

34. External Evaluation

Joseph Kolar

Evaluation Philosophy

There are two principal ways to approach program evaluation: the traditional model and the participatory model. The *traditional* model involves an evaluator, employed as a third-party objective observer, who collects and interprets quantitative and qualitative findings and presents the information. A scientific paradigm focuses on the quality of the data collected, and an evaluation is considered valid to the extent that it meets specific standards of methodological rigor. In the *participatory* model, all the stakeholders in the program are engaged in a process to increase their evaluation skills and knowledge and the likelihood that the evaluation findings will be used. Because this approach to evaluation involves the people who are involved in the program, these investigations may be less objective by the standards of the scientific paradigm; however, they are valued because they improve the analytical capacity of the program participants and increase the likelihood that evaluation results will be used to refine and improve programs.

My methodology blends the participatory and traditional models, using both quantitative and qualitative data and a variety of methods and procedures to solicit as much information as possible, with an overall focus toward ongoing program improvement. Both formative and summative evaluations are employed, using established criteria with an emphasis on continuous feedback from everyone involved. It is important to quickly identify concerns, issues, or problems and find means to eliminate or minimize them (*Selecting an External Evaluator*, n.d.). My primary role is to observe all the aspects of the grant, its progress and process; review all products and results; help identify what is going well and what may need to be improved or changed; and then work with the key project personnel, program leaders, and participants to generate solutions. It has been noted that “the task of evaluators is to walk the line between solid preparation and flexible responsiveness to whatever situations may arise” (*Sample Evaluator Questions*, n.d., p.1). I listen to all parties and make it a practice not to include my opinions in the interview process.

Evaluator Process

Site visits occurred during workshops, industry tours, panel discussions, planning meetings, classroom module delivery to students, module writing sessions, feedback sessions, articulation roundtables, and other venues. Upon beginning, I introduced myself, stated that I was the external evaluator (EE) for the project, and tried to blend into the activities. During this interview, if anyone attending the activity felt that there was a problem, I expected them to discuss it with me. Within a week of a visitation, the pattern was to write to the principal investigator (PI), inform her of my observations, and end my correspondence with “Evaluator Comments.” However, whenever need arose, we discussed issues or met. Participants seemed

to be comfortable with my presence, freely discussing the events, their feelings, and the perceptions of outcomes at each event.

Design

The project employed a rigorous system of assessment, feedback, and evaluation activities. Sometimes a fine line separates these activities. Assessment was used to determine or confirm how the program was progressing for participants: performance assessment to determine if participants were gaining the planned knowledge and skills, and feedback to help participants understand where they were in the development or achievement of their goals throughout the entire program. Products were then evaluated. Assessment was more formative in that it enabled project leaders to identify needed changes along the way by event or specific process; evaluation was more summative in nature. Formative and summative evaluation were used to determine the level and merit of accomplishment at particular points. Both teacher assessment and program assessment helped to assure a positive evaluation outcome. Program content was determined by pre-assessing the teachers' self-perceived and self-analyzed level of knowledge and skills. By assessing each program activity or event and its outcomes, and participants' products and performances, program success was determined. If it was successful, teachers increased the knowledge and skills they wanted to learn. So, there was interaction between two types of ongoing assessment, teacher and program, as well as both formative and summative evaluation. Each type of assessment led to critical feedback from which judgments were made about changes.

Formative evaluation occurred each year at the program's end. Culminating teacher performances and products were evaluated, and the program was evaluated as well. The ongoing assessment was formative, while the end-of-year evaluation also served as formative and to determine if any changes should be made from year to year. Finally, a summative evaluation, an NSF requirement, occurred to consider the questions of value added for "intellectual merit and broader impacts."

Data Collection Methods and Procedures

Questionnaires

Administrator: Administrators were initially surveyed to determine priorities and support levels. Programmatic adjustments were made as necessary. Some minor adjustments were required. For example, teachers were not allowed to be absent from school for institute days; therefore, a weekend was substituted for the intended weekdays.

Teacher: Teachers were surveyed regularly at each workshop, event, or activity, after their pilots, at the end of most years, and at the end of the project.

