EVALSOLUTIONS INC.

Evaluation Report: 2010-2011

Illinois Mathematics & Science Partnership

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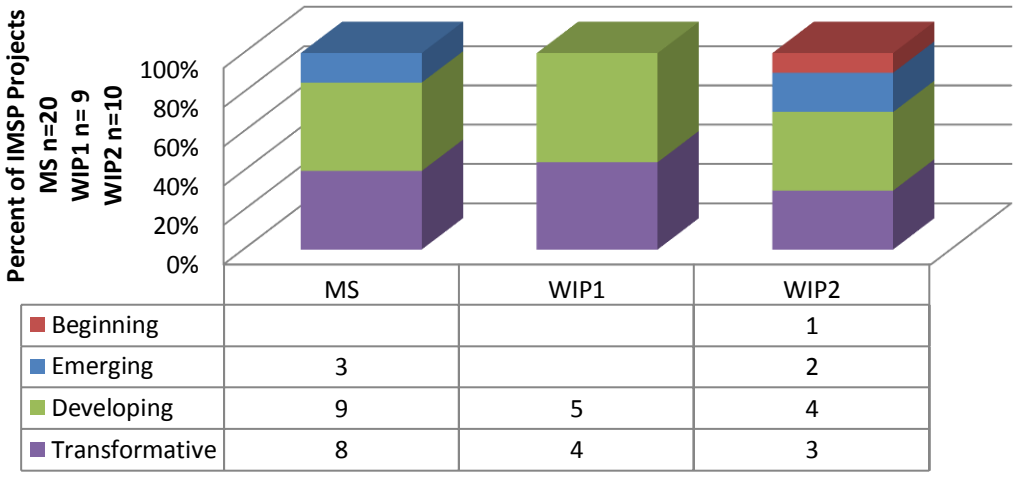
Executive Summary

Qualities of the partnering relationship

In the 2010-2011 school year, an overview of the qualities of the progress of the grants was summarized across all of the categories investigated for three funded models.

Based on site interviews, many positive relationships matured between partners. As a whole, the majority of partnerships were characterized as collaborative and positive with ongoing communication between partners. Many grants continue to operate with a more centralized model with restricted roles of outside partners. These partnerships were characterized by collaboration with partners outside the lead institution primarily focused in the planning stages. These partnerships were more difficult to describe confidently because no partners outside the project director participated in the interview session.

