



I L L I N O I S

# **A Values-Engaged, Educative Approach for Evaluating Education Programs**

## **A Guidebook for Practice**

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## Welcome

Welcome education program evaluators, developers, and professional staff. We present this guidebook for education program evaluation to help inform and enlighten your evaluation practice *and* the meaningfulness and usefulness of your evaluation studies.

## Do Any of These Questions Ring a Bell?

- Does the idea of a science program in the form of a working urban garden make sense for youth in our low-income, urban community? (Example: [http://www.detroitagriculture.org/GRP\\_Website/Home.html](http://www.detroitagriculture.org/GRP_Website/Home.html))
- The county would like to expand the reach of its new 21st Century 4-H Animal Husbandry Program beyond the traditional 4-H youth or those who are easy to reach. How do we conduct a more thorough effort at recruitment, and what would constitute *recruitment success*?
- How will we know if the hands-on activities in our new global studies course will provide good opportunities for skill building and the understanding of globalization among high school students? What measurements and data should we collect for these different program goals?
- What types of service learning experiences can best enhance the critical, self-reflective capabilities of middle school students?
- Faculty support and active participation are essential to the college's new doctoral program in critical media studies. How can faculty effectiveness be assessed for the program and more importantly what constitutes *effectiveness*?
- This high school program is intended to provide high-quality and accessible opportunities for youth from underrepresented and underserved groups to enhance their literacy skills and competence. This is important so they are able to participate in the full complement of literacy prerequisites for college. How can we best measure and understand how well the program serves these youth?

The above are just a few examples of the types of questions asked when evaluating the quality of education programs.



## The Multiple Faces of Evaluation

Program evaluation can serve multiple purposes and intended uses. These include but are not limited to the following:

- Provide input about program effectiveness to policy decisions.
- Address accountability requirements.
- Contribute to program or organizational improvement.
- Deepen understanding about the program and the social problem it is designed to address.
- Catalyze democratic change in a context.
- Offer a structural critique of the assumptions and stances underlying the program and associated policies.

These various purposes for evaluation are connected to the interests of different evaluation stakeholders or audiences, which comprise four main groups: (a) policy and decision makers, program funders, program developers, and researchers in that field; (b) program administrators, staff, and volunteers; (c) program participants, and their families and communities; and (d) interested advocacy groups, the media, and the general public. As an example of the connections between evaluation purposes and audiences, policy makers are often interested in information on program outcomes and effectiveness that can inform their decisions about program continuation. After all, it is our policy makers who have the authority and responsibility to allocate public resources wisely and judiciously. As another example, program staff members are characteristically interested in information about the strengths and limitations of the program's delivery to support their efforts for improving the way services are delivered.

A major challenge of program evaluation is that while all of these purposes and audiences are legitimate, any one evaluation study cannot address them all. So, choices – sometimes difficult ones – need to be made.

Clearly, there are dimensions of *evaluation contexts* that help shape and even define evaluation purposes and audiences. For example, who has requested the evaluation, who is funding it, and what are their information needs? At what stage of development is the program to be evaluated and what evaluation questions are best suited to a new program or a program that is ready for scaling up? In what ways is the program or policy to be evaluated one that is politically contested, and which interest groups must be involved in setting the evaluation's direction? What resources exist for the evaluation?

“A major challenge of program evaluation is that while all of these purposes and audiences are legitimate, any one evaluation study cannot address them all. So, choices – sometimes difficult ones – need to be made.”



At the same time, evaluators bring to an evaluation study their own ideas about what constitutes meaningful and useful evaluation practice. Evaluators have their own preferred evaluation approaches, questions, quality criteria, as well as associated designs and methods. To illustrate, some evaluators choose to focus on a program's causal theory in their evaluation practice, while others emphasize precise measurements of program outcomes. Some evaluators prefer an on-site case study approach while others prefer a controlled experimental or quasi-experimental design. And some evaluators position evaluation as informing high-level decision making, while others conduct their work with aspirations of democratizing social change and participant empowerment.

These evaluator preferences and characteristic ways of practicing their craft reflect deep-seated understandings of the purpose, role, and character of evaluation as a social practice. They represent evaluator commitments, aspirations, and values. And in most evaluation contexts, the particular form that an evaluation takes emerges from a negotiation between the demands of the context and these evaluator commitments.

In this guidebook, we offer a contribution to the evaluator commitment side of this negotiation in the form of a set of ideas and ideals for what we believe evaluation can be.

## About This Guidebook

This guidebook presents practical guidelines for evaluators of education programs. It presents these guidelines within a "values-engaged, educative" framework for evaluation.

"Values engagement" has two main dimensions. First, it signals *purposeful attention to the values* that are intrinsic in education programs, including value differences that may be present among key program stakeholders. Take, for example, the program challenges of prioritizing among different learning outcomes. Performance on standardized tests may be highly valued by some stakeholders, while problem solving competence may be prized by others, and laboratory skills by yet others. Evaluators using this evaluation approach aspire to be *inclusive* in their engagement with these varied value stances as part of assessing program quality and further to promote stakeholder dialogue about them. Such dialogue, we believe, can advance the evaluation's educative goals of better program understanding, program improvement, and enhanced student learning.

In the second dimension of values engagement, evaluators pay special attention to the values of *diversity and equity*. Diversity refers to the traditional socio-demographic markers such as class, gender, race, alongside the multiple other ways people are different from one another such as talents, humor, learning styles. (See Appendix A.) Equity in this approach is concerned with the *treatment* of diverse program participants and other relevant stakeholders. (See Appendix B.) Treatment refers to access and the opportunity to participate and benefit from a program. These three strands of equity in an education program – access, participation, and accomplishment – are all important areas of focus

“‘Values engagement’ has two main dimensions. First, it signals **purposeful attention to the values that are intrinsic in education programs...** and second it pays special attention to the values of **diversity and equity.**”



*“This special focus on equity draws attention to the particular educational histories, contexts, and needs of the children, youth, and adult learners who remain underserved by our public schools and our community education programs.”*

for the values-engaged education program evaluator. This special focus on equity draws attention to the particular educational histories, contexts, and needs of the children, youth, and adult learners who remain underserved by our public schools and our community education programs. In this evaluation approach, an equitable education program is one in which all potential participants – particularly those least well served in that context – have opportunities for participation, meaningful learning, and accomplishment.

The “educative” part of this evaluation approach means that it is intended to facilitate learning and better understanding about the program being evaluated – its underlying logic, contextual appropriateness, potential power to effect change, connections to relevant standards and research evidence, and overall quality – all from diverse stakeholder perspectives. This approach, therefore, is best suited for evaluations that include assessments of program design and implementation, as well as program outcomes. Programs at the efficacy stage of development are perhaps the best match for this evaluation approach<sup>1</sup>, although it can be well used in multiple contexts.

## Who Will Benefit from This Guidebook?

Education programs as well as the work of evaluators are highly shaped by the contexts in which they are envisioned, designed, and implemented. These contextual features include characteristics related to policy and resources; educational practice; community histories and demographics; organizational cultures; and various other facets of the places in which we live, work, and learn. But, as noted above, evaluation practice is further shaped by the evaluator’s own commitments and beliefs about the evaluation’s purpose, role, and core components. The evaluator, therefore, is responsible for shaping an evaluation study that is responsive to context *and* also fulfills her/his own evaluation commitments and vision. This guidebook offers practical advice to evaluators who share the commitments and vision of a values-engaged, educative approach to education program evaluation.

The guidebook is intended to be useful to evaluators of varying levels and types of experience, and to evaluators working in various educational contexts. The guidebook focuses on the practice of evaluation, not on the technical or methodological components of the evaluator’s work. The guidebook, that is, assumes basic methodological proficiency among readers. However, the list of additional readings at the end of the guidebook provides some useful links to methods resources.

<sup>1</sup>From the US Department of Education Institute for Education Sciences, a program at the efficacy stage has completed its development and pilot testing phases and is now ready for a significant field trial.



## How the Guidebook Is Organized

The guidebook is organized around the core commonplaces or regular components of evaluation design and implementation. After presentations of a sample evaluation context and then the distinctive role of the values-engaged, educative evaluator, the guidebook addresses the following evaluation commonplaces: context description (community and school); program description; evaluation context, evaluation purpose and evaluation audience; key evaluation questions; criteria for judging program quality; evaluation design and methods; and reporting and communications. In each section, we provide a general description of that evaluation commonplace, followed by a description of what it looks like in values-engaged, educative evaluation, and why.

We also provide selected references and links to further discussions of these ideas, for the particularly avid and enthusiastic reader. Then for each commonplace, we turn to the heart of this guidebook and provide specific guidelines for the practice of values-engaged, educative evaluation, along with illustrations of these guidelines from our field tests of this evaluation approach. These illustrations are taken from one evaluation context, a summer math camp at the Pinewood Middle School, a description of which follows this introduction.

Throughout this guidebook there is substantial cross-referencing of one section to other related sections. This reflects the interconnections of evaluation commonplaces in the values-engaged, educative approach, and we hope helps the reader to better understand these relationships.

Our work on this values-engaged, educative approach for evaluating education programs was funded by the National Science Foundation (NSF). Our field testing thus focused on science, technology, engineering, and mathematics (STEM) education programs, and many of our examples in this guidebook draw on our field testing work. We also drew inspiration from NSF's long-standing leadership in matters of educational excellence and diversity, as briefly outlined next.

“The guidebook is organized around the core commonplaces or regular components of evaluation design and implementation: Context description; program description; evaluation content, evaluation purpose, and evaluation audience; key evaluation questions; criteria for judging program quality; evaluation design and methods; and reporting and communications.”



“Global leadership in science is vitally important for our economic well being, and scientific excellence is accomplished through diversity of thought, perspective, and experience.”

## The National Science Foundation and STEM Excellence, Diversity, and Equity

Under the leadership of the National Science Foundation (NSF), the U.S. has aggressively worked for decades to further develop and maintain excellence in our STEM workforce *and* to diversify the types of people who become STEM professionals. Global leadership in science is vitally important for our economic well being, and scientific excellence is accomplished through diversity of thought, perspective, and experience. Thus, today there is a strong effort among policymakers, industry leaders, and educators to improve the quality of STEM education at K-12 and university levels, and to increase the number of students who are interested in STEM fields, particularly among groups who have not traditionally chosen STEM careers. These groups include women, ethnic and racial minorities, people with disabilities, and those from lower socioeconomic backgrounds. This persistent lack of diversity in science classrooms and laboratories is not only inequitable; it also compromises the vitality, creativity, and economic competitiveness of U.S. STEM endeavors.

Accompanying this significant national investment in STEM education is the need to assess the quality and effectiveness of various program initiatives and to better understand what works in which contexts for whom and in what ways. Further, given the national agenda of diversifying STEM careers, there is the additional need to better understand how well targeted educational initiatives serve those traditionally under-represented in these fields. Enter evaluation.

As noted, the development of the values-engaged, educative approach to evaluation is anchored in our NSF program work and thus focuses on STEM education evaluation. Because we believe these ideas have broader applicability, this guidebook is oriented to educational evaluators in multiple contexts, serving multiple learners from diverse backgrounds. We even encourage readers from domains other than education. And we welcome your feedback!



## Hypothetical Scenario:

# MATH SUMMER CAMP AT THE PINEWOOD MIDDLE SCHOOL



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The following presents an evaluation context – hypothetical but drawn from our field testing. This scenario will be used throughout this guidebook to provide you with examples of how the values-engaged, educative approach is applied in a specific context.

## Community Context

The Pinewood Middle School is one of four middle schools in Jefferson, a small urban community located in the upper Midwest with a population of 160,000 people. Economically, Jefferson boasts a well regarded second-tier state university, a modest research and knowledge industry, strong health and technology businesses, and some light manufacturing. Demographically, the city is approximately 15 percent African American, 10 percent Latino/a, 65 percent Caucasian, and the remainder a mix of southeast Asians (primarily Vietnamese), Native Americans, Pacific Islanders, and people of mixed races. The median household income is \$45,000, with 25 percent of the population living below the poverty line, and disproportionately high poverty rates for under-represented minorities.

Jefferson's unemployment rate is about 8.5 percent, below the current state and national averages, thanks to the diversity of the local economy. The community's cost of living is reasonable, and there is affordable housing for people living at most income levels. Jefferson is regionally known for its 'green' public transit system and its extensive bike paths. The local folk music scene attracts people from throughout the state.

Yet, Jefferson also has its challenges, much like its larger urban counterparts. The most serious of these are racial disparities in all economic and service sectors of the city, a segregated residential profile, touchy race relations that flare up with some regularity, a higher than average crime rate comprised largely of non-violent and unarmed crimes like burglary and robbery, and a decaying infrastructure of roads, bridges, and public facilities.

## School Context

The Pinewood Middle School is a public school that serves close to 800 students (grades 6-8) from the city of Jefferson. According to the year's state school report card, Pinewood has 50 full-time teachers, 90 percent of whom are Caucasian, 7 percent African American, and 3 percent Latino/a. Nearly 80 percent of the teachers are female. Pinewood teachers have an average of 15 years teaching experience, and nearly half of them have a Master's degree. The school has a student-teacher ratio of 15 to 1, which is lower than the state's 17 to 1 ratio. A substantial portion of the faculty will be retiring in the next five years, creating a possible gap in teacher leadership at that time.

The demographics of the student body at Pinewood reflect the relatively younger ages of the community's minority populations. At present, 45 percent of the students are Caucasian; 25 percent African American; 15 percent Latino/a; 10 percent Asian, Pacific



“*The Pinewood Middle School’s Math Summer Camp (MSC) is a summer enrichment program, designed to prepare and support rising African American students, in grades 6-8, for successful participation and achievement in advanced mathematics courses the following year.*”

<sup>2</sup>Annual Yearly Progress is measured by annual state tests in selected grades and subject areas, required by the federal *No Child Left Behind* law.

Islander and Native American; and 5 percent multi-racial. Approximately 45 percent of the students at Pinewood qualify for free or reduced-price lunches. The school also serves the 7 percent of students with limited English proficiency, who are in the process of learning English language skills.

The African American principal at Pinewood, Delores Jones, has been there for four years. Previously, she served as a middle school principal in a nearby district for five years and as an elementary teacher for 10 years before that. Her leadership at Pinewood has been well received by most of the school staff and the families served by the school.

Overall, the students of Pinewood have met Annual Yearly Progress (AYP)<sup>2</sup> for the past five years. However, certain student subgroups including African Americans, Latinos/as, and students with disabilities have not met AYP in mathematics during this same time period.

## Program Description

The Pinewood Middle School’s Math Summer Camp (MSC) is a summer enrichment program, designed to prepare and support rising African American students, in grades 6-8, for successful participation and achievement in advanced mathematics courses the following year. To date, most targeted students have participated in the MSC every summer since the program began two summers ago.

### *Policy Context*

This program is situated within the current accountability policies of the *No Child Left Behind* legislation. MSC was prompted by the persistent “under-performance” of particular subgroups of Pinewood students on the state’s mathematics test. It also seeks to go beyond accountability to offer meaningful and sustainable access to the STEM pipeline (for which math competency is a key entrance requirement) and future STEM success.

### *Program Development*

The primary champion of the MSC is the Pinewood Middle School principal, Delores Jones. The MSC is her programmatic response to the school’s mathematics achievement gap and its contribution to the school’s ongoing “needs improvement” ranking on the state’s overall report card. She also deeply believes the MSC is an intrinsically good idea that could provide access to higher level math for African American students, who do not always have the same opportunities to study and excel in math as their majority peers.

The MSC program was developed by a master mathematics teacher in the school where Ms. Jones previously served as principal, in cooperation with two mathematics teachers from Pinewood. The program design incorporates “research-based evidence” on active learning, cognitive skills required for good mathematics understanding, and culturally responsive pedagogy.

The program is funded for five years from a combination of district and state funds, support from a local foundation, and, beginning this third summer, a small grant from the National



Science Foundation (NSF). Program funding is used primarily to pay teacher stipends and to provide student transportation to and from the MSC, with a modest amount earmarked for evaluation.

### ***Program Aspirations***

Now in its third summer, the overall goal of the MSC is to change school norms about *who* qualifies as advanced students by having not just one or two, but clearly visible clusters of African American students in advanced math classes. More specifically, the program aims to boost participants' math skills and to increase their motivation, self-efficacy, and confidence to engage in the serious study of mathematics.

Corollary to these goals, the program is also expected to help build a community of confident and competent learners who will continue to work with one another in advanced math courses in the following academic year, and beyond.

### ***Student Recruitment***

Students are identified for the program through a combination of teacher, parent, and self nominations. Targeted students are those performing strongly in math (as indicated by state achievement tests, classroom performance, and/or teacher recommendation) but are not currently in the school's advanced math track. Once students are identified, the program staff work actively to recruit them for the program and to secure both their motivation and the necessary parent/guardian consent and support.