Student: Students were surveyed at the end of the module pilots. This data was not used because not all teachers followed through; therefore, it was not possible to draw reliable conclusions. However, most of what was collected indicated positive feelings on the part of the students about the modules.

Observations

Classrooms: External observers visited classrooms, unannounced, to gather information and initial perspectives about teaching skills, knowledge, use of technology, classroom management, teaching and learning practices, and more. This information was used to construct an initial picture of strengths and general areas of potential improvement across teachers and classrooms. This was shared with individual teachers, and a composite report for the whole group was shared as well. Teachers then used the information in their self-analyses and the goal development of their professional growth plans. They reported that this was an insightful process exhibiting great respect for care taken with confidentiality.

Workshops, events, activities: I visited, unannounced, and observed workshops, events, and activities. Reports were filed with the PI. Since they were very positive, there was little need for problem resolution; however, the standard practice was to discuss each observation to connect more deeply what could be improved for the next round of offerings.

Module evaluation: I participated in all module evaluation, with evaluation teams, observing the process of reviewing each module and providing input.

Module pilots: Teachers and teams were observed by an external key project person during the module pilots. Observations were shared with teachers, followed by discussions about what to change. (See Table 1 for the sampling of workshops observed.)

Interviews

Administrators: The PI interviewed administrators periodically to determine if the project was progressing as planned. This did not occur as often as planned because district turmoil resulted in a lack of cooperation by some administrators.

Teachers: Each year, I interviewed teachers at two levels: informally during workshops and other events and then again at an exit interview.

Project personnel: I interviewed program leaders and key project personnel throughout the grant period.

The interview was critically important for the evaluation process. Through interviews, participants provided greater insight and depth about information gathered from the surveys. When participants had responded to the general questions, I asked more specific questions, ending with, "Do you have any suggestions to improve this activity or the overall project?"

This question opened the floodgates. Interviewees informed me about boring food, incompetent administrators, poor working conditions, union negotiations, teacher strikes, layoffs, contracts, judicial mandates, overwork, and an infinite number of other concerns that were not always related to the project. I filtered all responses and reported issues germane to the project. Allowing teachers to openly provide information built a level of trust, developed an avenue for venting, and allowed the interviewees to discuss any issues. The openness of our exchanges enhanced my acceptance as a full participant in their endeavor.

Teachers had many good ideas on what made the project better, although some suggestions were specific to the classroom not the project. The important suggestions were forwarded to the PI, who in turn shared the information with a variety of different audiences involved in delivering the program. Many ideas were implemented. I formally presented the ideas to the PI

and sometimes unofficially made suggestions and provided information on possible improvements after observations.

Product Review

I reviewed and evaluated all project products, data, results, and information.

Student Achievement

There was a pattern of significant student gain during the module pilots. The first year's pilot design included control groups. When comparisons were made between the control group's and the experimental group's achievement, the pattern of growth by the experimental group was remarkable. However, only one year included a control group, so no direct conclusions could be made that the treatments were the cause of the gain with the experimental groups during the subsequent years. But it is possible that the new practices, strategies, models, techniques, assessment procedures, teaching models, and partnership activities contributed to the gain.

Administrator or District Priorities

The district's priorities for teachers could change overnight. For example, one year the district mandated that all teachers had to focus on reading in their curriculum. Program leaders quickly adjusted and incorporated reading across the curriculum as an additional standard in the culminating module. Thus, it is important to conduct an annual needs assessment from the administrative or district perspective and infuse that information into the program as much as possible. That was never a problem, but rather served to make the program even more relevant by showing teachers how they could integrate other content, process, or skill agendas with very little difficulty.

Participant Achievement Evaluation

Teacher pre-assessment

At the beginning of each project year, participants were assessed on their needs and how they felt about program priorities. Priorities had already been established and were based upon an initial needs assessment. However, major changes in personnel and district priorities often occurred over summers, especially during these years of high turnover and retirements. Each new group of teachers was asked to participate in a self-assessment and an analysis of strengths and areas to improve to identify professional learning needs and to prioritize them. As part of this process, they were asked to study the state teaching standards and state student learning standards and to identify where they needed to extend knowledge and skills. They then participated in an initial workshop with program leaders and identified discipline-specific needs, wishes, or desires for learning.