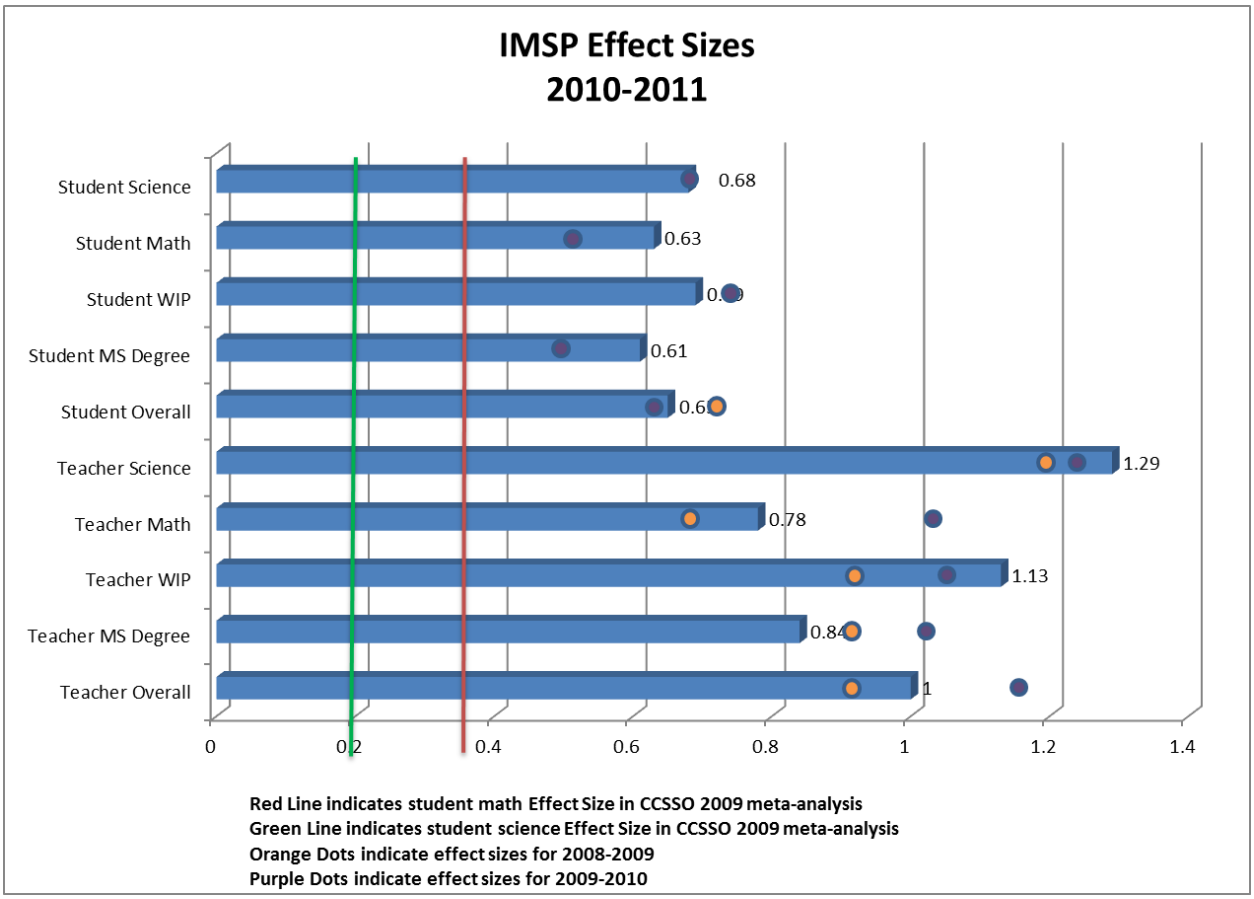
In surveys, the majority of responding teachers and partners (industry, school, higher education, and teacher) were positive about their experiences in terms of the vision, leadership, and technical support.



	MS	WIP1	WIP2
Beginning			1
Emerging	3		2
Developing	9	5	4
Transformative	8	4	3

IMSP Performance and Outcomes

For 2010-2011, both the effect sizes in the 2009 CCSSO meta-analysis of national MSP trends as well as the IMSP meta-analysis results for 2008-2009 and 2009-2010 are provided. In this context, the IMSP effect sizes for mathematics and science are moderate to large. In a comparison against last year's IMSP meta-analysis results, *initial* IMSP effect sizes for 2010-2011 are larger across the board except for the student science effect size, which is slightly smaller in 2010-2011 (2009-2010=.68; 2010-2011= .67).



Sustainability

Survey respondents across partner groups as well as teacher participants were generally positive about the sustainability of IMSP practices. In site interviews, partners generally reported that they received benefits commensurate with their contributions. Grantees consistently stated that the main elements of the projects will not continue without new funding. Generally, sustainability was most commonly described by grantees in terms of changes made to participants' content knowledge, pedagogical knowledge, and access to STEM resources. At the university level, sustainability was noted in terms of on-going collaboration between colleges. Some grantees are actively pursuing National Science Foundation (NSF) grants to continue their work. Continued teacher practices at the individual participant level were generally the focus of expectations for sustainability.

Areas of Improvement

Evaluation

The lack of available student outcome measures was a barrier for grants. Alternatives to the state tests (like performance assessment) might be considered if funding for standardized tests (or piloting new assessments) is not available.

Recommendation:

Evaluation activities related to student and teacher outcomes and implementation fidelity should be centralized using the Illinois Data Portal. Tools on the data portal should be supplemented to include surveys and observation protocols appropriate to the goals of the IMSP to be used by all grants. Student data requirements should be changed in future IMSP programs to incorporate student performance assessments (through the portal).

Communication

Clear communication to teachers and school districts about project activities and expectations in advance of participation is an important element of participant satisfaction.

Recommendation:

As recommended in 2009-2010, the state MSP program can provide a better structure to improve communication. First, the state IMSP should provide guidelines for the local communication of the IMSP goals during recruitment phases as well as throughout the program. All grantees can benefit from more access and opportunity for communication with the state coordinator as well as with other grantees.