From the outset the MSC has targeted African American students, as they are the school's largest minority and the most under-represented in advanced math classes, according to the program developers and champions. However, "there have been recent discussions," said the MSC co-director, "about expanding the program to include Latinos/as and low-income kids, including white students. But right now, due to the limited budget, the program is serving only African Americans."

### ***Program Design, Content and Instruction***

The Math Summer Camp is taught by experienced math teachers from Pinewood. The Camp runs for eight weeks in the summer, from 8:30 am – 12:30 pm, Monday through Friday. The MSC incorporates both supplementary and enrichment curricula that are connected to but not driven by the state standards. The program uses hands-on learning, real-life applications, and technology activities to accomplish its goals. Specific program content and activities have been selected and developed by the program instructors to be congruent with and relevant to those of the advanced math courses appropriate to each grade level.

Most MSC participants are strongly encouraged to also attend a "math connections" course the following year to support their participation in advanced math courses. The math connections course provides supplementary instruction and review, as well as homework tutoring for students in various math courses, including advanced curricula.

“Now in its third summer, the overall goal of the MSC is to change school norms about **who** qualifies as advanced students by having not just one or two, but clearly visible clusters of African American students in advanced math classes.”

## Evaluation Context

Evaluation priorities, as stipulated by the funding group, prioritize program outcomes – specifically, participant success in advanced math, motivation to continue studying mathematics, and improvements in the school report card. Due in part to the insistence of Principal Jones and the evaluation team, these priorities also include attention to the quality of the learning experience for students and teachers. Questions about which students should have access to the MSC persist, both within the school’s faculty and the families it serves.

To date, the following information is available:

- Ninety percent of the students participating in the MSC were placed in advanced math courses the following year and performed successfully.
- The supportive “math connections” class is not popular with students, in part because they have to give up an elective in order to take it. This class continues to be strongly recommended for MSC participants by program staff.
- Pinewood students’ performance on the state math tests has increased over the last two years, but African Americans, Latinos/as, and students with disabilities still do not meet AYP in math, although the African American students’ performance is much closer to the bar than two years ago.
- Parents are highly satisfied with the MSC, according to informal conversations and feedback received.

This is the second evaluation of the MSC program. The first evaluation was conducted during the second summer of the program with a focus on the program’s design, content and instruction, as well as participant selection and recruitment processes. For this second evaluation, the school administration and program staff are seeking information on the program’s implementation, in terms of the quality of program experience for students and teachers, and the program’s learning outcomes.

## Looking Ahead

This evaluation context – the Pinewood Middle School Math Summer Camp – will be used throughout the core practical section of this guidebook as a context for the evaluation plan examples that will be shared. A complete version of the evaluation plan for the Pinewood MSC is presented in Appendix C.

# The Role of the VALUES-ENGAGED, EDUCATIVE EVALUATOR



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Our vision of a values-engaged, educative approach for evaluating education programs is distinctive in its explicit value commitments – to values engagement in evaluation and to evaluation as an opportunity for learning. These commitments are most meaningful when enacted in preferred evaluation processes and communications rather than in preferred evaluation methods or designs. They are thus highly anchored in the development and nurturance of strong and trusting relationships – between the evaluation team and stakeholders, as well as among stakeholders themselves. This means that the evaluator plays a critical role in implementing this approach.

The values-engaged, educative evaluator must attend not only to the substantive and methodological dimensions of the evaluation, but also to its social-relational dimensions. While conducting the evaluation, the evaluator must attend carefully to how he/she is present in the context at hand and the kinds of interactions, communications and relationships he/she engages in with evaluation stakeholders.

The following describes our aspirations for the evaluator's role in the values-engaged, educative evaluation process and the ways in which these relational and practical dimensions of evaluation can be meaningfully and usefully enacted in practice.

## Ideal Prerequisites for an Effective Evaluator

Ideally, a values-engaged, educative evaluation approach requires a skilled and experienced evaluator who has:

- Authority, credibility and presence in the evaluation context including:
  - o Adequate access to program materials, activities, and personnel (including key decision makers).
  - o Adequate opportunities to meet with stakeholders for various generative, dialogic, and reporting purposes throughout the evaluation process.
  - o Adequate resources for the evaluation.
- Expertise in the relevant STEM field, or access to it.
- Evaluation team members, if possible, who share substantial life history with members of the context (such as socio-cultural and political history).

“The values-engaged, educative evaluator must attend not only to the substantive and methodological dimensions of the evaluation, but also to its social-relational dimensions.”



This is important so that he/she can:

- Meaningfully and productively conceptualize, assess, and understand context, especially in relation to the meanings of diversity and equity and their interplay with program quality and effectiveness.
- Use program theory and other strategies to portray and meaningfully engage with varied stakeholder program understandings, values, and interests.
- Respectfully emphasize engagement with values of equity, raising difficult value-laden questions and working through conflicting viewpoints and tensions, while being broadly inclusive of and responsive to multiple perspectives and interests.
- Promote and sustain critical reflection and respectful dialogue in order to enhance program understanding and sustain improvement efforts.

## Practical Suggestions for the Evaluator

The authoritative role of the evaluator should not be construed as a dictatorial presence in the program, however. Rather, the values-engaged, educative evaluator serves as teacher, critical friend, and co-learner sharing information and insights about the program, promoting discussion and deliberation among various stakeholders, and supporting the use of evaluation findings for learning and program improvement.

Fundamental to these ideals is building and developing sustained, trusting, respectful, and reciprocal relationships with stakeholders.

The following are a few suggestions for evaluators in support of this goal.

- Learn about and become acquainted with multiple and diverse characteristics and rhythms of the program and its context in order to develop an accurate and thoughtful understanding of what is being evaluated.
  - ==> How?
    - o Follow the suggestions of responsive evaluation to establish presence and build rapport and understanding. For example, spend time onsite, review relevant program documents, and conduct formal/informal interviews with key stakeholders.
    - o Spend extra time onsite by adopting a “membership role,” doing small tasks and participating in the life of the site (Thomas, 2004).
    - o Talk to community “old-timers” or other key informants to learn more about the broader community context of interest.
    - o “Show up” and spend time at community gatherings, for example, at community centers, churches, bowling alleys, coffee shops, or town halls.



- Be explicit about the value commitments of the approach upfront and throughout the process, and make the evaluation a visible, open and transparent activity.

==> How?

- o Introduce key evaluation interactions and communications with stakeholders, including initial meetings and progress reporting, with a clear and succinct statement of the evaluation's values-engagement and educative agenda.
- o Use each of these opportunities to address and reinforce the importance of equity and diversity issues.
- o Promote the potential power of the evaluation as being a meaningful and valuable learning activity via ongoing engagement with the important evaluation issues pursued.
- o Include diverse stakeholder perspectives and interests in the evaluation process and content.
- o Engage in frequent, open communications with stakeholders and make the evaluation a visible activity.

[For additional suggestions, see the evaluation planning and reporting discussions in the next section.]

- Promote, and also engage in, ongoing communication and critical reflection on practice.

==> How?

- o Provide safe spaces for stakeholders to share dialogue about their program experiences and critically reflect on their work.
- o Disseminate information and data more actively and widely.

[For additional suggestions, see the evaluation communication and reporting discussion in the next section.]

## Examples from the Field

The following are some examples of the values-engaged, educative evaluator in action. They offer behind-the-scenes snapshots of interactions, communications and field relationships that are critical to effective enactment of the values-engaged, educative evaluation.

### *Evaluation PLANNING: Developing an Understanding of the Context and the Program to be Evaluated*

TO: Delores Jones, Principal, Pinewood Middle School  
FROM: Values-Engaged, Educative Evaluation Team  
DATE: Early Spring  
RE: Possible Evaluation Program  
CC: Pinewood Middle School Math Department

Dear Ms. Jones:

Thank you very much for inviting us to develop a proposal for evaluating the Pinewood Middle School's Math Summer Camp. We are deeply committed to strong educational programs that provide meaningful access for *all* students to high quality learning experiences and accomplishments, and are eager to work with you on this important evaluation study.

We would like to learn more about your school and the Math Summer Camp, as well as the teachers, students, and families, and unique characteristics of the broader Jefferson City community. This will help us develop an evaluation plan that can yield the kinds of information likely to be meaningful and useful to your school community.

For this purpose, we are hoping that we could visit the school several times this spring and review relevant materials such as annual reports and previous evaluation studies. While there, we can also talk with various members of your school community and learn about their evaluation priorities.

We will follow up this email with a phone call to discuss the idea further and arrange our visits. In the meantime, please feel free to let us know if you have any questions or concerns.

We are looking forward to meeting you. Thank you for your consideration.

Sincerely,

Values-Engaged, Educative Evaluation Team





***Evaluation PLANNING: Identifying Key Evaluation Questions and Criteria***

TO: Delores Jones, Principal, Pinewood Middle School  
Clark Kent, Director of the Pinewood Math Summer Camp  
FROM: Values-Engaged, Educative Evaluation Team  
DATE: Mid Spring  
RE: Evaluation Priorities

Hello Delores and Clark,

Thank you both for all your time and assistance in hosting our visits to the Pinewood Middle School this past month. We appreciate your support in coordinating the meetings with math teachers and parents, providing copies of relevant materials, and helping us make connections to the old-timers in the community. We value your thoughtful responses, and all the helpful insights, information and interesting stories others shared about your school community. We remain excited about working with you on this evaluation.

Attached please find a draft of our evaluation plan for the Math Summer Camp at Pinewood. We used key evaluation priorities that emerged during our school visits as the basis for developing our preliminary evaluation questions and plan. These priorities emerged from our conversations and meetings around the school as well as from our review of relevant documents – along with our own commitment to addressing diversity and equity issues in STEM education.

We hope you will share this plan with the Pinewood Math Summer Camp staff and gather any feedback they may have. As we continue to refine this draft, we realize that additional issues may arise and we encourage your feedback on the draft in its current form. We hope to finalize this plan in the next few weeks, and would appreciate your thoughts at your earliest convenience.

In addition to the evaluation plan, we have attached a draft of our description of the Pinewood Math Summer Camp context. We also welcome your feedback on this draft, particularly with regard to its accuracy and completeness.

Many thanks for your continuing cooperation. We are excited to be moving forward with this evaluation. As always, please feel free to contact us with any questions or concerns at any time during our work together.

Sincerely,

Values-Engaged, Educative Evaluation Team

***Evaluation PROCESS: Data Collection***

TO: Lois Lane, Math Teacher of the Pinewood Math Summer Camp  
FROM: Values-Engaged, Educative Evaluation Team  
DATE: Summer  
RE: Request for Interview: Evaluation of the Pinewood Math Summer Camp

Hello Ms. Lane,

As you recall, we are a team of evaluators who are conducting an evaluation this summer of the Math Summer Camp at Pinewood Middle School at the school's request. Our main focus for the evaluation is to describe and assess the character, quality, and outcomes of the program from the participants' perspectives. This specifically relates to their experiences, perceptions and reflections on the relevance and value of the program to meaningful student math learning. Our evaluation will also attend specifically to the issues of diversity and equity, and the ways in which the program is engaging and supporting diverse students, especially those who are least well served in your school context.

We are contacting you because you are directly involved with the Pinewood Math Summer Camp. As a participating math teacher, your experiences and perspectives will provide essential and valuable information for our evaluation. We are hoping you would be willing to participate in a brief interview regarding your program experiences and perspectives. It should take no more than 30-45 minutes and we would schedule this at your convenience.

If possible, we'd like to schedule this interview within the next two weeks, and would appreciate it if you would get back to us with some times that would be convenient for you.

We would be happy to provide more information about our evaluation and data collection activities if you are interested. In the meantime, please feel free to contact us with any specific questions you might have. We thank you in advance for your cooperation and thoughtful contributions to our work.

Sincerely,

Values-Engaged, Educative Evaluation Team

***Evaluation PROCESS: Progress Reporting***

TO: Delores Jones, Principal, Pinewood Middle School  
Clark Kent, Director of the Pinewood Math Summer Camp  
FROM: Values-Engaged, Educative Evaluation Team  
DATE: Summer  
RE: Progress Report: Evaluation of the Pinewood Math Summer Camp

Hello Delores and Clark,

As always, we thank you and the Math Summer Camp teachers for all of your help in coordinating our evaluation activities and interactions. This memo offers a brief update on our evaluation activities, and a preview of upcoming events.

***Evaluation Focus***

As you recall, our evaluation focus is as follows:

- To describe and assess the character, quality, and outcomes of the program from the participants' perspectives, as related to meaningful student math learning.
- To address issues of diversity and equity in program access, learning experiences and accomplishments.

This focus represents both your evaluation needs and priorities, and our interest in STEM diversity and equity.

***Activities Completed***

To date, our work has included the following activities:

- Completed the evaluation plan and secured university approval.
- Observed selected Math Summer Camp classes.
- Drafted interview guides for:
  - o Math teachers and administrators at Pinewood to gather their perceptions of and experiences with the program, its strengths and limitations, as well as their evaluative reflections on the relevance and value of the program.
  - o Students to gather their understanding of the program's goals and structure, the perceived quality of their experiences in the program, and their transition into advanced mathematics courses.
- Conducted interviews with selected community members to learn more about the school and the Jefferson City Community.

*continued*

***Evaluation PROCESS: Progress Reporting (continued)***

*Upcoming Activities*

Moving forward, we will focus on the following:

- Observe selected Math Summer Camp classes.
- Draft and refine the interview guide for parents/guardians of Math Summer Camp participants to gather their perceptions of the quality and benefits of the program for their child.
- Conduct interviews with students, teachers, and administrators involved in the Math Summer Camp.

We are also waiting to receive student math achievement data and other relevant academic information for program participants, including: student performance on state and school math tests, and student math grades in all math courses taken.

Please feel free to share this memo with the other teachers and staff at Pinewood.  
As always, let us know if you have any questions or concerns. Thank you.

Signed,

Values-Engaged, Educative Evaluation Team

***Evaluation PROCESS: Ongoing Communication and Dialogue I***

TO: Clark Kent, Director of the Pinewood Math Summer Camp  
FROM: Values-Engaged, Educative Evaluation Team  
DATE: Early Fall  
RE: Scheduling time for interim evaluation reporting and discussion

Hello Clark,

As always, thank you for your assistance and support of our work.

We have a full set of descriptive results from our evaluation activities in the summer and have begun to conduct analyses on the Math Camp participants' fall math performance. At this time, we would like to schedule a meeting with the math teachers to share a brief report on the evaluation's progress and preliminary findings. We believe that this discussion will provide teachers with critical, data-informed reflections on their own practice and on important educational issues engaged in this evaluation.

We intend to arrange parallel meetings with administrative staff, district and parent groups at separate times and locations, as well as host a joint reporting forum for all interested members of the Pinewood school community at the end of the evaluation.

Would it be possible to reserve time at one of your staff meetings for preliminary evaluation reporting and discussions? We realize the multiple demands on staff time, but are hoping we can find a time that works best for everyone. The potential power of the evaluation as a meaningful and valuable learning activity will be greatly enhanced by this discussion of emerging findings.

Thank you in advance. We look forward to hearing from you.

Signed,

Values-Engaged, Educative Evaluation Team

***Evaluation PROCESS: Ongoing Communication and Dialogue II***

TO: Clark Kent, Director of the Pinewood Math Summer Camp  
FROM: Values-Engaged, Educative Evaluation Team  
DATE: Fall  
RE: Follow-up conversations

Hello Clark,

Thank you again for inviting us to the Pinewood Math Department staff meeting. We had hoped more teachers would attend the meeting, especially those not directly involved in the Math Summer Camp, but we value and appreciate the thoughtful input and ideas of those who did participate.

As we are deeply committed to the issues of diversity and equity in STEM education, we were particularly interested in hearing the teachers' questions and concerns about the program access and perceived benefits, and thought we could have a follow-up conversation on these issues.

Will there be additional staff meetings in the next few weeks where we might follow-up on these questions and concerns? And perhaps most importantly, what do you think of this idea? If you have any concerns or reservations about this approach, or any suggestions on how we might go about further engaging these evaluative issues, please let us know.

Many thanks.

Signed,

Values-Engaged, Educative Evaluation Team

***Evaluation REPORTING: Invitation to the Reporting Forum***

TO: All Members of the Pinewood School Community  
FROM: Values-Engaged, Educative Evaluation Team  
DATE: Late Fall  
RE: Invitation to the Reporting Forum: Evaluation of the Pinewood Math Summer Camp

Hello Members of the Pinewood School Community,

As some of you may already know, we are a team of evaluators who have been conducting an evaluation of the Math Summer Camp at Pinewood Middle School at the request of the school's leadership. Our main focus for the evaluation has been to assess the character, quality, and outcomes of the program from the participants' perspectives, as related to meaningful student math learning. Our evaluation also addresses the important issues of diversity and equity in terms of program access, quality of learning experience, and accomplishment for all students.