Although this was a qualitative process, it resulted in an understanding and focus by program leaders and teachers. Usually, this process simply confirmed the originally planned program, often extending it to include greater depth, breadth, or additional types of in-service education. It was possible, through a number of creative strategies, to extend the program offerings each year.

Using any type of formal quantitative or traditional knowledge testing was not usually possible with teachers for two reasons: (1) testing teachers in any way was intimidating to the point that a majority would drop out, and (2) project personnel did not want to be perceived as evaluating teachers in any way, with the exception of project products, and even that had to be sensitively and carefully completed. Therefore, the PI and program leaders involved teachers in a self-study of their knowledge and skill levels by engaging them in an analysis of standards and content requirements (i.e., benchmarking) and then joined them in a self-discovery process that led them to identify what they needed. It was important to assist them in becoming comfortable with “not knowing” and, beyond that, in becoming comfortable with openly stating what they did not know to others. The teachers’ analyses usually confirmed what was planned. When teachers began to realize what could be accomplished and that it was okay to request particular knowledge, process, or skill development, they often became excited and asked the PI to extend the program. Teachers were also exposed to a variety of careers across business and industry sectors, including community opportunities and higher-education requirements (i.e., educational pathways to careers). This exposure helped teachers to explore what they needed to learn more about and what would be expected of their students in communities of practice and higher education. The culminating activity for teachers at this stage was to develop a “learning plan,” which was possible to achieve within the overall professional development program. Because teachers were “pulling” the program versus project leaders “pushing,” program leaders often responded to their requests by incorporating new content, adding more depth, or eliminating some aspects. Once teachers felt that project personnel were partners and that they could participate in the leadership, they became “seekers” of learning. For the pilot of this particular endeavor, the teachers agreed to unannounced external visits to their classrooms by the evaluator to gain an objective perspective about what others perceived was going on in their classrooms. This data was collected and shared only with the observed teachers and the PI. This process served to establish an objective baseline perspective about strengths and areas needing improvement to add to their own self-studies. The teachers unanimously agreed that this process was insightful and very helpful when they began their self-study. Although this strategy was used only once, for the one year as an extended pre-assessment activity, this segment of the program really worked with and for teachers.

Teacher assessment

There was no traditional assessment to measure teacher progress throughout the program, but the project and program leaders used performance assessment in a number of ways (performances, products, processes, and technologies). All workshops and activities were parts of the whole development. Each workshop, event, or activity provided teachers with new information, models, strategies, processes, techniques, procedures, tools or skills; teachers were then responsible for incorporating these into new integrated, interdisciplinary mathematics, science, technology, and English curriculum modules. These modules were built progressively while participating in program events and included both content and process (e.g., new models, teaching/learning strategies, and techniques, etc.) to pilot in the classroom with students. Teachers worked together as interdisciplinary teams or as individuals responsible for integrating the interdisciplinary requirements and then delivering them in a variety of ways. Performance

and products were assessed at each workshop, activity, or event that had deliverables to confirm progressive growth by the teachers. Most teachers were highly committed and spent a great deal of time between events working on segments of the products. There were measurable performance, process, product, and technological outcomes. These were identifiable and could be assessed and evaluated.

Teacher feedback

Teachers received feedback about their progress at each stage, so they could then modify aspects along the way. This ongoing assessment with immediate feedback usually ensured high-quality products and performances. If having difficulty, teachers could seek further assistance. Although most used the feedback to revise their work, some either chose to ignore the feedback or waited so long to make changes that they forgot what it involved, even when written feedback was available. Generally, an average of 55-70% were highly committed and produced higher quality and useful educational products, also performing well. Another 25-45% were outstanding in the quality of their performances and product development. Finally, on an average, 0-5% participated for the wrong reasons and did not produce what was expected. We could not expel them from the program for political reasons. Thus program leaders tried very hard to motivate them.