LEA Collaboration, Participation and Recruitment

The issues that are created by weaker, more tertiary commitment and collaboration between the LEA of the teachers and grant lead agencies are evident in the problems identified by project staff and teachers who are not receiving the needed support for systemic change. Similarly, projects struggle with effectives processes for recruiting individual teachers. A new perspective on recruiting is needed at the state level to help coordinate and support more efficient, effective recruiting for individual grants.

Recommendation:

As recommended in 2009-2010, a more formal application and recruitment process needs to be considered by the state IMSP for LEA eligibility to participate. Districts should formally identify local needs and acknowledge formally their commitment to a deeper participation in the IMSP program. Alternative strategies to local IMSP partners recruiting participating teachers individually needs to be considered to improve the commitment, relevance, and coherence of the program for the local LEA.

Teacher Background

Diverse teacher background and needs in terms of content and pedagogical knowledge creates important issues that need to be addressed by grants. Flexibility and more agile approaches need to be considered to adjust and accommodate the range of teacher needs.

Recommendation:

As reported in 2009-2010, there is no evidence that the two models (graduate versus workshop institute) are different in their student and teacher outcomes. There is some evidence that serving teachers from mixed grade and content areas is not as effective at serving the teachers' needs generally. The IMSP should consider re-formulating the distribution of grants to provide more targeted opportunities that can address the needs of the schools and teachers more flexibly. District level commitment to multiple IMSP grants that more specifically target content or grade level needs may be an appropriate alternative. Centralized evaluation data collection through the portal will help minimize the burden of participating in multiple grants.

Evaluation Report: 2010-2011

Background

The Illinois Mathematics and Science Partnership (IMSP) program represents an important response to a very critical need in students' mathematics and science achievement. The IMSP program is designed to improve the performance of students in the areas of mathematics and science by encouraging states, IHEs, LEAs, and elementary and secondary schools to participate in programs that improve and upgrade the status and stature of mathematics and science teaching, focus on the education of mathematics and science teachers as a career-long process; bring mathematics and science teachers together with STEM professionals, and develop more rigorous mathematics and science curricula aligned with state and local standards.

The IMSP program was initiated by the Illinois State Board of Education (ISBE) as a response to achievement needs for Illinois students in mathematics and science as well as to increase the percentage of high school math and science teachers certified in their field

Addressing the Need

Model 1:

The ISBE has developed two MSP programs to address the need for improved mathematics and science instruction in Illinois. The first model currently funded in the IMSP program centers around Master's Degree programs that represent partnerships across colleges of Arts and Science and Education with school districts to provide degree programs uniquely tailored to the needs of the IMSP.

Model 2:

In 2008-2009, the ISBE launched a second model, the Workshop Institute MSP program. This model focused on two week intensive training sessions complemented by shorter training and mentoring sessions throughout the year. The first round of intensive training was conducted in June 2009.

IMSP Program Evaluation Framework

Participants

Initially, the Master's Degree MSP model was represented by twenty-four separate partnerships across ten universities throughout the state. The first phase of development for this model was completed in 2008-2009, a planning phase for finalizing the Master's programs and recruiting teachers to participate.

In 2009-2010, Master's Degree grants moved into the implementation phase of the program with teachers beginning coursework in the fall 2008 or winter 2009. Of the original cohort of grants, sixteen grants across eight universities began the implementation phase of their projects. Four grants across four universities extended their planning to delay implementation until 2009-2010. Four grants were discontinued and did not complete the process to continue into the implementation phase.

The IMSP higher education partners include the Illinois Institute of Technology (IIT), Illinois State University (ISU), Northern Illinois University (NIU), Southern Illinois University – Carbondale (SIU-C), Southern Illinois University – Edwardsville (SIU-E), University of Illinois Urbana Champaign (UIUC), Loyola University (LU), Aurora University (AU), Bradley University (BU), and DePaul University (DU). See Table 1 for breakdown of institutions and content.