In the spirit of sharing, thinking and learning together, we are inviting all interested members of the Pinewood school community, including students, teachers, parents and Jefferson community members, to attend the reporting session, and participate in the discussion.

So please join us and the Pinewood Math Summer Camp participants for the Evaluation Reporting Session:

- Date: November 13th.
- Time: 5:00 pm.
- Place: Pinewood Middle School Auditorium.
- Light refreshments will be served.

Copies of the evaluation plan will be available, which will provide key information relative to understanding the results that will be presented. If you would like additional information about the evaluation design, process, and/or implementation, please feel free to request it from us.

We look forward to meeting you. Many thanks.

Signed,

Values-Engaged, Educative Evaluation Team

# Key Evaluation Commonplaces IN VALUES-ENGAGED, EDUCATIVE EVALUATION

“Each commonplace is addressed in four parts:

- Overall meaning.
- Its distinctive features.
- A “how to” section.
- Examples.”

This chapter of the guidebook presents a framework for the key evaluation commonplaces or components involved in a values-engaged, educative program evaluation. It is organized to help evaluators walk through the process of designing and conducting a values-engaged, educative evaluation.

The key evaluation commonplaces include: description of context; program description; evaluation context; evaluation purpose; evaluation audience; key evaluation questions; criteria for judging program quality; design and methods; and communications and reporting.

Each commonplace is addressed in four parts:

- Its overall meaning, in general, as it is conceptualized and practiced in the evaluation field.
- Its distinctive features within the values-engaged, educative approach.
- A “how to” section with detailed guidelines on how to plan and implement the values-engaged, educative ideals for each evaluation commonplace in practice.
- Examples of what each commonplace would look like in a values-engaged, educative evaluation plan. These examples were developed for our hypothetical context presented previously – the Math Summer Camp at Pinewood Middle School. A complete version of the evaluation plan for the Pinewood MSC is presented in Appendix C.

## Context Description

### *Overall Meaning*

Context is not just the place in which the education program is implemented, but rather it is intertwined with the program in critical ways. That is, the meanings of the program and its experiences are defined, in part, by features of its context. These features include but are not limited to the:

- Policy within which the program is sponsored and the policy objectives to which the program is intended to contribute.
- History of the program and relevant comparisons to similar or other competitive programs.
- Descriptive and demographic character of a setting, in terms of the characteristics and diversity of people living there.
- Cultural strands of a setting, such as ethnic heritage, continuing customs and worldviews of the diverse inhabitants of that setting.
- Material and economic features of a setting, such as the quantity and quality of its physical features (buildings, gathering spaces, resources like books and technology), along with other indicators of material wealth or scarcity.
- Institutional and organizational climate of a setting, specifically the character of the organization (agency, public institution, private business) that is administering or implementing the program – its norms, decision making structures, employee morale, and other features of its organizational climate.





- Interpersonal dimensions of a setting, in terms of the nature of the interactions that take place and the norms that frame and guide relationships.
- Political dynamics of a setting, particularly with regard to contested issues and interests, as well as power, influence, and privilege (from the “context” entry in the *Evaluation Encyclopedia*, Mathison, 2005).

Context thus helps to shape the character and ambitions of the program being evaluated *and* the experiences of its key stakeholders and participants. Most of what is meaningful in a program’s experiences and outcomes is defined by features of the context. As such, a description of context belongs both in the evaluation plan as well as the reports, either as a separate section or integrated with the program description.

### ***Distinctive Features***

A careful reading of context – both current and in terms of relevant history – is a key starting point for values-engaged, educative evaluation. Most importantly, the meanings of the core values of diversity and equity, as well as the values related to the educational program being evaluated, are all understood as contextual. For example, underserved groups may be traditional minorities in one context, first-generation college students in another, and a religious minority in a third. Further, there may be a shift in who is considered an underserved group depending on the context at hand. So, developing a valid understanding of context and the contextualized meanings of the key values are critical to the success of values-engaged, educative evaluation.

### ***How to Plan and Implement***

Develop a sound understanding of context through the following activities:

- Informal site observations and “walks around town.”
- Informal interviews with people onsite and with targeted groups in the community (e.g., members of underserved groups, old timers, activist citizens, government officials, police officers, educational leaders).
- Local media review to gain an understanding of the important events in the community.
- Review of program and related policy documents.
- Adopting a short-term volunteer role onsite.

These overlap with the activities relevant to generating a meaningful description of the program, as offered in the next section. And clearly, the extent to which an evaluator can fully understand a new context is limited by time, distance, and other resource issues. In fact, learning about context is a facet of evaluation that continues throughout the evaluation process and may contribute to evolving and refined evaluation questions.

“A careful reading of context – both current and in terms of relevant history – is a key starting point for values-engaged, educative evaluation.”

*Example: Context Description*

*Community Context*

The Pinewood Middle School is one of four middle schools in Jefferson, a small urban community in the upper Midwest with a population of 160,000 people. Economically, Jefferson boasts a well regarded second-tier state university; a modest research and knowledge industry; strong health and technology industries; and some light manufacturing. Demographically, the city is approximately 15 percent African American, 10 percent Latino/a (and increasing), 65 percent Caucasian, and the remainder a mix of southeast Asians (primarily Vietnamese), Native Americans, Pacific Islanders, and people of mixed races. The median household income is \$45,000, with 25 percent of the Jefferson population living below the poverty line, and disproportionately high poverty rates for under-represented minorities.

Jefferson’s unemployment rate is about 8.5 percent, below the current state and national averages, thanks to the diversity of the local economy. The community’s cost of living is reasonable, and there is affordable housing for people living at most income levels. Jefferson is regionally known for its ‘green’ public transit system and its extensive bike paths. The local folk music in the area attracts people from throughout the state.

Yet, Jefferson has its challenges, much like its larger urban counterparts. The most serious of these are racial disparities in all economic and service sectors of the city, a segregated residential profile, and touchy race relations that flare up with some regularity. In addition, the city has a higher than average crime rate comprised largely of non-violent and unarmed crimes like burglary and robbery, and a decaying infrastructure of roads, bridges, and public facilities.

*School Context*

The Pinewood Middle School is a public school that serves close to 800 students (grades 6-8) from the city of Jefferson. According to the year’s state school report card, Pinewood has 50 full-time teachers, about 90 percent of whom are Caucasian, 7 percent African American, and 3 percent Latino/a. Nearly 80 percent of the teachers are female. Pinewood teachers have an average of 15 years teaching experience, and nearly half of them have a Master’s degree. The school has a student-teacher ratio of 15 to 1, which is lower than the state’s 17 to 1 ratio. A substantial portion of the faculty will be retiring in the next five years, creating a possible gap in teacher leadership at that time.

*continued*

*Example: Context Description (continued)****Community Context***

The demographics of the student body at Pinewood reflect the relatively younger ages of the community's minority populations. At present, 45 percent of the students are Caucasian, 25 percent African American, 15 percent Latino/a, 10 percent Asian/Pacific Islander/Native American, and 5 percent Multi-racial. Approximately 45 percent of the students at Pinewood qualify for free or reduced-price lunches. The school also serves the 7 percent of students with limited English proficiency, who are in the process of learning English language skills.

The African American principal at Pinewood, Delores Jones, has been there for four years. The previous five years she served as a middle school principal in a nearby district, and as an elementary teacher for 10 years prior to that. Her leadership at Pinewood has been well received by most of the school staff and the families served by the school.

Overall, the students at Pinewood have met Annual Yearly Progress (AYP)<sup>3</sup> for the past five years. However, certain student subgroups including African Americans, Latinos/as, and students with disabilities have not met AYP in mathematics during this same time period.

<sup>3</sup>Annual Yearly Progress is measured by annual state tests in selected grades and subject areas, required by the federal *No Child Left Behind* law.



## Program Description

### *Overall Meaning*

A critical initial step in evaluation planning is to clearly describe what is being evaluated – whether it is a policy, program, product or some other object of value. A program description often includes information about the program’s genesis and history, evolution over time, goals and ambitions, and intended target population. Specific intervention strategies and their grounding in previous research and theory, innovative character of the program, and links to important public policy agendas are also a part of the program description. For education programs that emphasize curricular innovation, a major part of the program description is comprised of the content and structure of the curriculum, and its supporting research base. One function of a program description in an evaluation plan is to assure evaluation clients and stakeholders that the evaluator accurately understands the program to be evaluated. Another function is to surface possible nodes of tension or, more commonly, vagueness or incompleteness in the design of the program being evaluated. Such nodes are candidates for key evaluation focus and questions.

An initial program description belongs in the evaluation plan. Refinements to this description are expected throughout the evaluation process, with the final one often more complete and different from that presented at the outset of the evaluation.

### *Distinctive Features*

Ongoing attention to the evolving program description is a vital part of values-engaged, educative evaluation. Providing opportunities for stakeholders to think critically about their own program and speak with others about alternative program designs is the core ambition of this approach’s educative aspirations.

The program description for the values-engaged, educative approach has three interwoven components. The first is a description of the way in which the **context** defines and shapes the program’s design, implementation, and likely outcomes (see previous section). Second is a clear articulation of the education program’s planned instruction and curricula overall *and* as they intersect with the program’s intended participants, *whether or not* they are from underserved or underrepresented groups. This second strand engages the question of the intended responsiveness of the program’s instruction and curriculum to the particular learning characteristics of the targeted students, and assembles the research evidence relevant to these claims. This second strand thus articulates the program’s attention to **diversity and equity**. Lastly, the program description is a clear articulation of the program’s underlying “**theory**” or the logic of the planned connections among resources, activities, and outcomes. The purpose of articulating the program theory is primarily to facilitate reflective dialogue and learning among key stakeholders about the

“Ongoing attention to the evolving program description is a vital part of values-engaged, educative evaluation. Providing opportunities for stakeholders to think critically about their own program and speak with others about alternative program designs is the core ambition of this approach’s educative aspirations.”



logic and defensibility of their program's design. For example, is it powerful enough to reach ambitious goals and objectives?

Program theory is thus a critical vehicle for enacting the "educative" agenda of the values-engaged, educative approach to evaluation. Some elaboration of this construct is provided next.

*The Program's "Theory of Action."* A program theory is a description of the major elements of a program – resources, activities, and outcomes – and of the connections among them. In particular, a program theory articulates the connections between program activities and expected outcomes, or changes in students' learning attitudes, behaviors, and accomplishments. For example, a summer laboratory research program for undergraduate students could be expected to enhance students' research skills through instruction and hands-on practice, as well as enhance their confidence as a researcher through ongoing and constructive feedback of their lab work. A program theory can also be more explanatory, not just describing the connections among major program components but also articulating the underlying mechanisms expected to cause anticipated changes in student learning. Because the role of program theory in this evaluation approach is primarily as an educative vehicle for stakeholder reflection, dialogue, and learning, a descriptive program theory may be sufficient. This is a contextual decision.

Further, in most contexts there is more than one program theory. Different stakeholders may have different understandings and experiences with a program and its logic. And it can be very useful to generate multiple program theories over the course of the evaluation, which can provide for meaningful dialogue and learning and can offer a sense of validation to diverse program perspectives. In this way, the generation of multiple program theories can offer an important connection to the values-engaged commitments of diversity and equity.

In short, in values-engaged, educative evaluation, articulation of a program's theory is used to (a) capture and represent various and diverse stakeholders' understanding of the program as designed and experienced, and their accompanying underlying values and commitments; (b) bring the voices of "less heard" stakeholders to the forefront; (c) promote critical stakeholder reflection and dialogue related to program goals, structures, underlying causal mechanisms, implementation processes, and outcomes; and (d) thereby enhance the educative ambitions of this evaluation approach. Finally, program theories may also be used to critique (a) the underlying policy intent, (b) the program design, and (c) persistent structural or institutional factors that impede meaningful and sustainable systemic reform.



“The point here is for the evaluator to seek opportunities to surface understandings, values, assumptions, and underlying rationales of the program design and implementation from multiple perspectives.”

### *How to Plan and Implement*

To generate a program's theory, Weiss (1998, 2000) offers some strategies. For example, in homogenous or heterogeneous groups, the evaluator might ask questions about the program's intentions, how the program is designed and implemented, and how specific activities are expected to achieve specific outcomes. The evaluator might ask stakeholder groups to respond to a hypothesized theory based on the evaluator's preliminary acquaintance with the program. The point here is for the evaluator to seek opportunities to surface understandings, values, assumptions, and underlying rationales of the program design and implementation from multiple perspectives. Of primary importance in the evaluator's relationship with stakeholder groups is to promote education and inclusion—not to achieve consensus.

Further, strategies and tools for developing a sound program description more broadly are well established in the evaluation field. It should be noted that these strategies are parallel to and overlap with strategies for understanding the context. These include the following:

- Spend time onsite and informally observe daily rhythms and activities of the program.
- Attend relevant events and meetings, and informally talk with program staff (Thomas, 2004).
- Take on a short-term membership or volunteer role
- Review multiple program documents such as annual reports, previous evaluation reports, previous proposals for funding, board and other meeting minutes, news reports.
- Conduct more formal interviews with identified key informants such as program leaders and old-timers.
- Use concept mapping or some other structured technique with varied stakeholder groups to generate their understanding of the program's theory of action.

A program theory can be represented in a variety of ways. Examples of these representations are offered in Figures 1 to 4.

1. Logic Model (WKKF reference, United Way reference).
2. Path Diagram.
3. Conceptual Model.
4. Story Narrative.

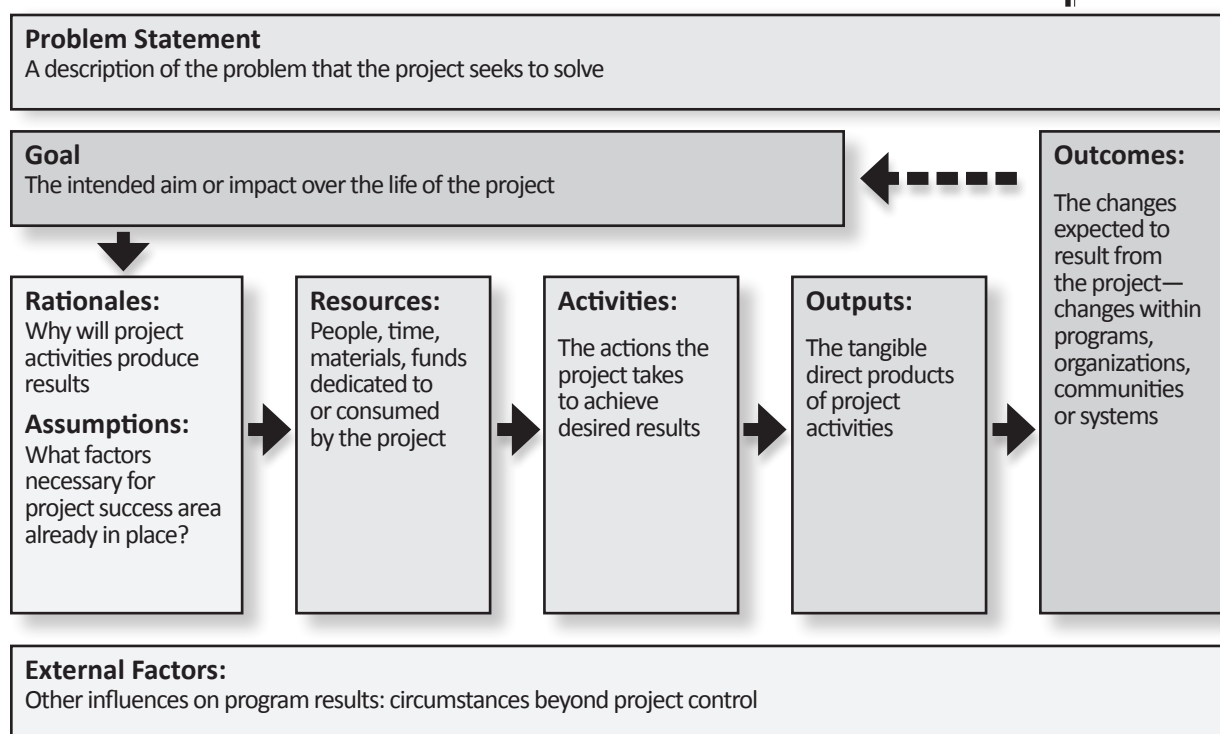


Figure 1. Logic Model

(<http://www.island94.org/2008/11/strengthening-organizations-through-community-engagement/>)