First-year participants sometimes became involved in a staff development/curriculum project for the money. They assumed that they would be paid whether they did a good job or not. The 0-5% non-productive group did not often choose to continue beyond the initial year of participation.

Program Evaluation

Program pre-assessment

A district needs assessment related to teaching and learning was executed to prepare the project proposal. Evidence suggested that mathematics, science, and technology education needed improving and also reforming. The program was designed to engage Rockford's teachers in new teaching and learning practices, strategies, models, techniques, and procedures; to assist them in the development of partnerships with local education, business, industry, and community organizations to make learning more relevant and purposeful; to integrate curriculum across MSTE, also infusing information about careers and educational pathways to those careers; and to use performance assessment along with improved traditional assessment.

Program assessment

Program assessment occurred at every workshop, activity, and event. There were survey questionnaires that all participants completed for each event. This was the initial level of information. Participants consistently rated the activities and program leaders so highly that one could have justified not assessing at a deeper level. However, good qualitative data and research processes can provide the "why" and often the "how" to why things are going well or to why they need to improve or change.

Therefore, the process always involved external observation and interviewing. I determined which workshops, activities, or events to observe. This resulted in feedback to the project personnel and program leaders. I informally interviewed to gain deeper insight beyond that provided by the simple state-required surveys. Often the most insightful information gained was when teachers identified “what else” they would like to learn about.

Finally, program assessment also occurred based upon how well the teachers performed and delivered. A holistic picture was drawn from analyzing the level of performances and deliverables. There were three typical reasons for teacher failure: (1) they attended for the wrong reasons with the wrong attitudes, (2) they did not use the feedback to make important changes in their deliverables, or (3) they did not come to sessions prepared or with particular work completed. Overall, 95-98% of the teachers responded very positively; they worked very hard to learn as much as they could and deliver high-quality performance and product. They were usually very excited about producing something that was practical and best-practice based. They were appreciative of producing something that had rigor and could be used immediately to engage students in relevant learning.

Program feedback

The survey questionnaire data from each event was compared with the data from the observations and teacher participant and program leader interviews. This allowed me to triangulate the qualitative data for a deeper level of information. The surveys gave a very general picture; the interviews of the participants and program leaders added depth and more definition and more clearly identified what might need to be changed, enhanced, or extended.

Program evaluation

The project was organized to achieve eight major objectives:

1. Provide in-service education and training on a variety of targeted content and skills
2. Provide in-service training to district administrators and counselors on change, reform leadership, and strategic planning
3. Partner with local industry, community organizations, and the community college
4. Externally evaluate all activities through ongoing assessment, feedback, and formative and summative assessment
5. Produce a systemic reform model aimed at improving mathematics, science, technology, and English education through industrial and educational partnerships
6. Develop teacher skills in the use of computer technology for teaching and learning
7. Develop teacher skills in working with students to develop postsecondary and career goals
8. Develop long-term sustainability and continuous improvement plan

Evaluation outcomes

All but one of the objectives was accomplished. The in-service education exceeded all expectations. The PI recruited funding to extend the program beyond its initial level and number of activities. She was able to build the program into several levels of in-service programming and

piloting; each year the initial or base level program was offered to new participants as planned, and then veteran participants could return for greater depth and additional staff development opportunities. With each advanced level, participants followed through with piloting. This developed knowledge and skills to a much greater breadth and depth and enhanced sustainability.

The district engaged in intense training for reform leadership and strategic planning; therefore, it would have been redundant to require administrators to participate in a similar activity. Instead, this objective was met by the district and was determined to be a match. However, the district was in such political turmoil and had experienced such great turnover at all administrative and teaching levels that it was really impossible to get much administrator cooperation beyond that required. The partnership between the district and its local community college was enhanced. The connections are expected to last beyond the grant period. Teachers responded well to the professors and were excited by their workshops and the prospect of future collaboration.