There are currently two cohorts of the Workshop Institute Program (WIP) model included in this evaluation report. WIP-1 partners include AU, UIUC, ISU, Lee-Ogle ROE, Monroe-Randolph ROE, Rock Island ROE, and St. Clair ROE (see Table 2). WIP-2 partners include AU, Bureau Henry Stark (BHS) ROE 28, ISU, Monroe-Randolph ROE, Lee-Ogle ROE, St. Clair ROE, NIU, Rock Island ROE (see Table 3). There is a third WIP cohort that is not included in the MSP evaluation for 2010-2011.

Table 1. IMSP Funded Grants – Master's Degree Programs

	Institution										
Content Focus	IIT	ISU	NIU	SIU-C	SIU-E	UIUC	LU	AU	BU	DU	Total
Life Sciences			1**					1			2
Chemistry		1					1*				2
Earth/Space Science								1			1
Elementary		1*		1*		1		1	1		5
Environmental Science									1**		1
IT/Pre-engineering		1	1								2
Physics	1										1
Secondary Mathematics		1	1		1**		1	1		1**	6
Total	1	4	3	1	1	1	2	4	2	1	20

***Implementation delayed until January 2009**

****Implementation delayed until 2009-2010**

Table 2. IMSP Funded Grants – Workshop-Institute Program 1

	Institution							
Content Focus	AU	UIUC	ISU	Lee-Ogle ROE	Monroe-Randolph ROE	Rock Island ROE	St. Clair ROE	Total
Nanotechnology		1						1
Physics	1							1
Middle School Mathematics & Science						1		1
Secondary Science			1		1			2
Secondary Mathematics	1		1	1				3
Secondary Mathematics & Science							1	1
Total	2	1	2	1	1	1	1	9

Table 3. IMSP Funded Grants - Workshop Institute Program 2

	Institution								
Content Focus	AU	BHS ROE 28	ISU	Monroe-Randolph ROE	Lee-Ogle ROE	St. Clair ROE	NIU	Rock Island ROE	Total
Elementary	1								1
Middle School Mathematics				1					1
Secondary Mathematics & Science		1			1				2
Science			1					1	2
STEM			1			1	1		3
Total	1	1	2	1	1	1	1	1	

Core program components

Each of the programs in both models has the following core elements:

*Content-focused professional development***.** The Master's Program model is focused around new or revised graduate level program granting Master's degree for participants. The Workshop-Institute Program model incorporate intensive content-focused training with mentoring.

Partnerships between STEM organization or business, government agencies, universities, and/or local school districts and school service agencies. All grants in both models have formed important partnerships to execute the grant activities. For the Master's Program model, all grants incorporate collaboration across colleges within their universities. In both the Master's Program and Workshop Institute Program, grants have developed or used existing partnerships with industry, government, education service agencies, or school partners as part of the IMSP. The nature of the partners and their relationships varies across grants.

The Illinois cross-site evaluation framework uses local evaluation results in a systematic way as an indicator of the effectiveness of the IMSP project overall. Meta-analysis methodology is used to provide estimates of the impact across the range of mathematics, science, and STEM partnership initiatives funded by the IMSP program.

For 2010-2011, meta-analyses were applied to model the scale of change in teachers' and students' content knowledge. In addition to meta-analyses, results from qualitative analyses of interviews and artifacts were triangulated with quantitative survey results to provide a more complete picture of Illinois' progress toward its MSP goals.

Overview of Illinois State-Level MSP Evaluation Data Sources

IMSP outcomes evolved from the CCSSO matrix of professional development outcomes (CCSSO, 2007).

There are five categories of outcomes for which local grants submit data to the state each year:

1. Quality of PD Activities
2. Change in teacher content knowledge
3. Change in instructional practice (including strategies, resources, and content knowledge)
4. Change in student achievement
5. Quality of Partnerships

Extended definitions of data sources are available in Appendix A.

State Data Templates – local grants submit aggregated data for the state evaluation for outcomes 1-4.