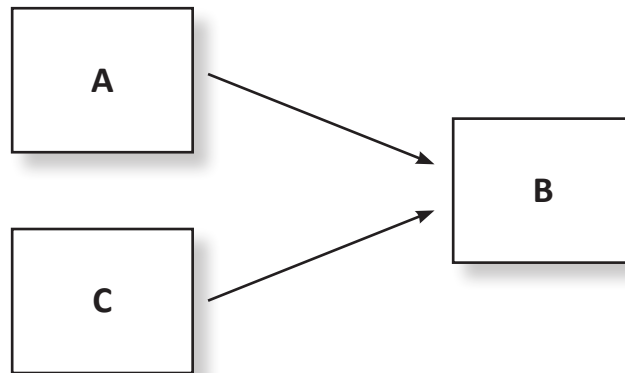


Figure 2. Path Diagram  
([http://support.sas.com/documentation/cdl/en/statug/63033/HTML/default/viewer.htm#statug\\_tcalis\\_sect065.htm](http://support.sas.com/documentation/cdl/en/statug/63033/HTML/default/viewer.htm#statug_tcalis_sect065.htm))

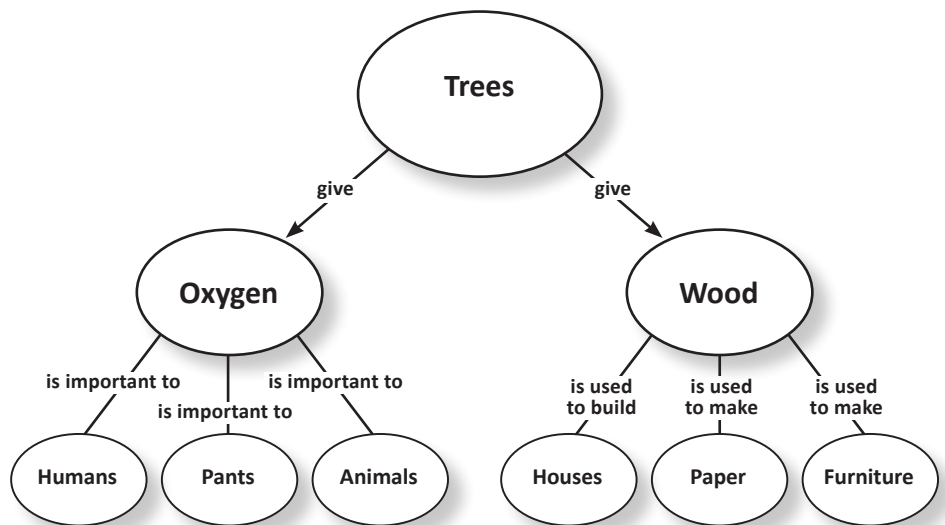


Figure 3. Conceptual Model  
([http://cosmopos.files.wordpress.com/2008/09/map\\_1.gif](http://cosmopos.files.wordpress.com/2008/09/map_1.gif))



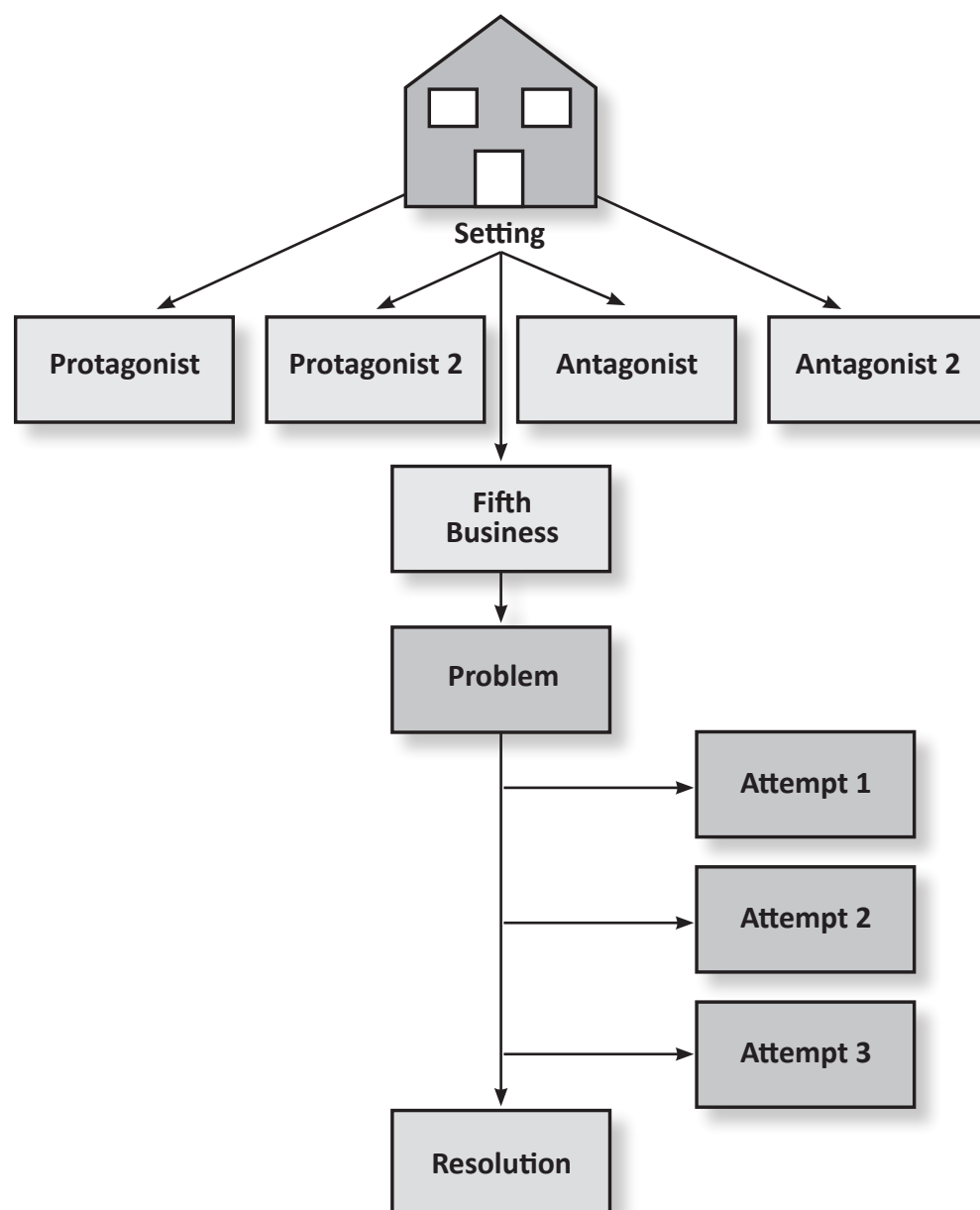


Figure 4. Story Narrative  
<http://www-personal.umich.edu/~jmargeru/conceptmap/types.htm>

*Example: Program Description*

The Pinewood Middle School's Math Summer Camp (MSC) is a summer enrichment program, designed to prepare and support rising African American students, in grades 6-8, for successful participation and achievement in advanced mathematics courses the following year. To date, most targeted students have participated in the MSC every summer since the program began two summers ago.

**Policy Context.** This program is situated within the current accountability policies of *No Child Left Behind*. The program was prompted by the persistent "under-performance" of particular subgroups of Pinewood students on the state's mathematics test. It also seeks to offer meaningful and sustainable access to the STEM pipeline (for which math competency is a key entrance requirement) and future STEM success.

**Program Development.** The primary champion of the MSC is the Pinewood Middle School principal, Delores Jones. The MSC is her programmatic response to the school's mathematics achievement gap and its contribution to the school's ongoing "needs improvement" ranking on the state's overall report card. She also deeply believes in the MSC as an intrinsically good idea that could open access for African American students to higher-level math, who do not always experience the same opportunities to study and excel in math as their majority peers.

The MSC program was developed by a master mathematics teacher in the school where Ms. Jones previously served as principal, in cooperation with two mathematics teachers from Pinewood. The program design incorporates "research-based evidence" on active learning and the cognitive skills required for good mathematics understanding, and culturally responsive pedagogy.

The program is funded for five years from a combination of district and state funds, support from a local foundation, and, beginning this third summer, a small grant from the National Science Foundation (NSF). Program funding is used primarily to pay teacher stipends and to provide student transportation to and from the MSC, with a modest amount earmarked for evaluation.

**Diversity Agenda: Program Aspirations and Student Recruitment.** The broad goal of the Math Summer Camp is to change school norms about who qualifies as an advanced mathematics student. This is being accomplished by having not just one or two, but clearly visible clusters of African American students in advanced math classes. More specifically, the program aims to boost both individual participants' math skills and to increase their motivation, self-efficacy, and confidence to engage in the serious study of mathematics.

*continued*

*Example: Program Description (continued)*

Corollary to these goals, the program is also expected to help build a community of confident and competent learners who will continue to work with one another in advanced math courses in the following academic year, and beyond.

Students are identified for the program through a combination of teacher, parent, and self nominations. Targeted students are those performing strongly in math (as indicated by state achievement tests, classroom performance, and/or teacher recommendation) but are not currently in the school's advanced math track. Once students are identified, the program staff work actively to recruit them for the program and to secure both their motivation and the necessary parent/guardian consent and support.

From the outset the MSC program has targeted African American students, because African Americans are the school's largest minority and the most under-represented in advanced math classes according to the program developers and champions. However, "there have been recent discussions," said the MSC co-director, "about expanding the program to include Latinos/as and low-income children, including white students. But right now, due to the limited budget, the program is serving only African Americans."

***Initial Program Theory: Program Design, Content and Pedagogy.*** The MSC program is being taught by experienced teachers from Pinewood. The Camp runs for eight weeks in the summer, from 8:30 am – 12:30 pm, Monday through Friday. The MSC incorporates both supplementary and enrichment curricula that are connected to but not driven by the state standards. The program uses hands-on learning, real-life applications, and technology activities to accomplish its goals. Specific program content and activities have been selected and developed by the program instructors to be congruent with, and relevant to those of the advanced math courses appropriate to each grade level.

Most MSC participants are strongly encouraged to also attend a "math connections" course the following year to support their participation in advanced math courses. The math connections course provides supplementary instruction and review, as well as homework tutoring for students in various math courses, including advanced courses.

## Evaluation Context

### *Overall Meaning*

All evaluations are initiated by a person or group for some particular reason or intended use and within specified parameters of time and money. This information constitutes the context within which the evaluation is located and thus is to be planned and implemented. A description of the evaluation context may also include key stakeholder interests relevant for the evaluation, contributions of the evaluation team, and other important influences on the evaluation design, implementation, and expected use.

### *Distinctive Features*

There are no particular variations on descriptions of the evaluation context recommended by the values-engaged, educative evaluation approach.

### *How to Plan and Implement*

This is straight forward. Briefly present information about the evaluation’s purpose, rationale, and funding, along with other key issues and interests relevant to the setting.

### *Example: Evaluation Context*

Evaluation priorities, as stipulated by the funding group, prioritize program outcomes. In the case of the MSC, the outcomes are the participants’ success in advanced math and motivation to continue studying mathematics, and improvements in the school report card. Due in part to the insistence of Principal Jones and the evaluation team, these priorities also include attention to the quality of the learning experience for students and teachers. Questions about which students should have access to the MSC persist, both within the school’s faculty and the families it serves.

To date, the following data are available:

- Ninety percent of the students participating in the MSC were placed in advanced math the following year and performed successfully.
- The “math connections” class is not popular with students, in part because they have to give up an elective in order to take it. This class continues to be strongly recommended for MSC participants by program staff.
- Pinewood students’ performance on the state math tests has increased over the last two years, but African Americans, Latinos/as, and students with disabilities still have not met AYP in math, although the African American students’ performance is much closer to the bar than two years ago.
- Parents are highly satisfied with the MSC, according to informal conversations and feedback received.

This is the second evaluation of the MSC program. The first evaluation was conducted during the second summer of the program with a focus on the program design, content and instruction, as well as participant selection and recruitment processes. For this second evaluation, the school administration and program staff will focus on program quality in relation to experience, outcomes and accomplishments.



## Evaluation Purpose

### *Overall Meaning*

The evaluation purpose frames its primary ambitions, intended products, and intended uses. Many in the evaluation community recognize the four major clusters of evaluation purposes that follow, each rooted in judgments of merit and worth (Chelimsky, 1997; Greene, 1997):

1. *Decision Support, Accountability* – Providing information that informs policy and decision making about the program or policy at hand or that accounts for resources expended.
2. *Program Improvement, Organizational Learning or Change* – Providing information that contributes to important program or organizational changes and improvements.
3. *Knowledge Generation, Contextual Understanding* – Providing information about the character of the social program at hand, its contextual complexities, and its promise with respect to contributing to social betterment.
4. *Social or Political Change* – Structuring an evaluation process and providing evaluative information that intentionally seeks to give voice to all participants in the context, redistribute power, or democratize decision making.

A major challenge in evaluation practice is fulfilling multiple purposes with limited resources. Making choices among legitimate purposes is an important challenge of evaluation practice, requiring some to take priority over others.

### *Distinctive Features*

The primary purpose of the values-engaged, educative approach for evaluating education programs is to augment our contextualized understanding of high quality educational practices, programs, and policies that have particular promise for underserved students. This approach pays explicit attention to the values that permeate all evaluation contexts, with particular attention to (a) the inclusion of multiple perspectives and interests in a given education program and (b) the program's success in promoting diversity and in advancing equity of access, experience, and accomplishment for all learners, particularly those from underrepresented groups. In this way, values-engaged, educative program evaluation advances our understanding of how to enable and enhance meaningful student learning for *all* students in the context at hand, with particular attention to those traditionally underrepresented in the given field, and thus to vital contemporary issues of equity in policies, programs, and practices.

“Values-engaged, educative evaluation advances our understanding of how to enable and enhance meaningful student learning for *all* students in the context at hand, with particular attention to those traditionally underrepresented in the given field...”



This purpose most directly engages the “knowledge generation” role for evaluation, but in a more complex, contextualized, and values-engaged fashion than is traditionally encountered. Traditionally, knowledge-oriented evaluation aims to inform the work of program developers and education scholars, as the understandings reached about meaningful and sustainable teaching and learning in particular contexts are envisioned to be directly relevant to the larger education communities. And this is an aspiration for the values-engaged, educative approach as well. Yet, of higher priority is the generation of knowledge for illumination and concrete use in the context at hand. Specifically, in values-engaged, educative evaluation, the knowledge generated is first and foremost grounded in the context being evaluated, and it addresses both program implementation and outcomes. So, it is intended to be directly relevant for site-based program improvement or organizational learning. Moreover, the knowledge generated is centrally engaged with issues of equity, thus providing some direction and perhaps even some leverage for considerations of democratizing social change. In short, this evaluative knowledge most importantly contributes to contextualized and democratized program understanding and engagement (Cronbach and Associates, 1980).

### ***How to Plan and Implement***

Here are some examples of evaluation purposes that are consistent with the values-engaged, educative approach for evaluating education programs. These are offered for either direct use as presented or for adaptation to the reader’s particular situation.

The purpose of this evaluation is to:

- Generate contextual understanding of the quality of the program’s design, implementation, and outcomes, with particular reference to its ability to serve meaningfully and successfully those least well served in this context.
- Advance the educational interests of the underrepresented and underserved groups in this context through critical examination of the program’s design, implementation, and outcomes.
- Contribute to enhancing the quality and effectiveness of the program’s design, implementation, and outcomes, in particular its ability to serve meaningfully and successfully those least well served in this context.

### ***Example: Evaluation Purpose***

See next section on Audience for an example of an evaluation purpose.

Evaluation Audience

Overall Meaning

The audience of an evaluation is the stakeholder group(s) for whom the evaluation is primarily intended. That is, evaluation audiences are those whose interests and needs for information are addressed by the evaluation. Clearly, one evaluation audience in every context is the evaluation *client*, or the individual, group, or organization that has commissioned the evaluation and is also paying for it. But, many approaches to evaluation seek to broaden the interests and concerns served beyond those of the client. The values-engaged, educative approach to evaluation is one of these.

Evaluation audiences can be one or more of the following stakeholder groups (defined as all people with a vested interest in the program being evaluated and thus the evaluation as well):

- 1. People with overall decision authority and responsibility for the program – policy and decision makers, program funders, top administrators.
- 2. People involved in developing and implementing the program – program developers, onsite managers, program staff and volunteers.
- 3. People who would benefit or lose from the allocation or non-allocation of resources to this particular program, such as the program participants and their families and communities.

All stakeholders are potentially legitimate evaluation audiences, but no one evaluation can address the interests and concerns of every stakeholder group. So, like evaluation purpose, difficult choices need to be made. There are connections between the evaluation purposes and audiences, as displayed in the following table.

Table 1. Links Between Evaluation Purposes and Audiences

Evaluation Purpose	Primary Evaluation Audiences
Decision support, accountability	Policy and decision makers, program funders
Program improvement, organizational learning	On site program or organizational administrators and staff
Knowledge generation	Program developers, theorists, researchers
Social or political change	Program participants and families, the interested public



“Within all audiences, the inclusion of groups traditionally underserved and underrepresented is of particular importance in values-engaged evaluation.”