The business and industry and community (BIC) organizations provided overwhelming support, with more than 300 organizations participating over the grant period. Teachers had a minimum of three and up to five days in local companies or community organizations annually. This aspect of the program was exceptional in every way. The ability of the industrial liaison (IL) to work with organizations to help them understand what they could provide resulted in companies offering more extensive and higher quality experiences. The IL made suggestions; she also coordinated what teachers needed based upon the learning standards chosen as the basis for their modules, as well as their backgrounds, and then worked with them to schedule the experiences. Having an IL presented teachers with much greater opportunity in the broader sense, provided experiences during which they could deepen their knowledge, and also gave them real-world problems around which to build their student performances and problem-based curricula. The teachers connected with partners for the long term and felt more comfortable and confident requesting help from them. At the beginning of each project year, an industry/articulation activity was scheduled for all participants. Stakeholders from both Rock Valley College (RVC) and Northern Illinois University (NIU) met with an industry panel to better understand the needs of business and industry. Relationships blossomed into teacher visits, guest speaker invitations, module development, classroom interaction, student field trips, equipment donations, and the opportunity for the BICs to provide better services to educators and students.

Teachers were especially excited about the knowledge, skills, variety of disciplines, research interests, and approachability of their community college and university partners. Teachers felt much more connected to their regional university and local community college, becoming aware of the vast resource network available to them. The professors were interested in continuing their relationships with teachers after the grant period, and the teachers felt comfortable emailing or calling to request support.

All aspects of the project were externally evaluated. A systemic reform model was designed, developed, and evaluated as successful. Teachers received computers, printers, scanners, and digital cameras. They were trained on the hardware and a variety of software packages and were then motivated to use the technology for learning and producing educational products and

processes. In fact, the teachers asked for more types of technology and software training, which were also delivered.

Teachers included careers and educational paths to careers in their newly developed curriculum and, during the pilots, worked with students to plan educational paths toward targeted career clusters. The duration of the project was not long enough to achieve measures of the number of students entering the community college or choosing technical careers.

The ongoing political turmoil in the district prevented the administration from developing a definite long-term sustainability plan. However, the new superintendent was a great supporter of this initiative. The teachers themselves provided strong evidence of sustaining their own changes. They were offered more than one year of training and piloting; many were able to participate in three or four years of development, with two to three years of piloting new curriculum, strategies, models, techniques, and technology with students. This changed the potential for sustainability in the classroom, so even though the district's political turmoil could delay the long-term sustainability of the district models, most of the teachers seemed to have moved into long-term sustainability of their new products and best practices. These teachers were seeking ongoing development. That is exactly where key project personnel planned for the project to be phased out and the district to continue. The RPS Board of Education was impressed with the initiative's outcomes and after receiving final documentation was to consider sustainability action.

One aspect of the program failed to meet expectations. One year the industrial liaison tried "clustering" teams and visiting industry sectors with all teams, as a new model to simplify coordination. However, teachers were not as satisfied, largely, we think, because the preparation did not change with the experience. The model should work well with appropriate preparation.

Teachers overwhelmingly reported that they had extended their knowledge, implemented major changes in their instructional strategies, begun to use performance assessments and rubrics, built integrated MSTE career-focused curricula that had rigor and were standards based, and learned to use computer technology for teaching and student learning, to name just a few of the major outcomes.

In addition:

1. Teachers changed their attitudes about education: teaching, co-teaching, working with counselors, using technology, working with low-performing students, using new strategies and curricula, and much more.
2. We saw evidence that teachers would sustain the improvements in MSTE education. However, it was impossible to determine if the systemic staff development model would be sustained.
3. All curricula and instructional decisions (within project parameters) were now based on state teaching and learning standards, largely due to this initiative.
4. Student pretests and posttests showed significant gain in learning. Although not formally used as measures, the performance assessments suggested that students made significant gains.
5. It was not possible to measure change in parental attitudes or numbers of students moving into technical careers.

Observed changes in participants

One of the goals of MSTE was to change the way education was delivered to students. Participating teachers were exposed to a myriad of models, strategies, etc. designed to encourage the use of alternative methods of instruction. Participants exhibited increased skills in developing curriculum, planning lessons, using rubrics, creating standards-driven objectives, and using a variety of teaching models to engage students in learning. Additionally, they were inspired, motivated, and confident in their ability to alter daily instruction from traditional direct delivery. Many teachers stated that their experience in this initiative had been their most stimulating and professionally enriching career activity.