Participant Surveys – Partners and teacher participants are surveyed each year by the state evaluation team. The survey was adapted from Annual Satisfaction Survey for Community Coalitions. Wolff,T. (2003). A practical approach to evaluating coalitions. In T.Backer(Ed.) Evaluating Community Collaborations. Springer Publishing and covers their perceptions of the effectiveness of the local MSP vision, leadership, communication, technical assistance, progress and outcomes, and sustainability. The

survey focuses largely on state outcome 5 as well as providing evidence for outcomes 1, 2, 3, and 5. In addition to site visits, IMSP grantees submitted lists of teacher, school, industry, and higher education partners to complete satisfaction surveys (see Appendix B). Response rate for the surveys was moderate at 64%. Analyses after the survey administration indicated the internal consistency was strong with α= .97 (n=875). In order to compensate for attrition in responses due to the "not applicable" response choice which causes the listwise deletion of cases in analyses and an inflated Cronbach's alpha, these responses were replaced with the appropriate subscale median.

Site Visit Interviews & Protocols – Interview protocols conducted by the state site evaluation team are available in Appendix B. The protocol addresses all of the outcome categories 1-5.

Implementation Fidelity

Implementation fidelity is built into the state level evaluation framework. The state requirements rely on the local evaluation models using a variety of data sources to establish the levels of implementation of grant goals in participating teachers' classrooms. Although there are broad commonalities across grants, the unique scope and sequence of the content, strategies, resources, and technologies across programs precludes the use of a single implementation measure for everyone. In addition to the differences in goals and design, differences in local school settings require flexibility at the local grant level for measuring implementation. Contextual variables related to the participants (administrators, teachers, and students), competing reforms in the participating schools, and unique partnerships with STEM industry professionals need to be considered when determining how to measure local implementation.

Common Implementation Areas

Regardless of local needs, all grantees measure the following common implementation elements:

- Integration of content expertise from program activities
- Integration of curriculum resources
- Integration of instructional strategies and classroom activities
- Integration of STEM technologies

These four areas are the focus of the state-level implementation evaluation requirements.
Each local grant measures the levels at which participants are implementing expected grant activities using a variety of data sources (e.g., surveys , logs, interview and/or focus groups, classroom observation, and extant data). Examples of each of these methods for assessing implementation include:

1) Surveys – like the Survey of Enacted Curriculum which gives a broad view of implementation and the use of a wide variety of strategies. However, this survey will not provide information about specific new lessons, tools, strategies, or resources that teachers are implementing in their classrooms.

2) Logs – teachers can complete instructional logs tailored to the exact implementation requirements of each grant during the period of implementation specified by the grantee

3) Extant data –grantees can collect and analyze lesson plans, teacher reflection journals, and artifacts from action research projects to examine implementation.

4) Observation – several observation protocols are available to provide a framework for observation. Some resources have been used extensively in IMSP grants. There are other protocols available that are more generic or specialized that could complement the data collection (e.g., protocols specific to technology or inquiry). Grantees select an observation protocol that aligns with their specific program goals.

5) Interviews/Focus Groups – grantees may employ interviews or focus groups to supplement their understanding of teachers' implementation or barriers to implementation.

At the site level, site evaluators summarized interview field notes and project artifacts in Program Profiles for each IMSP grant (see IMSP Profiles Supplemental Report). Principal Investigators for each grant reviewed the profiles and submitted clarifications and comments through an online member check survey (see Appendix C). Analyses of the partnerships focused on Partnership Composition, Organizational Structure, Action Plan and Operational Guidelines, Qualities of the Partnering Relationship, and Evaluation Implementation. Grant profiles and narrative survey responses were coded using MAXQDA 10 software. Statistical analyses were conducted using SPSS 18.

Results for IMSP Implementation

In 2010-2011, the state-level evaluation efforts continued to focus on teacher and student outcomes for Master's Program, Workshop-Institute Program WIP-1 and WIP-2 grants that continued implementation WIP cohort that is not included in the MSP evaluation for 2010-2011. Site visits were completed in spring 2011 for the thirty-nine grants in the MS and WIP-1 and WIP-2 program (see Appendix C for protocol). Site evaluators summarized interview field notes and project artifacts in Program Profiles for each IMSP grant (see IMSP Profiles Supplemental Report). Principal Investigators for each grant reviewed the profiles and submitted clarifications and comments through an online survey as desired.

