** Benchmark Examinations	**Data Collection:** Results of AP Calculus Examination
Year 3	**Assessments:** Benchmark Examinations	**Assessments:** Benchmark Examinations	**Implementation:** Pre-Calculus/ Trigonometry Curriculum **Assessments:** Benchmark Examinations	**Comparison Assessments:** Benchmark Examinations **Data Collection:** Results of AP Calculus Examination
Year 4	**Assessments:** Benchmark Examinations	**Assessments:** Benchmark Examinations	**Assessments:** Benchmark Examinations	**Implementation:** AP Calculus Curriculum **Assessments:** Benchmark Examinations **Data Collection:** Results of AP Calculus Examination

Table 3

Evaluation Schedule and Instruments for Each Year by Stakeholder

	High School Graduates	Implementing Teachers	Professional Development Participants
Year 0	**Data Collection:** Results of Graduation Exit Examination: Mathematics Subtest	**Assessments:** 1. Qualitative Interviews: Pre-planning, mid-term, end of course, and post-planning 2. Weekly implementation monitoring checklist 3. Demographic Surveys	**Assessments:** Exit Surveys
Year 1	**Data Collection:** Results of Graduation Exit Examination: Mathematics Subtest	**Assessments:** 1. Qualitative Interviews: Pre-planning, mid-term, end of course, and post-planning 2. Weekly implementation monitoring checklists 3. Demographic Surveys	**Assessments:** Exit Surveys
Year 2	**Data Collection:** Results of Graduation Exit Examination: Mathematics Subtest	**Assessments:** 1. Qualitative Interviews: Pre-planning, mid-term, end of course, and post-planning 2. Weekly implementation monitoring checklists 3. Demographic Surveys	**Assessments:** Exit Surveys
Year 3	**Data Collection:** Results of Graduation Exit Examination: Mathematics Subtest	**Assessments:** 1. Qualitative Interviews: Pre-planning, mid-term, end of course, and post-planning 2. Weekly implementation monitoring checklists 3. Demographic Surveys	**Assessments:** Exit Surveys
Year 4	**Data Collection:** Results of Graduation Exit Examination: Mathematics Subtest	**Assessments:** 1. Qualitative Interviews: Pre-planning, mid-term, end of course, and post-planning 2. Weekly implementation monitoring checklists 3. Demographic Surveys	**Assessments:** Exit Surveys

Analyzing and Interpreting the Data

With most program evaluations, data analysis includes basic descriptives, which include means, standard deviations, ranges, frequency counts, and percentages; however, it depends on the audience of the evaluation. Using the curriculum example, descriptives will assess exit surveys from the professional development workshops, weekly observations, 9-week grades from courses, and class attendance. After the initial descriptives are assessed with the graduation examination, benchmark examinations, and the Advanced Placement Calculus Examination, a repeated measure analysis of variance will be conducted to determine if level of mathematical proficiency has changed across implementation years and across grade level and group. One of the components for evaluating the implementation activities was teacher interviews before, during, and after the implementation year. To analyze this data, the qualitative interviews will be collected and analyzed using the grounded theory approach.

Reporting The Findings

The results of the evaluation plan for the example mathematics curriculum will be reported to the school faculty each semester as a formative report and during the pre-service faculty meeting as a summative report. Once a semester, the evaluation team will meet with the Superintendent individually and with the local school board during a caucus meeting. Afterwards, an annual summative report will be presented at a public school board meeting. The expected findings include improved mathematical proficiency as the curriculum was implemented. In addition, the evaluation team would expect to see increased graduation exit examination scores in mathematics and Advanced Placement Calculus Examination scores, and successful curriculum implementation from the staff members' point of view. Table 4 displays the suggested headings for an evaluation report.

Table 4

Section Headings for Annual Evaluation Reports

Context
Needs Assessment
Objectives
Method
Participants
Intervention
Description
Procedure
Process Evaluation
Reach
Dosage
Fidelity
Outcome Evaluation
Design
Data Course/Measure
Data Collection Procedure
Data Analyses
Results
Discussion

Summary

The purpose of this paper was to provide an overview explanation of an external program evaluation. After completing the six steps outlined in this paper, the K-12 professional will have evidence to facilitate the program implementation process and to decide if the program positively impacted student learning.

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