Critical Personnel Factors

Principal investigator or project director

The PI was intensely involved in every aspect of the project. The PI wrote numerous grants based upon the premise of interdisciplinary delivery of mathematics, science, and technology/career/vocational and English education. All of the grants included the use of an external evaluator.

Below is a sampling of the expertise needed by the PI and EE:

Knowledge: interdisciplinary teaming models and processes; project management; leadership, theory, and application; staff development strategies; best educational practices, research and evaluation methods and procedures; technical backgrounds

Abilities: to motivate others, to build self-esteem and confidence, to build knowledge and skills, to establish standards, and to hold others accountable

Skills: organization, management, leadership, interpersonal, and technological skills

Attitude: to encourage, praise, build self-esteem, instill confidence and ownership, and be positive, flexible, and questioning

Project co-directors

Co-directors of such a project need to understand their opportunity to lead aspects of the project and contribute as full and equal members rather than wait to be directed. This was an opportunity to be part of the design team, to be able to design opportunities for college professors and teachers that had never been attempted, as well as to adapt some that were successful in other communities. The co-directors relied on NIU's leadership, even though NIU encouraged local leadership and educational partners.

Administrative relationships

The PI and co-directors must have a close working relationship. If the key administrators design aspects together, work closely together, and feel comfortable putting issues on the table for open resolution, there is a much greater opportunity for success.

Key Personnel

Each individual involved in the content and delivery of the program must be knowledgeable about the overall goals of the initiative. Workshop presenters were well prepared, followed an outline of activities, distributed useful information using both hard copy and websites, provided information for ongoing contact, and exhibited a command of the subject content. The effectiveness of the workshops, scheduled at appropriate times during the development process, was crucial to provide information essential to teacher development. All key project personnel were effective. Participants rated all project personnel excellent or superior.

Critical Factors about Teacher Participants

Teachers come to a project with great differences in perspectives, backgrounds, motivations, and purposes. It is important to understand:

Purpose: A few teachers joined for the technology, stipends, and graduate credit of continuing professional development units (CPDUs) toward certification renewal. Most, however, joined because they genuinely wanted to improve their teaching and student learning.

Expectations: Some teachers expected to be paid for every hour of involvement; even when they did not complete something in a workshop, they requested pay for the extra hours it would take them to finish it at home. Most, however, understood that workshops were set up on averages, with time for assistance and work built in, and that it was their professional responsibility to come to the subsequent sessions with work completed so that they would be prepared to continue their developments in the new sessions.

Attitude: Some of the teachers felt that they were entitled to all the technology, stipends, graduate credit, and CPDUs if they just sat in on the activities. They did not want to be held accountable for performances and product completion. However, the greater majority desired to learn what they could to make themselves better teachers and to increase student achievement.

Insecurities: When working toward complex reform in districts that have issues, there are unexpected and hidden dynamics that can be great challenges to the project leadership. Teachers who feel very insecure when learning something new or who feel that they should already know something exhibit a defensive attitude that is difficult to work through. Some districts have become punitive in nature or at least have conditioned teachers to become invisible, when what should be desired is to have them knocking on the door every day asking for support. Teachers in politically charged districts may also fear success because they may be penalized by their peers if they are recognized for succeeding with students or as professionals. Some of our participants seemed to share these concerns, and project leaders had to find ways to build their self-esteem, confidence, professionalism, and willingness to shine as leaders.

District Climate: The Rockford Project

The project was successful in spite of a politically charged environment. There was limited support from the central administrative office and principals. The PI was determined to overcome challenges by motivating and working with the teachers and administrators. The grant exceeded its goals, with the exception of getting the administration to develop a long-term sustainability plan. The responsibility of long-term sustainability lies with the district leadership. Teachers cannot be held accountable for district-wide sustainability.

Overall Project Merit and Broader Impact

The greater impact of this project will result from the potential to learn from it and replicate it. Its results have intellectual merit, as exemplified by the models, program, strategies, philosophy, results, and outcomes, clearly speaking to others who may be seeking a more holistic approach to staff development for increased student learning and achievement. In this approach teachers pull the program, seeking to build more knowledge and skills and deepen their professionalism and commitment. It is well worth replicating in part or in whole.