### ***Distinctive Features***

The values-engaged, educative evaluation approach has several intended primary and secondary audiences:

- Primary audiences include the evaluation client, practitioners, and program managers, as well as students in the local context, along with their families and communities.
- Secondary audiences include the larger communities of relevant education program developers, theorists, policy makers, and funders, as well as interested citizen groups and the media.

Within all audiences, the inclusion of groups traditionally underserved and underrepresented is of particular importance in values-engaged evaluation.

### ***How to Plan and Implement***

Identify the targeted stakeholder groups as primary audiences, prioritizing (a) first, the local program staff and decision makers, program participants and their families and communities; and (b) secondly, the remote policy makers and the broader education community (program developers, theorists, researchers, interested citizens). However, aspire to include the perspectives, interests, and values of all legitimate stakeholders throughout the evaluation process. Inclusion can support the commitment to equity and diversity.



**Example: Evaluation Purpose and Audience**

This evaluation is being conducted at the request of the district administration, using local and NSF funding. Evaluation priorities, as stipulated by the program funders, emphasize program outcomes, specifically participant success in advanced math, motivation to continue studying mathematics, and improvements in the school report card. The priorities also include attention to the quality of the learning experience for students and teachers, and questions about which students should have access to the MSC.

**Values and Aspirations.** This evaluation is grounded in our commitment to promote an enhanced understanding of the STEM program being evaluated, and to engage with issues of diversity and equity in STEM education.

Framed within these value commitments, the major purpose of this evaluation is to assess the quality and importance of Pinewood's Math Summer Camp with regard to its ability to support mathematics education for a diverse background of students. This specifically relates to their interest in and attitude toward math, their motivation to further pursue advanced math, their self-concept as math students, and their achievements, including transition from regular to advanced mathematics curricula. More broadly, the evaluation will also seek to address the relevance of the program in nurturing a more equitable culture of math learning at Pinewood in support of greater diversity and equity.

**Evaluation Focus and Utility.** To this end, our work will focus on describing and assessing the character and quality of the overall program. This specifically relates to the participants' experience, their perceptions of the relevance and value of the program for meaningful and equitable student learning, and the outcomes and accomplishments in mathematics.

Within this focus, the evaluation team will attend specifically to the ways in which the program is engaging and supporting diverse students' math learning, especially those who are traditionally underserved in our education system and those who are least well served in this school context.

In addition, we aspire to an evaluation that is responsive to the current interests and concerns of the Pinewood community, and yields the kind of information likely to be meaningful and useful to the school community. The information obtained from this evaluation is intended to contribute to a greater understanding of the program for school administrators and staff, as well as to their efforts toward continued program improvement and refinement.

**Key Evaluation Audiences.** The primary audiences for this evaluation are: (1) Pinewood administrators, math department faculty, and NSF funders; (2) Pinewood students and their parents or guardians; and (3) school district and state administrators. We further hope that our evaluation results will be shared more widely with the larger community of mathematics educators and researchers, as well as interested citizens.



## Key Evaluation Questions

### *Overall Meaning*

Key evaluation questions are the primary inquiry questions in an evaluation, akin to research questions or hypotheses in a research study. These questions reflect the purpose of the evaluation and thus the concerns and interests of identified evaluation audiences. The evaluation questions play a pivotal role in directing the character of the evaluation design and methods, and in defining the evaluation agenda for a particular context.

In theory, evaluation questions can address many aspects of a program and its context, including how well the program meets important needs in the context, the quality of the program's design, the sufficiency of the program's resources, the experiential quality and integrity of the program's implementation, as well as the nature and extent of program outcomes, both intended and unintended (Stufflebeam, 2001). Historically, evaluation approaches have emphasized assessments of the quality of implementation processes or outcomes, with less attention to context, program design, or program resources. Today, most evaluation approaches embrace questions related to both the implementation and outcomes of the program being evaluated, while assessments of the quality of the design remain under-emphasized.

### *Distinctive Features*

Key evaluation questions in the values-engaged, educative approach to evaluation address the general domains listed below. The first four domains, or some combination thereof, are included in many evaluations. It is the fifth domain on equity issues – along with the disaggregation of data by participant type in the second, third, and fourth domains – that are central and unique to the values-engaged, educative evaluations. The specifics of evaluation questions, of course, are tied to each particular evaluation context, and likely, not all domains would be fully addressed in any single evaluation. Still, a values-engaged, educative evaluation must strive to address questions related to equity issues, and how the program is serving various kinds of learners, including those least well served, in the given context. Further, because most education program evaluations today will likely require some kind of accountability assessment, in our approach, this assessment most likely fits under the fourth domain of “outcomes and accomplishments.”

Following are several categories of evaluation questions that represent priorities for a values-engaged, educative evaluation approach, along with a comprehensive set of illustrative questions for an education program.

“...a values-engaged, educative evaluation must strive to address questions related to equity issues, and how the program is serving various kinds of learners, including those least well served, in the given context.”



### *1. The Quality (“the Contextual Power”) of the Program Design*

*What is the quality and logical cohesiveness of the overall program design for the context(s) being served?*

- How and with what rationale is the program conceptualized and structured?
- Is the program design congruent with recommendations from relevant research (for example, research on effective teaching of underserved students), and the perspectives and experiences of the program participants, especially those of students and staff?
- How well does the program design support meaningful and relevant learning for a diverse cross section of program participants, especially underserved students?
- How well has the program identified, recruited, and included students that best “fit” the program goals and rationale?

### *2. The Quality of Program Content and Pedagogy*

*What is the quality of the program content and pedagogy, as designed for the various learners in the context?*

- To what extent is the program content and pedagogy adequate, appropriate, and meaningful for program participants?
- To what extent does the program content match the program participants’ developmental and learning profiles in mathematics?
- To what extent is the program content and pedagogy congruent with the program goals and rationale?

### *3. The Quality of Program Experiences from Multiple Participant Viewpoints*

*What is the quality of the program experiences, from the viewpoints of participants, staff, parents/guardians, and the community?*

- How well does the program provide participants with a distinctive and meaningful learning experience that:
  - o Engages participants’ existing knowledge and skills, while also stretching them to higher and deeper levels?
  - o Uses appropriate instructional strategies, specifically designed to stimulate engagement and active learning for these program participants?
  - o Recognizes and respects a diversity of learning histories and styles within the groups of program participants?
- What are the perceptions of the program staff and, as appropriate, parents and guardians, regarding the purpose and nature of the program, as well as its relevance and value to creating meaningful and equitable learning experiences for all participants, especially those least well served in the context?



#### *4. The Quality of Program Outcomes and Accomplishments*

*What is the quality and magnitude of program outcomes and accomplishments, both intended and unintended, for the various learners?*

- To what extent does the program affect short-term (end of program) and longer-term (end of following academic year) educational outcomes for program participants, including:
  - o Increases in knowledge and skills.
  - o Heightened sense of self-efficacy as a learner.
  - o Sustainable motivation, and encouragement from parents/guardians to study further.

#### *5. Equity in Program Access Experiences, and Accomplishments, and the Advancement of the Interests of Underrepresented and Underserved Groups*

*In what ways and to what extent has the program served to advance the interests and well being of those least well served in this context, and also more broadly?*

- To what extent does the program contribute to a school-wide change in normative expectations of who constitutes a successful student? Specifically, to what extent are particular groups of underserved students included in this conceptualization?
- In what ways does the program contribute to the community's collective mission of increasing diversity and equity in STEM education? How applicable is the program (its design and core elements) to other school contexts with similar needs for such an enrichment program?

#### ***How to Plan and Implement***

Develop evaluation questions collaboratively with key stakeholders using processes common to responsive and utilization-oriented evaluation. In addition, interview diverse stakeholders, spend time on site to discern key issues, review documents, and so forth. Ask questions of stakeholders to generate localized and broader understanding of the contextual, cultural, and normative characters of the education program's experiences and outcomes. That is, ask if, how, and why a particular program "works" in its context – from the diverse perspectives of program decision makers, staff, participants, their parents, and relevant community members, and as judged by relevant educational standards for instruction and student performance. Also focus on the quality of the program experience for participants, specifically its meaningfulness and connections to participants' contexts, learning histories, and lives, and on the match of the program to participants' developmental and learning profiles.



Strategies and tools for generating context-specific evaluation questions are well established in the evaluation field. These include the following:

- Interview key informants from diverse stakeholder groups regarding their primary “concerns and issues” related to the program (Guba and Lincoln, 1989).
- Spend time onsite and discern program “issues” of importance (Stake, 2004).
- Review relevant documents and focus the questions on critical program components.
- Use a divergent and then convergent process to generate multiple evaluation questions and then focus on those of greatest importance to diverse stakeholders (Cronbach and Associates, 1980).
- Hold stakeholder dialogues for discussions of the interests each brings to the evaluation, towards the identification of evaluation questions that engage multiple interests and perspectives. (House and Howe, 1999).

*Example: Key Evaluation Questions*

*The Quality of Program Experiences From Multiple Participant Viewpoints*

1. What is the educational quality of the Pinewood Math Summer Camp for the student participants?
  - How well does the program provide student participants with a distinctive and meaningful math learning experience that:
    - o Engages participants' existing mathematics knowledge and skills, while also stretching them to higher and deeper levels.
    - o Uses appropriate instructional strategies, specifically designed to stimulate math engagement and active learning for these program participants.
    - o Recognizes and respects a diversity of learning histories and learning styles within the groups of program participants.
    - o Prepares and supports participants' transition from regular to advanced mathematics curricula.

*The Quality of Program Outcomes and Accomplishments*

2. What is the quality and magnitude of program outcomes and accomplishments, both intended and unintended?
  - To what extent does the program affect short-term (end of program) and longer-term (end of following academic year) educational outcomes for program participants, including:
    - o Increase in mathematics knowledge and skills.
    - o Heightened sense of self-efficacy as a math student.
    - o Sustainable motivation to study mathematics further.
    - o Support and encouragement from parents/guardians for further study in mathematics.

*Equity in Program Access, Experiences, and Accomplishments, and the Advancement of the Interests of Underrepresented and Underserved Groups*

3. In what ways and to what extent has the program served to advance the interests and well being of those least well served in this context and also more broadly?
  - To what extent does the program contribute to a school-wide change in normative expectations of who constitutes a successful mathematics student?
  - More broadly, in what ways does the program serve to address important issues of diversity and equity in STEM education?

## Criteria for Judging Program Quality

### *Overall Meaning*

In evaluation, the criteria used for judging program quality are fundamental to evaluation practice, yet they are all too often assumed (commonly, in stated program goals and objectives) or remain implicit in the evaluation process. These criteria are in an important sense the heart of the evaluative enterprise; they distinguish evaluation from other forms of applied social inquiry. Criteria of quality directly engage cherished beliefs and values and are thus contested or at least legitimately open to multiple perspectives (Mark, Henry, & Julnes, 2000). For example, what constitutes a “good” mathematics education program is different for a mathematics teacher, a student interested in becoming an engineer, a student with artistic talents and sensibilities, a parent struggling just to keep her child in school, and a school board member deeply worried about low test scores in the district.

### *Distinctive Features*

The criteria used for making judgments about program quality are central to the character and the role of values in evaluation. As a result, initiating a conversation about quality criteria is a vital and pivotal component of the values-engaged, educative approach to evaluation. Moreover, it is also a critical time for the inclusion of multiple and diverse stakeholder perspectives. For what constitutes a “good” program in a particular context is rarely a matter of consensus. Ideally, the process of identifying criteria for judging program quality involves thoughtful dialogue among diverse stakeholders. At minimum, all legitimate stakeholder groups are consulted for their ideas about important criteria to include in the evaluation, and their reasons for valuing these particular criteria. In the values-engaged approach, multiple sets of explicit criteria, each with its own rationale, could be used in the evaluation process. Some of these criteria may even be competing ideas about quality and effectiveness, thus dramatizing the varied meanings of “goodness” in a variety of value stances.

Full explication of quality criteria is neither possible nor desirable. Much of what is valuable about teaching and learning remains implicit and is perhaps more complex and educationally sound in its implicit than its explicit form. As implicit understandings become explicated, they can also lose their nuance and sophistication and become too simplified. Ideally, an evaluation provides opportunities for dialectic conversations between explicit and implicit criteria, inviting the “unsaid” into the conversation (Bob Stake, personal communication, January 2005).

“...initiating a conversation about quality criteria is a vital and pivotal component of the values-engaged, educative approach to evaluation.”



“In values-engaged, educative evaluation, the evaluator attends to the **contextual quality** of the program’s content and pedagogy, **and further defines educational quality at the intersection of high-level and current content, appropriate pedagogy, and equity.**”

In short, what matters most about criteria in values-engaged, educative evaluation is the calling of attention to quality criteria and the conversations held about different stakeholders’ views on what constitutes a “good” program. Clearly, criteria need to be set, even if tentatively, awaiting illumination from data and dialogue alike. But, most important is the opening up of this aspect of evaluation so the process is inclusive of multiple, legitimate stakeholder interests and perspectives, and so the values bases of evaluative judgments are made explicit.

Education programs involve teaching and learning about particular content, in particular contexts. In values-engaged, educative evaluation, the evaluator attends to the *contextual quality* of the program’s content and pedagogy, *and further* defines educational quality at the *intersection* of high-level and current content, appropriate pedagogy, and equity (see Figure 5). A good program, that is, not only generates meaningful learning about current content via active and responsive teaching, but also engages, encourages, and respects the perspectives, life experiences, practical wisdom, and understandings that under-represented students bring with them to the teaching-learning context.

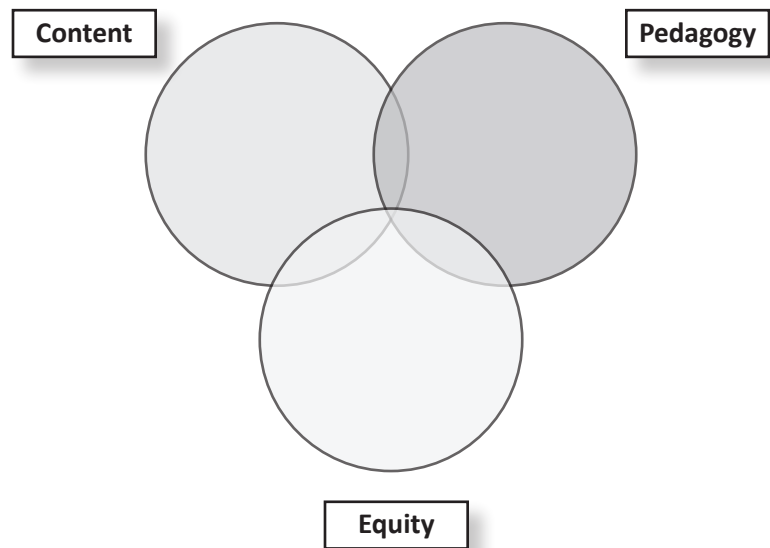


Figure 5. Program quality at the intersection of content, pedagogy, and equity



The specific criteria for judging quality should be drawn from the following three domains, presented with illustrative examples.

### *1. Domain I: Quality of Program Design*

Content and pedagogy, using contextually relevant and accepted standards (local, state and/or national), the perspectives of diverse stakeholders, and appropriate research and theory literature.

- The program has a strong rationale and coherence, is grounded in relevant theory and research (including relevant educational standards), and is well aligned with the educational values and vision of the program staff (teachers and other members of the school community).
- The curriculum and pedagogy are of high quality, based on relevant theory and research in learning, well aligned with relevant state standards, and based on the perspectives and experiences of the program participants (students and staff).
- The curriculum and pedagogy offer relevant, valuable and diverse approaches to learning that are meaningful, appropriate, and adequate for all student populations.

### *2. Domain II: Contextual Power of the Program Design*

Ability to “show up” meaningfully in learners’ lives, to have sufficient power and potential to reach meaningful outcomes, and, as appropriate, to change contextual norms.

- Participants in the program have meaningful, positive, and consequential learning experiences, and demonstrate strong and consistent mastery of valued and relevant skills and knowledge, as assessed by school and state tests, teacher judgment, and other achievement measures. Participants also show increased interest, motivation and self-efficacy for learning.
- Staff, teaching and administrative personnel hold high expectations for all student education, demonstrating care and support for students and affirming the value of diverse experiences, resources and the creative minds they bring to the program.

### *3. Domain III: Advancement of the Interests of Underrepresented and Underserved Groups*

Equity in program access, experiences, and accomplishments:

- The program meaningfully includes, engages and supports learning for those students least well served in the context.
- The program provides its participants with equitable opportunities for meaningful and high quality program experiences and accomplishments on par with their peers.
- The program helps to challenge and change the current thinking and normative expectations of “who constitutes successful learners” within the school.
- The program has clear goals and strong rationales that are well aligned with and support the mission of the broader STEM education community to increase diversity and equity in STEM fields.