Recommendations

All parties interested in improving education should examine this project carefully. Key events and indicators are guides in ensuring that the change process is effective:

1. Teachers involved must be challenged, and their comfort zone must be disturbed.
2. The administration has to be willing to block-program students and teachers if initiating a team structure.
3. Funding is required to attempt the change process.
4. Participants need support and nurturing.
5. District, university, or community college administration must support and strongly encourage participation, modeling through their own participation.
6. All investigators should become familiar with the wide range of literature confirming and informing the need such an initiative seeking to improve student achievement in MSTE and motivating them toward technical careers.
7. Teachers are not held accountable at the same level when not involved in a project.
8. Excellence in teaching is primary to classroom management and vice versa.
9. Program leaders model best practices.
10. For districts in turmoil, five years are required for institutionalization or sustainability to be achieved.
11. Explore the Online Evaluation Resource Library, <http://oerl.sri.com>, a resource for professionals seeking to design, conduct, document, or review project evaluations. OERL's mission is to support the continuous improvement of project evaluation.
12. A PI with appropriate qualifications is critical to success.
13. External funding is very helpful.
14. The collaboration of business/industry community organizations is a must.

15. Piloting a similar endeavor before attempting full implementation is advisable.
16. Reviewing professional literature on all teaching/learning concepts as well as other topics included in the program is helpful.
17. Developing a standards-driven approach to curriculum and process development is essential.
18. School districts need to team with higher education partners.
19. Stakeholders need to thoroughly understand the goals of such a project.
20. Parties should never lose sight of the purpose of education, the development of lifelong learners who contribute to society

This initiative began in 1997, with NSF funding for the final three years. Unfortunately, OERL was not available at the time, but the evaluation process used was confirmed when the resource became available. The information presented in the OERL was used to benchmark the processes used in this project. Table 1 lists OERL procedures and methods of reporting evaluation data and a description of the methodology followed in this project.

OERL lists areas of standards for program evaluation:

Utility Standards: intended to ensure that an evaluation will serve the information needs of intended users.

Table 34.1 OERL to MSTE Methodology Comparison

	S=Similar procedure followed	
OERL		Strategic Alliance
Reports -2 types		Reports -2 types
1. Progress report-formative information and recommendations	S	1. Progress report-formative information and recommendations
2. Final report-summarize qualitative and quantitative data	S	2. Final report-summarize qualitative and quantitative data
Plans -2 types		Plan
1. Embedded	S	Embedded-Included within NSF Proposal narrative
2. Stand-alone		
Instruments		Instruments
1. Questionnaires	S	1. Questionnaires
2. Surveys	S	2. Surveys
3. Interviews	S	3. Interviews
4. Assessments	S	4. Assessments
		5. Event and Site visitations

Feasibility Standards: intended to ensure that an evaluation will be realistic, prudent, diplomatic, and frugal.

Propriety Standards: intended to ensure that the evaluation will be conducted legally, ethically, and with due regard for the welfare of those involved in the evaluation, as well as those affected by its results.

Accuracy Standards: intended to ensure that an evaluation will reveal and convey technically adequate information about the features that determine worth or merit of the program being evaluated.

Each of the four areas has subsets that clearly identify all aspects of the evaluation process. Using this information, the evaluator can easily be evaluated. OERL information related to evaluation standards is essential to a PI when considering the employment of an external evaluator. Additional standards are available to evaluate students and personnel; they are similar in format to the program evaluation standards.

The process used met the standards in each of these areas. The NIU project was supported by a grants compliance office and fiscal/administrative agents. The EE, as a third party, was another requirement for accomplishing the process with rigor, objectivity, and integrity. Finally, program leaders and participants shared in all assessment and evaluation activities and processes.

Closing Statement

Anyone interested in developing a proposal should explore OERL for ideas related to curriculum development, teacher education, faculty development, laboratory improvement, under-represented populations, and technology. The information is designed to be used without extensive revisions.

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