### *How to Plan and Implement*

Strategies and tools for generating the criteria for assessing program quality parallel those relevant to identifying evaluation questions. Indeed, these two processes can readily be conducted together. The relevant strategies and tools include the following:

- Interview key informants from diverse stakeholder groups regarding their views on quality dimensions and criteria.
- Review relevant documents, research literature, and relevant standards (e.g., for curricula or student performance), and consider inclusion of quality criteria identified therein.
- Hold stakeholder dialogues for discussions of the quality considerations each brings to the evaluation, towards the identification of quality criteria that engage multiple interests and perspectives.

### *Example: Preliminary Criteria for Judging Program Quality*

Criteria for judging the quality and effectiveness of the Pinewood Math Summer Camp will be further specified and refined during the process of the evaluation. In particular, the evaluation team will invite math teachers and administrators at Pinewood to contribute to this process. Preliminary criteria are the following:

#### *Quality of the Program Implementation: Experiences and Perspectives;*

#### *Outcomes and Accomplishments; Vision and Values*

- All participants in the program have meaningful, positive, and consequential math learning experiences, and demonstrate strong and consistent mastery of valued and relevant skills and knowledge in mathematics. This is assessed by school and state tests, teacher judgment, and other achievement measures, as well as increased interests, motivation and self-efficacy for math learning.
- All participants in the program develop a community of confident and competent math learners who will continue to work with one another in advanced math courses in the following school year and beyond.
- All staff, teaching and administrative personnel hold high expectations for all student math education, demonstrating care and support for students, and affirming the value of diverse experiences, resources and creative minds they bring to the program.

#### *Advancement of and Support for Diversity and Equity in STEM Education*

- The program meaningfully engages and supports mathematics learning across a diverse spectrum of program participants, especially those least well served in the context.
- The program provides its participants with equitable opportunities for meaningful and high quality program experiences and accomplishments on par with their peers.
- The program helps to challenge and change the current thinking and normative expectations of “who constitutes successful math learners” within the school.
- The program helps to foster a greater understanding across the broader school community of the importance of increased diversity and equity in STEM fields, and subsequently, the critical need to increase opportunities for, and broaden the participation of underserved and underrepresented student groups in STEM education.



## Evaluation Design and Methods

### *Overall Meaning*

Evaluators use a wide range of designs and methods for their evaluations. Which design and methods are right for a particular evaluation depends on many factors. The most important consideration is getting the most useful and meaningful information to address each evaluation question that has been formulated. Also important to consider is the practicality of the design and its implementation, such as the time and resources needed to secure the data and the accessibility and availability of the sampled participants. More broadly, a good evaluation design is one that also adheres to widely accepted standards of methodological rigor, and common standards of evaluation quality such as the Joint Committee Evaluation Standards for Education Programs (<http://www.jcsee.org>) and the American Evaluation Association Guiding Principles (<http://www.eval.org/publications/guidingprinciples.asp>).

Although most aspects of an evaluation design can be changed as needed, given the dynamic and evolving nature of the setting at hand, a well thought-out evaluation design will facilitate an orderly, credible and meaningful conduct of the evaluation. It will also increase the defensibility of the evaluation's process and results, and thus strengthen the quality and usefulness of the work.

See Further Reading at the back of the guidebook for additional information on methodological traditions and designs.

### *Distinctive Features*

What is distinctive about the values-engaged, educative evaluation process is not the particular set of methods or approaches to evaluation design, but rather its value commitments and engagements. Accordingly, values-engaged, educative evaluators are encouraged to use and select from the full repertoire of designs and methods available that are relevant to the evaluation questions at hand and are also in concert with the demands and variables of the given program context.<sup>4</sup>

Selected to fit the evaluation questions identified, a *good* values-engaged, educative evaluation design is one that not only attends to the technical adequacy of the evaluation but also advances the espoused values of the approach, notably inclusion, diversity, and equity. A mixed methods design is often a good fit for a values-engaged, educative evaluation because the mixing of methods itself invokes different perspectives on the program and affords respect for each one (Greene, 2007). Mixing methods can thus invoke a dialogic engagement with the diverse perspectives brought by different stakeholders, and their underlying assumptions and values.

“A mixed methods design is often a good fit for a values-engaged, educative evaluation because the mixing of methods itself invokes different perspectives on the program and affords respect for each one.”

<sup>4</sup>In this way, methodological proficiency with a variety of methodological traditions is a kind of pre-requisite for implementing this approach.



### *How to Plan and Implement*

The evaluation design and methods should be crafted to fit the context. If a mixed methods design is selected, then there are various design alternatives that can advance the values-engaged, educative approach, from choosing a specific mix of methods with differing value commitments to employing various integrative analytic strategies. Two examples follow.

- The following mix of methods can address the accountability demands of the context at hand, while also addressing substantive issues of education program quality and equity:
  - o “Document analysis” of relevant local, state and/or national standards:
    - To assess the alignment of the program content with relevant local, state, and/or national content standards.
    - To assess the program’s curricular or pedagogical quality in relation to existing local and national learning standards.
  - o Quantitative test score analysis:
    - To assess student outcomes based on relevant standardized testing and benchmarks.
  - o Qualitative interviews:
    - To enrich the quantitative data, offering further insight into why certain outcomes are/are not attained, and to insure a meaningful and comprehensive assessment of student learning in the program being evaluated.
- The following mix of methods can address diversity and difference throughout the analysis phases of the evaluation:
  - o Disaggregate data of all kinds by relevant subgroups, and carefully assess systematic differences among them.
  - o Juxtapose and synthesize the “micro-level” individual program experiences (captured by interviews and test score analysis, for example) and the “macro-level” analysis of the many dimensions of the program context (represented through document analysis, for example) to examine how different versions and visions of stakeholders program experiences are shaped by the features of the larger social and political context.



### Example: Evaluation Design and Methods

To address the Pinewood MSC evaluation questions above, data will be collected using the following mix of methods: class observations; interviews with student participants and as appropriate, their parents/guardians, key school administrators and program staff; and analysis of the selected student math achievement data. All participants in the evaluation will provide prior consent.

**Class Observations.** Unstructured observations will be conducted of a range of math classes offered at MSC. These observations will be scheduled such that different classes are observed multiple times. The primary purpose of these observations will be to descriptively record the overall class structure and atmosphere, learning activities, and the characteristics and diversity of student interactions and engagement in each observed class. No data on individual students or teachers will be recorded.

**Student Interviews.** Brief interviews will be conducted individually or in groups with a select sample of students who have participated in the program. These interviews will focus on student understanding of the program goals and structure, the perceived quality of experiences in the program, and their transition into advanced mathematics courses. These confidential interviews will be conducted during the school day (preferably during the lunch period) and require approximately 15-20 minutes to complete.

**Parent/Guardian Interviews.** With the assistance from the school administration, a select sample of parents/guardians of current program participants will be interviewed. These brief, 15-20 minute interviews will be conducted in person or by phone to gather information on parent/guardian perceptions of the quality and benefits of the Math Summer Camp for their child. The interviews will also engage issues related to program access and participant selection.

**Administrator and Teacher Interviews.** Math teachers and administrators who are involved in the Pinewood MSC will be individually interviewed. These interviews will focus on their perceptions of and experience with the program, its strengths and limitations, as well as their reflections on the student recruitment and selection process and the relevance and value of the program. Applying a broader perspective, the interviews will also pursue their sense of commitment to the program's aspiration to change normative school culture. Interviews will be scheduled during the school day or after school and will require approximately 30-45 minutes to complete.

These scheduled consultations will be supplemented with informal conversations during our school visits and with electronic communications as needed, throughout the evaluation process.

**Student Achievement Data Analysis.** Available data will be collected for program participants on student math achievement and other relevant academic information. The data to be reviewed include: student performance on state and school math tests, student grades for all math courses taken, teacher judgment, and other indicators of math performance deemed relevant by teachers. This data will be collected without identification of individual students.

A summary of the various data gathering methods that are connected to key evaluation questions is presented in the following table. A large "X" indicates a primary method and a small "x," a secondary method for that specific evaluation question.

<b>Evaluation Questions</b> <b>Data Gathering Methods</b>	<b>Q1 Program Experiences</b>	<b>Q2 Program Outcomes and Accomplishments</b>	<b>Q3 Diversity and Equity in the Program</b>
Class observation	X	x	
Administrator/teacher interview	X	X	X
Parent/guardian interview	X	x	x
Student interview	X	x	X
Student achievement data analysis		X	



## Evaluation Communication and Reporting

### *Overall Meaning*

Communication and reporting are essential for all evaluation activities. Considerable evaluation literature exists regarding the art of crafting evaluation reports. Many evaluators also consider the broader domain of evaluation communications as part of evaluation reporting. Communicating the findings of the evaluation efforts throughout the course of the evaluation, as well as at the end, is one of the major tasks of the evaluator. There is a strong connection between communications and reporting practices and the relationships established during an evaluation between the evaluator and key stakeholders.

### *Distinctive Features*

As discussed earlier, with regard to evaluator role and processes, this approach considers evaluation reporting as part of the broader agenda of evaluation communications. We advocate substantial and continuing involvement with stakeholders, as well as ongoing communications about emerging results throughout the evaluation, rather than relying solely on a formal final written report at the end. These frequent communications will engage stakeholders in an ongoing dialogue about important emergent evaluation findings, and especially their meanings and implications for the program being evaluated. In order to fully accomplish dialogic values-engagement and the educative intent of the approach, wide dissemination of all evaluation reports and communications (while safeguarding confidentiality), using a variety of formats and venues (written and oral, informal and formal, data-based and interpretive), is the ideal.

This ideal underscores the importance of the relationships established in the evaluation contexts, and thus the social, moral, and interactive dimensions of our work. For it is in these relationships that the broader political and value commitments of our work are practiced and therefore realized, or not. With this way of thinking, the character of the actual practice of evaluation – what we do in the places in which we work – helps to constitute relational norms, values, and ideals in that place. These norms relate to status, power, and privilege; trust, reciprocity, and caring; respect, tolerance, and acceptance. The values-engaged evaluator, through her/his commitments to inclusion and equity, seeks to advance these values through the stakeholder relationships established in the evaluation context.

“...wide dissemination  
of all evaluation  
reports and  
communications...  
using a variety  
of formats  
and venues ...  
is the ideal.”

### *How to Plan and Implement*

Evaluation reports are our most visible legacy, yet all too often they remain little-read and under-used. In order to facilitate wide dissemination of evaluation findings, ongoing communications, and meaningful dialogues:

- Consider negotiating wider dissemination of evaluation results, both within the local context and to outside audiences of policy makers, educators and researchers of relevant fields as part of the initial evaluation contract and planning.
  - o Include, as audiences, not only core stakeholders (program staff, administrators and decision makers) but also, and at a minimum, program participants, their families and communities, and more broadly, other relevant evaluation and education communities.
- Conduct ongoing communications of multiple types with diverse stakeholders about the intent and progress of the evaluation.
  - o Include in all communications and reports a consistent and explicit set of topics to reinforce the evaluation's values-engaged, educative agenda, such as important contextual dimensions, key education issues at hand, diversity and equity issues.
  - o Consider, for example, having a separate section on 'equity and diversity,' and an evaluator commentary section, as regular features of all evaluation reports and communications (interim, final, written, oral).
  - o Pursue various venues to open up spaces for values considerations and dialogues, and to provide secure spaces for stakeholder discussions about important program issues and their underlying value claims.
    - Reserve time during a staff meeting for evaluation reporting and discussion.
    - Post evaluation updates and put interim reports on the program's website.
    - Hold open public evaluation forums, possibly in conjunction with existing school events or community festivities.
    - Publish regular evaluation newsletters or quarterly updates.
    - Explore other multi-media opportunities.
- Consider using "alternative" representations in evaluation reporting, especially for interim reports:
  - o Generate evaluation reports of various kinds (written, oral, performative, web-based, narrative) to foreground different perspectives and values considerations.
  - o Use liberally and creatively alternative representations of evaluation data (e.g., skits, stories, poems, vignettes) to invite dialogue and evoke deeper stakeholder engagement with the issues at hand.
  - o Provide evaluation reports in multiple languages as appropriate.

- When writing up the final report, structure and present evaluation findings by themes, not by method.
  - o Include grounded, contextual, specific descriptions of the program structure and routine, as experienced by various participants and staff.
  - o Feature different sections for different stakeholder perspectives and experiences, and multiple representations of diverse program experiences and outcomes.
  - o Present different data sets (student interviews and teacher interviews) side-by-side to facilitate ‘dialogues’ between various perspectives.
  - o Present clearly and explicitly key value dimensions of the evaluation results, highlighting particularly those related to diversity and equity, their possible implications and meanings.
  - o Have a separate and clearly labeled section on ‘equity and diversity,’ and/or an evaluator commentary section.

### *Examples*

For this final evaluation commonplace, we offer three examples, underscoring the importance of the values-engaged, educative evaluator’s communications and relationships with key stakeholders. The first example is what might be written in an evaluation plan regarding communication and reporting. The second presents an outline of a final evaluation report. And the third illustrates our ideas about “alternative” representations of evaluation results.

### *Example 1: Evaluation Communication and Reporting in an Evaluation Plan*

As part of the ongoing evaluation communication and reporting process, we will pursue and engage in the following activities.

**Evaluation Forums.** Two community forums will be held (likely at the school and possibly in coordination with existing school events) to share what was learned during the evaluation process. All interested members of the Pinewood school community will be invited to attend and provide their comments, reactions, and action ideas. One forum will be held mid-way through the evaluation and the other after completion of data analysis. The evaluation team will consult with the teachers and administrators, and other relevant parent/community groups regarding how best to plan for these forums.

**Ongoing Progress Updates.** The evaluation team will provide regular progress updates throughout the evaluation to program participants, as well as for the larger Pinewood school community. This will occur, for example, through publishing regular evaluation ‘memos,’ using the school’s website and newsletters, as appropriate.





See also the section on The Role of the Values-Engaged, Educative Evaluator at the beginning of the guidebook, especially the set of memos offered, as an example of ongoing communications.

***Example 2: Evaluation Communication and Reporting  
in a Final Evaluation Report Outline***

Executive Summary

A Contextual Snapshot

Community Context

School Context

The Mathematics Summer Camp at Pinewood

Policy Context

Program Development

Diversity Agenda

Program aspirations

Student recruitment

Evaluation Context and Plan

Evaluation Purpose and Audience

Values and aspirations

Focus and utility

Key Evaluation Questions

Criteria for Judging Program Quality

Evaluation Design and Methods

Results

Evaluation Question 1: Quality of Program Experiences

Pinewood Math Summer Camp as envisioned and enacted

Overall program structure, content and pedagogy

Program engagement with and support for the learning of diverse students

Perceived program values and benefits

Pinewood Math Summer Camp as experienced and perceived

A brief portrait of the students

Students' experiences in and perceptions of the MSC

Perceived (unique) benefits of the MSC

Students' perspectives

Parents/Guardians' perspectives

Summary of evaluation question 1

Evaluation Question 2: Quality of Program Outcomes and Accomplishments

Program-wide portrait of achievement: Current and prospective status

Achievement status

Student views of math and math learning

Future aspirations in math learning

Summary of evaluation question 2

*continued*

Evaluation Question 3: Equity in Program Access, Experiences and Accomplishments

- Recounting the program’s diversity agenda
- Evolving presence and effects of the MSC within Pinewood
  - Changing (and unchanging) landscapes of math education at Pinewood
- Challenges encountered and issues remaining
- Summary of evaluation question 3

Commentary

- Program Implementation: Experiences, Perspectives and Outcomes
  - Diversity and Equity in the Program

References

Appendix

- A. Evaluation Plan and Instruments



***Example 3: Evaluation Communication and Reporting  
in Alternative Representations of Evaluation Data***

**1. Skit**

To generate dialogues about important program issues and to engage with values of diversity and equity (drawn from teacher interviews and classroom observations, and presented to Pinewood teachers and administrators)

Setting: Teachers lounge at Pinewood Middle School

Cast of Characters:

Joseph, a math teacher not involved in the MSC

Maria, a math instructor who teaches for the MSC

Conversations in the Lounge

Joseph: Hi Maria. How was the Math Summer Camp?

Maria: It was a lot of fun. I think the kids were really into it. We had a good group this year.

Joseph: What do you mean? What made them a good group?

Maria: Well, the students were pretty engaged, and we were able to stay on task. I felt like I was able to really connect with my students this summer.

Joseph: Hey, I had a couple of parents ask me how they can get their child into the program. What should I tell them?

Maria: Well there's not much they can do. The program is generally by invitation only. We select students based on test scores, teacher recommendations, and well, their race. Almost all of the program participants are African-American.

Joseph: Why?

Maria: Because the program is partly intended to increase the participation of African American students in advanced math. This program has really helped with that.

Joseph: What about other students who might be a good fit for the program? How are they considered?

*continued*

***Example 3: Evaluation Communication and Reporting  
in Alternative Representations of Evaluation Data (continued)***

Maria: There are only so many slots in this program, and we already do a fairly good job of finding students who are appropriate candidates. Of course, we know we can always do better, and there are always some students who could benefit from the program who don't get the chance to participate.

Joseph: I can see how picking students might be a tough job. But if a student would be a good fit for the program then they should at least be considered, right? I mean, having a chance to participate in advanced math is kind of a big deal. Speaking of which, what exactly does the program do to get the students ready for advanced math? Five weeks isn't exactly a long time.

Maria: Actually, the kids are pretty bright. In the past the program has worked with the students to increase their motivation and interest in advanced math. But this year we really sat down and tried to align the content of the program with the curriculum of the advanced math courses. So this year the kids were intentionally introduced to some of the content that they will be seeing next year. We tried to make it fun by incorporating more hands-on learning and technology than might otherwise be used during the regular class.

Joseph: It seems like that would require a lot of preparation. And the kids are all African American? Does that change the way you teach?

Maria: Yes and no. I mean, we are aware of it. And of course we try to do the best we can to prepare these students for advanced math, but when it comes down to it, math is math. We try to give them plenty of opportunities to engage with us, and with each other. We want them to be confident, make friends, and build support groups. For the most part, I think it's working.

**Prompts for Subsequent Discussion**

*Program Access*

- In reflecting on her MSC experiences, Maria gives a few examples of what qualifies as “a good group” of students for the program. Based on your own experiences and perspectives as a math teacher at Pinewood, how would you characterize students who would be ‘a good fit’ for the program? Or students with what types of characteristics would benefit most from this kind of math support program?
- What are your thoughts on the current procedures (“invitation only” with the focus only on African American students) that are used to select students for the program? What would be some of the implications of diversifying participants of the program?

*Perceived Program Relevance and Benefits*

- Maria explains that this year, the program focused on both increasing student interests and motivation in advanced math, as well as introducing students to some of the key content of the advanced math courses via more hands-on activities and technology. What are your thoughts on this dual program focus, especially considering the characteristics (current level of math education, learning styles/profiles, socio-demographic backgrounds) of the particular group of students the program is currently targeting?
- In your view, how effective or powerful might this kind of program be in supporting and encouraging students to pursue advanced math curriculum?

*continued*



***Example 3: Evaluation Communication and Reporting  
in Alternative Representations of Evaluation Data (continued)***

*Teachers' Values, Beliefs and Assumptions*

- In your opinion and experience, what are some important factors and/or characteristics contributing to student success in advanced math learning?
- How (to what extent and in what ways) has your involvement and experience in this program confirmed/reinforced, and/or challenged/changed your own values, beliefs and assumptions about the student characteristics required for success in advanced math?
- How (to what extent and in what ways) has your involvement and experience in this program helped to inform or change your pedagogical practices when teaching students from diverse backgrounds, especially those who are struggling to master important math skills?
- In your opinion and experience, what are some important factors and/or characteristics contributing to student success in advanced math learning?
- How (to what extent and in what ways) has your involvement and experience in this program confirmed/reinforced, and/or challenged/changed your own values, beliefs and assumptions about the student characteristics required for success in advanced math?
- How (to what extent and in what ways) has your involvement and experience in this program helped to inform or change your pedagogical practices when teaching students from diverse backgrounds, especially those who are struggling to master important math skills?



*Example 3: Evaluation Communication and Reporting  
in Alternative Representations of Evaluation Data (continued)*

**2. Poem or Poem-like Structure**

To provide a holistic portrait of participants' program experiences and understanding  
(drawn from student responses to interviews)

In Their Own Voices: Students' Program Experiences and Perceptions

The math summer camp is fun  
More fun than regular math class  
In the math summer camp, we learn how things work  
Many interesting activities and projects we hadn't done before  
It's not like a regular class but more like having fun  
Trying different things, and seeing what we can do with math  
In regular math class, we basically just talk about all the stuff  
Stuff we are learning  
Then we write it down on the board, and do problems on the book  
In the math summer camp, you play games and learn things  
The games you remember longer because they are fun  
By doing the games, it plants more things into our brain  
It helps us absorb the information better  
It keeps it in our brain more  
In the math summer camp, we do hands on activities  
Activities that keep you more interested  
Activities that help you understand math better  
Activities that give you a better feel  
Because if you don't understand it  
Then you won't remember it too well  
In the math summer camp, we learn what it's like to do hard math  
Seeing what it's like to be in advanced math class  
Using cool calculators, using smart boards, and using computers  
It was very fun  
I wish I could do it again



## Thank you!

We thank you for taking the time to look through our guidebook. In the remainder of the guidebook, we answer a few frequently asked questions, present some references and ideas for further reading, and relevant appendix materials.

We welcome your comments on these ideas and this guidebook.  
Please contact:

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## FREQUENTLY ASKED QUESTIONS

*1. How do I bring up the idea of conducting these types of evaluations with clients? Will this approach be appropriate for all evaluation settings?*

During initial meetings we tell clients that our approach to evaluation is comprehensive in scope – addressing issues of project design, context, implementation, and outcomes. It intentionally surfaces related value claims for reflection and critique – and it ambitiously aims to promote innovation and equity in STEM education.

Therefore, the approach works best with *seasoned evaluators, program staff and/or funders who seek a values-engaged evaluation, and have ample evaluation resources*. Extensions of this approach to other levels of grant-making, such as to less welcoming evaluative contexts, or to those with modest resources for evaluation are certainly possible, but likely in truncated or partial form and with acknowledged challenges.

*2. As an evaluator shouldn't I be trying to suppress my values during the evaluation process especially when conducting evaluations of education programs in the STEM field?*

All evaluation approaches serve to promote some set of values, as evaluation is inherently about making judgments of value based on selected criteria of quality. We believe value commitments in evaluation should be explicit. With this approach, we maintain that evaluation can most justifiably promote an engagement with democratic values, inclusive of multiple and diverse stakeholder views, and equity of participant access and accomplishment. Our commitment to engaging with equity is offered in direct support of NSF's longstanding commitment to diversity.

*3. What do I do if my STEM client says that their program is not a 'diversity program'?*

The continued vitality and vigor of STEM fields themselves rest on the meaningful inclusion of multiple and diverse viewpoints, many different creative minds and resourceful hands. Although your client's program may not be a 'diversity' program, the National Science Foundation and many private and corporate funders have placed a great emphasis on improving the quality of K-12 and postsecondary science, technology, engineering, and mathematics education. They are also focused on increasing the participation of traditionally underrepresented groups in STEM fields. This approach is a direct response to those initiatives.





#### *4. Where can I find out more about the theoretical background associated with this approach?*

This approach draws from responsive (Stake, 2004) and democratic (House & Howe, 1999) traditions in evaluation and, as such, it emphasizes particular evaluative purposes, commitments, processes, and evaluator roles. Dr. Jennifer Greene and her associates have spent more than seven years theorizing, conceptualizing and field testing these ideas. While this guidebook offers practical steps for how to conduct this evaluation, there are several materials for those interested in the theory behind this approach. Please contact Dr. Greene at [jcgreene@illinois.edu](mailto:jcgreene@illinois.edu) for a copy of these materials.

#### *5. Is this approach appropriate for for all educational settings?*

We envision this evaluation approach as broadly applicable to a wide range of education settings (public schools, institutions of higher education, and informal learning settings), age groups (K-12, undergraduate and graduate education), and content domains.

#### *6. This approach seeks to include multiple stakeholders; can you expand?*

Ideally, we aim to *inclusively describe and engage* the interests, perspectives, and values of *all* legitimate stakeholders in our evaluation, with particular attention to those least empowered and traditionally not heard in that context. The interests of the majority are not excluded in this approach; rather the interests of the minorities are specifically and intentionally included (House & Howe, 1999). And to surface and describe various stakeholder values is *not* intended to validate or legitimize them.

Stakeholder inclusion has a long history in evaluation, from both utilization and democratic traditions. Our emphasis is on the inclusion of all voices and values, precisely because such inclusion is more pluralistic and equitable. We believe that by actively seeking to include, respect, and represent the plurality of stakeholder interests and values, the evaluation itself can increase awareness of the importance and acceptance of the intrinsic diversity of experience and perspective in the program being evaluated. (Greene, DeStefano, Burgon, & Hall, 2006).



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## On the Meanings of Difference and Diversity, in Service of Equity

*Jennifer C. Greene*

Diversity includes those significant dimensions of human difference that have patterned implications for interpersonal relations and the nature of the interface with organizations, institutions, and other aspects of social structure. Notably, these are the human differences that [can impact] access, process and success. Diversity lives and breathes in all spaces and places, whether recognized or acknowledged. Furthermore, it moves around those spaces and places doing [what it needs to do] with or without our permission. (Symonette, 2004, pp. 2-3)

A serious engagement with difference requires the rejection of old myths, stereotyped images, and racialized code words like “urban” and “inner city” (Lee, 2003). It also requires rejection of race, ethnicity, culture, social class, and other markers of historical disadvantage as fixed or essentialized categories rather than as multifaceted, situated, dynamic, and socially constructed dimensions of experience and identity (Orellana & Bowman, 2003). Extending a discussion of the need to rethink race and ethnicity in educational research to the field of evaluation:

[We need to] resist simplistic assumptions about the meaning of group membership and develop more nuanced and complex research agendas [and evaluation questions]. These work from a basic assumption that human beings always have agency, always have resources, and make meaning of their experience in varied ways. ... [We need to disrupt and challenge persistent] folk theories about groups in the human family that are inextricably tied to relationships of power and dominance. ... [We need to use] a dynamic view of culture as located in history, in belief systems, and as carried forward through institutional practices [to better understand, respect, and accept the other]. (Lee, 2003, pp. 4, 3)

That is, with this evaluation approach, diversity is first conceptualized and enacted in terms of traditional social categories of difference (race/ethnicity, gender, age, class, physical and cognitive ability levels) even while acknowledging that these traditional categories are socially constructed. Inattention to such categories is disrespectful of past injustices and thereby risks perpetuating them. With this evaluation approach, diversity is *also* conceptualized and enacted with regard to other human differences such as learning style, expressive talent, sociability, analytic style, and so forth. In this way, the concept of diversity or difference can be given emphasis in this evaluation approach but in a contextually grounded and meaningful way, rather than relying only on socially constructed meanings of difference.

Engaging with diversity and difference in evaluation is thus both a substantive and a moral commitment. It is enacted in what issues we as evaluators address, what methods we use, the types of reports we craft – that is, where we locate our work in society. It is also relevant to who we are as evaluators, where we position ourselves in our work, what kinds of relationships we forge with others, and what we focus on within those relationships.

### Equity and the Values-Engaged, Educative Approach to Evaluation

*Dr. Maurice Samuels and Dr. Amarachuku C. Enyia*

In a values-engaged, educative evaluation approach, equity is concerned with the treatment of all program participants. It is enacted through generating discussions and questions related to the ways in which a program is attending to all individuals and groups that are present in the context, particularly those that have been identified as being underrepresented in the STEM fields. Moreover, equity is a value commitment in this approach and is used to confront challenges that hinder the advancement of underrepresented groups in the STEM fields.

This evaluation approach aims to understand the ways in which diversity is constructed within the program in order for the dialogue on equity to be generative, contextually relevant, and meaningful. Diversity is the perception of how people and groups are different in ways affecting their treatment. Working to understand diversity within the program context is part of the extent to which the STEM program is engaging equity. It is in this way, perceptions of diversity and equity serve each other.

Below are selected aspects of equity that this evaluation approach can engage. The level of engagement is dependent upon which aspects are relevant to the program being evaluated. Furthermore, this approach acknowledges that equity is a condition that can be attended to in a number of ways. And a values-engaged, educative evaluation can address additional aspects of equity that are not listed.<sup>7</sup>

- **Equity in Pedagogy:** Pertains to teachers' pedagogical knowledge and preparation to teach STEM material and to their values and beliefs on teaching students from underrepresented groups.
- **Equity in Content:** Pertains to providing students with STEM subject matter that meets their individual learning ability, needs, and background.
- **Equity in Opportunity:** Recognizes the program's commitment of ensuring that targeted groups, particularly those that have been identified as being traditionally underrepresented in STEM programs, are equally eligible to be selected for and to participate in the STEM program. Additionally, it is used to examine a program's capacity to meet conditions of equity.
- **Equity in Infrastructure:** Focuses on a program's available resources (e.g., financial, parental, community, leadership, and curricular) to support high levels of STEM learning for all students.
- **Equity in Outcomes for Students:** Considers students' achievement level, course enrollment, interest, motivation, and values as important indicators for students continuing to advance in the STEM fields.

<sup>7</sup> The aspects "equitable infrastructure, equitable pedagogy, equitable content, and equitable outcomes for students" were adapted from Allestaht-Snyder & Hart (2001). The aspect "equitable opportunity" was adapted from Johnson (2005).



Equity in this evaluation approach requires consideration of the social, community, cultural, structural, and historical contexts surrounding the program and the impact these contexts can have in creating equitable conditions for program participants (Martin, 2003). In this manner, equity is serving as a lever that may help to generate a deeper understanding about the challenges external to the program. More importantly, equity is a value commitment that is reconstructed partly through an inclusive dialogic process among the stakeholder groups and the evaluator. Such a stance is critical in seeing equity as it is experienced by stakeholders in the evaluation context and in generating a notion of equity that includes the voices of groups that are underrepresented in the program.

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## Evaluation Plan for the Pinewood Middle School Math Summer Camp

### A Contextual Snapshot

#### Community Context

The Pinewood Middle School is one of four middle schools (grades 6-8) in Jefferson, a small urban community in the upper Midwest with a population of approximately 160,000. Economically, Jefferson boasts a well regarded second-tier state university; a modest research and knowledge industry; strong health and technology industries; and some light manufacturing. Demographically, the city is approximately 15 percent African American, 10 percent Latino/a (and increasing), 65 percent Caucasian, and the remainder a mix of southeast Asians (primarily Vietnamese), Native Americans, Pacific Islanders, and people of mixed races. The median household income is \$45,000, with 25 percent of the Jefferson population living below the poverty line, and disproportionately high poverty rates for under-represented minorities.

Jefferson's unemployment rate is about 8.5 percent, below the current state and national averages, thanks to the diversity of the local economy. The community's cost of living is reasonable, and there is affordable housing for people living at most income levels. Jefferson is regionally known for its 'green' public transit system and its extensive bike paths. The local folk music scene attracts people from throughout the state.

Yet, Jefferson also has its challenges, much like its larger urban counterparts. The most serious of these are racial disparities in all economic and service sectors of the city, a segregated residential profile, touchy race relations that flare up with some regularity. In addition, the city has a higher than average crime rate comprised largely of non-violent and unarmed crimes like burglary and robbery, and a decaying infrastructure of roads, bridges, and public facilities.

#### School Context

The Pinewood Middle School is a public school that serves close to 800 students (grades 6-8) from the city of Jefferson. According to the year's state school report card, Pinewood has 50 full-time teachers, about 90 percent of whom are Caucasian, 7 percent African American, and 3 percent Latino/a. Nearly 80 percent of the teachers are female. Pinewood teachers have an average of 15 years teaching experience, and nearly half of them have a Master's degree. The school has a student-teacher ratio of 15 to 1, which is lower than the state's 17 to 1 ratio. A substantial portion of the faculty will be retiring in the next five years, creating a possible gap in teacher leadership at that time.

The demographics of the student body at Pinewood reflect the relatively younger ages of the community's minority populations. At present, 45 percent of the students are Caucasian, 25 percent African American, 15 percent Latino/a, 10 percent Asian/Pacific Islander/Native American, and 5 percent multi-racial. Approximately 45 percent of the students at Pinewood qualify for free or reduced-price lunches. The school also serves the 7 percent of students with limited English proficiency, who are in the process of learning English language skills.





The African American principal at Pinewood, Delores Jones, has been there for four years. The previous five years she served as a middle school principal in a nearby district, and as an elementary teacher for 10 years before that. Her leadership at Pinewood has been well received by most of the school staff and the families served by the school.

Overall, the students at Pinewood have met Annual Yearly Progress (AYP)<sup>8</sup> for the past five years. However, the African Americans, Latino/as, and students with disabilities did not meet AYP in mathematics during this same time period.

### Program Description

The Pinewood Middle School's Math Summer Camp (MSC) is a summer enrichment program, designed to prepare and support rising 6<sup>th</sup>, 7<sup>th</sup>, and 8<sup>th</sup> grade African American students for successful participation and achievement in advanced mathematics courses. To date, most targeted students have participated in the MSC every summer since the program began.

**Policy Context.** This program is situated within the current accountability policies of the *No Child Left Behind* legislation. MSC was prompted by the persistent "under-performance" of particular subgroups of Pinewood students on the state's mathematics test. It also seeks to go beyond accountability to offer meaningful and sustainable access to the STEM pipeline (for which math competency is a key entrance requirement) and future STEM success.

**Program Development.** The primary champion of the MSC is the Pinewood Middle School principal, Delores Jones. The MSC is her programmatic response to the school's mathematics achievement gap and its contribution to the school's ongoing "in-improvement" ranking on the state's overall report card. She also deeply believes that MSC is an intrinsically good idea that could provide access to higher level math for African American students, who do not always experience the same opportunities to study and excel in math as their majority peers.

The MSC program was developed by a master mathematics teacher in the school where Ms. Jones previously served as principal, in cooperation with two mathematics teachers from Pinewood. The program design incorporates "research-based evidence" on active learning, cognitive skills required for good mathematics understanding, and culturally responsive pedagogy.

The program is funded from a combination of district and state funds, support from a local foundation, and, beginning in the summer of 2011, a small grant from the National Science Foundation (NSF). Program funding is used primarily to pay teacher stipends and to provide student transportation to and from the MSC with a modest amount earmarked for evaluation. Funding has been committed for a five-year trial, beginning in the summer of 2009.

<sup>8</sup>Annual Yearly Progress is measured by annual state tests in selected grades and subject areas, required by the federal *No Child Left Behind* law.



***Diversity Agenda: Program Aspirations & Student Recruitment.*** Now in its third summer, the overall goal of the Math Summer Camp is to change school norms about who qualifies as advanced mathematics students. This is accomplished by having not just one or two, but clearly visible clusters of African American students in advanced math classes. More specifically, the program aims to both boost individual participants' math skills and to increase their motivation, self-efficacy, and confidence to engage in the serious study of mathematics.

Corollary to these goals, the program is also expected to help build a community of confident and competent learners who will continue to work with one another in advanced math courses in the following academic year, and beyond.

Students are identified for the program through a combination of teacher, parent, and self nominations. Targeted students are those performing strongly in math (as indicated by state achievement tests, classroom performance, and/or teacher recommendation) but are not currently in the school's advanced math track. Once students are identified, the program staff work actively to recruit them for the program and to secure both their motivation and the necessary parent/guardian consent and support.

From the outset the MSC program has targeted African American students, as they are the school's largest minority and the most under-represented in advanced math classes, according to the program developers and champions. However, "there have been recent discussions," said the MSC co-director, "about expanding the program to include Latino/as and low-income children, including white students. But right now, due to the limited budget, the program is serving only African Americans."

***Initial Program Theory: Program Design, Content and Pedagogy.*** The MSC is taught by experienced math teachers from Pinewood. The Camp runs for eight weeks in the summer, from 8:30 am – 12:30 pm, Monday through Friday. The MSC incorporates both supplementary and enrichment curricula that are connected to but not driven by the state standards. The program uses hands-on learning, real-life applications, and technology activities to accomplish its goals. Specific program content and activities have been selected and developed by the program instructors to be congruent with, and relevant to those of the advanced math courses appropriate to each grade level.

Most MSC participants are strongly encouraged to also attend a "math connections" course the following year to support their participation in advanced math courses. The math connections course provides supplementary instruction and review for students in various math courses, including advanced curricula.

## Evaluation Context and Plan

The funding group establishes evaluation priorities including program outcomes, specifically, participant success in advanced math and motivation to continue studying mathematics, as well as improvements in the school report card. Due in part to the insistence of Principal Jones and the evaluation team, these priorities also include attention to the quality of the learning experience for students and teachers. And questions about which students should have access to the MSC persist, both within the school's faculty and the families it serves.

To date, the following information is available:

- Ninety percent of the students participating in the MSC were placed in advanced math courses the following year and performed successfully.
- The supportive "math connections" class is not well liked by students, in part because they have to give up an elective in order to take it. This class continues to be strongly recommended for MSC participants by program staff.
- Pinewood students' performance on the state math tests has increased over the last two years, but African Americans, Latino/as, and students with disabilities are still not meeting AYP in math, although the African American students' performance is much closer to the bar than two years ago.
- Parents are highly satisfied with the MSC, according to informal conversations and feedback received.

This is the second evaluation of the MSC program. The first evaluation was conducted during the summer of 2010 with the focus on program design, content and pedagogy, as well as participant selection and recruitment processes. For this second year, the school administration and program staff are seeking an evaluation of the quality of program experience, outcomes and accomplishments.

## Evaluation Purpose and Audience

This evaluation is being conducted at the request of the district administration, using local and NSF funding. Evaluation priorities, as stipulated by the funders, emphasize program outcomes, specifically participant success in advanced math, motivation to continue studying mathematics, and improvements in the school report card. The priorities also include attention to the quality of the learning experience for students and teachers, and questions about which students should have access to the MSC.

***Values and Aspirations.*** This evaluation is grounded in our commitment to promote an enhanced understanding of the STEM program and to engage with issues of diversity and equity in STEM education.

Framed within these value commitments, the major purpose of this evaluation is to assess the quality and importance of Pinewood's Math Summer Camp in terms of its power to support diverse students' math learning. This refers specifically to their interest in and attitude toward math, their motivation to further pursue advanced math, and their self-concept as math students, as well as their math achievements, including transition from regular to advanced mathematics curricula. More broadly, the evaluation will also seek to address the relevance of the program in nurturing an equitable culture of math learning in support for greater diversity and equity in the school.

***Evaluation Focus and Utility.*** To that end, our work will focus on describing and assessing the character and quality of the overall program implementation. This includes the participants' experiences in the program, and their perceptions and reflections on its relevance and value to meaningful and equitable student learning, outcomes and accomplishments in mathematics.

The evaluation team will focus on the issues of diversity and equity, and the ways in which the program is engaging and supportive of math education for students from diverse backgrounds, especially those who are traditionally underserved in our education system and those who are least well served in this school context.

In addition, we strive for an evaluation that is responsive to the current interests and concerns of the Pinewood community, and yields information that is meaningful and useful to the school community. The information obtained from this evaluation is intended to contribute to the school administrators' and program staff's better understanding of the program and their efforts for continued program improvement and refinement.

***Key Evaluation Audiences.*** The primary audiences for this evaluation are: (1) Pinewood administrators, math department faculty, and NSF funders; (2) Pinewood students and their parents or guardians; and (3) school district and state administrators. We further hope that our evaluation results will be shared more broadly with the larger community of mathematics educators and researchers, as well as interested citizens.



## Key Evaluation Questions

### *The Quality of Program Experiences from Multiple Participant Viewpoints*

1. What is the educational quality of the Pinewood Math Summer Camp (MSC) program experiences for various participants?

- How well does the program provide student participants with a distinctive and meaningful math learning experience that:
  - o Engages participants' existing mathematics knowledge and skills, while also stretching them to higher levels.
  - o Uses appropriate instructional strategies, specifically designed to stimulate math engagement and active learning for these program participants.
  - o Recognizes and respects a diversity of learning histories and learning styles within the groups of program participants.
  - o Prepares and supports participants' transition from regular to advanced mathematics curricula.

### *The Quality of Program Outcomes and Accomplishments*

2. What is the quality and magnitude of program outcomes and accomplishments, both intended and unintended?

- To what extent does the program affect short-term (end of program) and longer-term (end of following academic year) educational outcomes for program participants, including:
  - o Increases in mathematics knowledge and skills.
  - o Heightened sense of self-efficacy as a mathematics learner.
  - o Sustainable motivation to study mathematics further.
  - o Support and encouragement from parents/guardians for further study in mathematics.

### *Equity in Program Access, Experiences, and Accomplishments, and the Advancement of the Interests of Under-represented and Under-served Groups*

3. To what extent has the program served to advance the interests and well being of those who are least well served as well as from a broader context?

- To what extent does the program contribute to a school-wide change in normative expectations of who constitutes a successful mathematics student?
- More broadly, in what ways does the program serve to address important issues of diversity and equity in STEM education?

## **Preliminary Criteria for Judging Program Quality**

Criteria for judging the quality and effectiveness of the Pinewood Math Summer Camp will be further specified and refined during the evaluation process. In particular, the evaluation team will invite math teachers and administrators from Pinewood to contribute to this process.

### **Preliminary Criteria:**

#### ***Quality of the Program Implementation: Experiences and Perspectives, Outcomes and Accomplishments, Vision and Values***

- All participants in the program have meaningful, positive, and significant math learning experiences. They demonstrate strong and consistent mastery of math skills, as assessed by school and state tests, teacher judgment, and other possible achievement measures, as well as increased interests, motivation and self-efficacy for math learning.
- All participants in the program develop a community of confident and competent math students who will continue to work with one another in advanced math courses in the following school year and beyond.
- All staff, teaching and administrators of the program hold high expectations for student learning, demonstrate caring and support for all students, and affirm the value of the diverse experiences, resources and creative minds brought to the program.

#### ***Advancement of and Support for Diversity and Equity in STEM Education***

- The program meaningfully engages and supports mathematics learning across a diversity of program participants, especially those least well served in the context.
- The program provides its participants with equitable opportunities for meaningful and high quality program experiences and accomplishments on par with their peers.
- The program helps to challenge and change the current thinking and normative expectations of “who constitutes successful math students” within the school.
- The program helps to foster a greater understanding across the broader school community of the importance of increased diversity and equity in STEM fields, and subsequently, the critical need to increase opportunities for, and broaden the participation of underserved and underrepresented student groups in STEM education.



## Evaluation Design and Methods

To address the evaluation questions stated above, data will be collected using the following mix of methods: class observations; interviews with student participants and as appropriate and possible, their parents/guardians, key school administrators and program staff; along with analysis of the selected student math achievement data. All participants in the evaluation will provide prior consent.

***Class Observations.*** Unstructured observations will be conducted of a range of math classes offered in MSC. They will be scheduled such that different classes will be observed multiple times. The primary purpose of these observations will be to descriptively record the overall class structure and atmosphere, learning activities, and the characteristics and diversity of student interactions and engagements. No data on individual students or teachers will be recorded.

***Student Interviews.*** Brief interviews will be conducted individually or in groups with a select sample of students who participated in the program. These interviews will focus on student understanding of the program goals and structure, the perceived quality of their experiences in the program, and their transition into advanced mathematics courses. These confidential interviews will take 15-20 minutes to complete, and will be conducted during the school day (preferably during the lunch period).

***Parent/Guardian Interviews.*** With the assistance from the school administration, a select sample of parents/guardians of current program participants will be interviewed. The interviews will be conducted in person or by phone and will take 15-20 minutes to complete. Parents/guardians will be interviewed regarding their perception of the quality and benefits of the Math Summer Camp for their child as well as issues related to program access and participant selection.

***Administrator and Teacher Interviews.*** The math teachers and administrators involved in the Pinewood MSC will be individually interviewed. These interviews will focus on the following: their perception of and experience with the program; its strengths and limitations; their reflections on the student recruitment and selection process; and the relevance and value of the program. Applying a broader perspective, the interviews will also pursue their sense of commitment to the program's aspiration in changing normative school culture. Interviews will take 30-45 minutes to complete and will be scheduled during or after school.

These scheduled consultations will be supplemented with informal conversations during our school visits and with electronic communications as needed, throughout the evaluation process.

***Student Achievement Data Analysis.*** Available data will be collected for program participants on student math achievement and other relevant academic information. The following data will be reviewed: student performance on state and school math tests, student math grades for all math courses taken, teacher judgment, and other indicators of math performance deemed relevant by teachers. This data will be collected without identification of individual students.

A summary of various data gathering methods that are connected to key evaluation questions is presented in the following table. A large “X” indicates a primary method and a small “x” a secondary method for that specific evaluation question.

<div> <div>Evaluation Questions</div> <div>Data Gathering Methods</div> </div>	Q1 Program Experiences	Q2 Program Outcomes and Accomplishments	Q3 Diversity and Equity in the Program
Class observation	X	x	
Administrator/teacher interview	X	X	X
Parent/guardian interview	X	x	x
Student interview	X	x	X
Student achievement data analysis		X	

### Evaluation Communication and Reporting

As part of the ongoing evaluation communication and reporting, we will engage in the following activities:

**Evaluation Forums.** Two community forums will be held (likely at the school and possibly in coordination with existing school events) to share what was learned during the evaluation process. All interested members of the Pinewood school community will be invited to attend and provide their comments, reactions, and action ideas. One forum will be held midway through the evaluation and the other after completion of data analysis. The evaluation team will consult with the teachers and administrators, and other relevant parent/community groups regarding how best to plan for these forums.

**Ongoing Progress Updates.** In addition, and again with the assistance from the school administration, the evaluation team will strive to provide regular progress updates throughout the evaluation to the program participants and for the broader Pinewood school community. This will occur, for example, through publishing regular evaluation memos using the school’s website and newsletters, as appropriate.



## Values-Engaged, Educative Evaluation “Checklist”

<i>Grounded on two inter-related fundamental commitments:</i>	
<ul style="list-style-type: none"> <li>Evaluation as a forum for explicitly and actively engaging with critical values of diversity and equity that are inherently embedded in STEM education contexts.</li> </ul>	<ul style="list-style-type: none"> <li>Evaluation as an educative practice centered on learning about the particular contextual character and contours of meaningful, high quality, effective STEM education programs.</li> </ul>
<i>That are importantly supported by:</i>	
<ul style="list-style-type: none"> <li>Intentional focus on particular characteristics of the given program context.</li> </ul>	<ul style="list-style-type: none"> <li>The instrumental use of the perspectives of program theory.</li> </ul>
<p><i>At every phase of the evaluation, from the framing of evaluation questions to the development of an evaluation design and its methods; from the interactions and communications with stakeholders in the evaluation process to the important task of making judgments on program quality, the Values-engaged, Educative Evaluator should seek to:</i></p>	
<ul style="list-style-type: none"> <li>Be inclusive of diverse program experiences and perspectives of all legitimate stakeholders in the evaluation, attending particularly to the inclusion of those least empowered and traditionally not heard in that context.</li> <li>Address and advance equity in STEM access, experience, and accomplishment by probing and examining the ways in which the program provides equitable access and opportunity to learn, experience and succeed in STEM for all learners, particularly those from groups traditionally underrepresented in the field.</li> <li>Assess not only how well participants perform in the program being evaluated, but also how well the program “performs” in a particular context, and how it “shows up” meaningfully in participants’ lives.</li> </ul>	<ul style="list-style-type: none"> <li>Generate localized knowledge about the particular contextual, cultural, normative character of the program from the perspectives of diverse stakeholders, as well as of relevant educational standards of instruction and student performance.</li> <li>Provide stakeholders opportunities to articulate and critically reflect on their own experiences, perspectives and assumptions regarding a given STEM program.</li> <li>Facilitate stakeholder dialogue with other stakeholders regarding their shared and various understandings of the program as intended and as implemented (their diverse “program theories”), and the assumptions and associated value stances that underlie these differences.</li> </ul>
<i>continued</i>	

## Values-Engaged, Educative Evaluation “Checklist” *(continued)*

*Specifically, for example, the Values-Engaged, Educative Evaluation should:*

*Seek to thoroughly understand the relevant contexts:*

- Learn about and describe the particular contextual character (e.g., cultural and normative dimensions) of the program.
- Assess how well the program fits the people and their expectations, the culture, the daily routines, and the tensions of the context in terms of the program’s design, implementation, and impact.
- Foster the understanding of context in evaluation design, analysis, and reporting as appropriate.

*Responsively and dialogically honor the importance of diverse program experiences:*

- Document and assess the character and quality of the program experiences and perspectives of various program participants.
- Describe a multidimensional conceptualization of what was experienced by multiple and diverse stakeholders.
- Provide multiple and diverse stakeholders an opportunity to learn about (a) the various perceptions they have of the program, (b) how participants experience and make sense of the program, (c) how their lives are changed through the program, and (d) the various values that accompany these different perspectives and experiences (e.g., the STEM thinking and pedagogical rationales offered by the program, values related to equity).

*Prescriptively and dialogically advance values of diversity and equity:*

- Explicitly acknowledge the evaluation’s equity orientation toward explaining and engaging in values of diversity and equity in STEM.
- Address questions and concerns about equity in the particular context throughout the evaluation process—the extent to which a program has been successful at providing educational opportunities and accomplishments for all participants, with particular emphasis on individuals from groups traditionally underserved.
- Define the quality of programs at the intersection of STEM content, pedagogy, and equity.
- Attend to the interests, perspectives, and relationships among multiple and diverse stakeholders throughout the evaluation process, specifically those traditionally under-served in STEM without the exclusion of other stakeholders.

*Adopt a respectful, engaged evaluator presence:*

- Incorporate significant onsite time and interaction.
- Concentrate carefully and respectfully on building relationships with various stakeholders and learning about power differences among stakeholders and thus stakeholder voice.
- Maintain frequent and widespread communications with multiple stakeholders throughout the course of the evaluation and its results.