In addition to site visits, IMSP grantees submitted lists of teacher, school, industry, and higher education partners to complete satisfaction surveys (see Appendix B). Analyses after the survey administration indicated the internal consistency for the survey was strong with $\alpha = .970$ ($n=822$). In order to compensate for attrition in responses due to the "not applicable" response choice which causes the list wise deletion of cases in analyses and an inflated Cronbach's alpha, these responses were replaced with the appropriate subscale mean.

Analyses of the partnerships focused on Partnership Composition, Organizational Structure, Action Plan and Operational Guidelines, Qualities of the Partnering Relationship, Progress toward Outcomes, Sustainability, and Evaluation Implementation. Grant profiles and narrative survey responses were coded using MAXQDA10 software. Statistical analyses were conducted using SPSS 18 and SAS.

Qualities of the partnering relationship

To what extent is there a mutual need, trust, equality in decision-making, resource exchange, transparency, respect, representation, enthusiasm, and sustained understanding between partners and stakeholders across this IMSP grant? To what extent is leadership collaborative and transformational? Who are the leaders? Have the IMSP resources been sufficient to reach implementation goals?

Partnership profiles and Partner survey results were analyzed in terms of the characteristics associated with quality partnerships, including mutuality & trust, leadership, resources, and collaboration and mechanisms of communication.

Partners and participants were surveyed for feedback on their experiences in the IMSP for 2010-2011. The surveys asked for satisfaction ratings in terms of vision, leadership, communication, technical support, progress toward objectives, and sustainability.

Summary of Site Visits

Detailed profiles of grants in the implementation stages were developed based on interviews and review of extant data conducted by the state evaluation team. Based on these profiles, projects were described in terms of the degree to which they were in the beginning, emerging, developing, or transformative stages.

The site visit tools include the site visit protocol and an analysis of artifacts that programs submit to support interview data (see Appendix B). Sites also submit for review IMSP membership list, IMSP/ IHE organizational charts, logic/change models, evaluation frameworks, evaluation data analysis plans, formal agreements or contracts in addition to the grant agreement, meeting agendas, meeting minutes, budget summary/narratives, newsletters, websites, and other forms or policy statements. Site evaluators analyze the data in formal profile reports that are reviewed by the local grantee (see Appendix C). In addition, the site evaluators' analyses and interview evidence are incorporated into the state level reports to triangulate with survey and achievement data.

The Site Visit Protocol includes questions about the partnership composition, organizational structure of the partnership, the action plan and operational guidelines, and the quality of the partnership. Partnership Composition is considered in terms of the degree to which IMSP staffing, collaboration between colleges, as well as the context for implementing the MSP shows effective coordination for achieving outcomes. Organizational Structure indicates the extent to which governance and decision-making bodies of the MSP were stable and effective. Action Plan & Operational Guidelines describe the nature of the program elements and the extent to which formal or informal agreements define,

establish and support effective collaboration. Partnership Quality is represented as the degree that the IMSP partnership meets mutual needs. The level of trust, respect, and mutual accountability between partners, shared leadership between partners and sufficient resources to accomplish goals are also elements of partnership quality. The Performance and Outcomes elements added in 2009-2010 to the protocol to assess the participants' perspectives on the IMSP grant outcomes and capacity building for the partners were continued in 2010-2011. Sustainability profiles indicate the degree to which the grant partners have benefitted from the grant and their perceptions of the institutionalization and sustainability of the core grant elements. And finally, a profile of the Local Evaluation Implementation is provided based on interviews of site partners to describe the resources, methodology and lessons learned in the implementation of the evaluation framework. The interview data is triangulated with summaries of the support of state level surveys and completion of the state and federal data reporting requirements.

Based on the interview data, artifacts, and data provided to the state, site evaluators characterize the progress that each site is making in each of the partnership areas along a four-level heuristic:

- Beginning stages are represented by articulated plans but no actions. The element is "on the radar" but there is no substantive progress toward effective implementation. The quality of the plans is inconsistent. Outcomes are not possible because no plans have been put into action. Plans may not provide adequate foundation for full implementation.

- Emerging stages are represented by clear and articulated plans with some initial actions setting the stage for implementation, but not enough substantive activity to establish implementation. The quality of the articulated plan may be very strong or may have some apparent weaknesses amidst other strengths. Outcomes are not imminent or predictable because high quality implementation has not reached a minimum threshold.

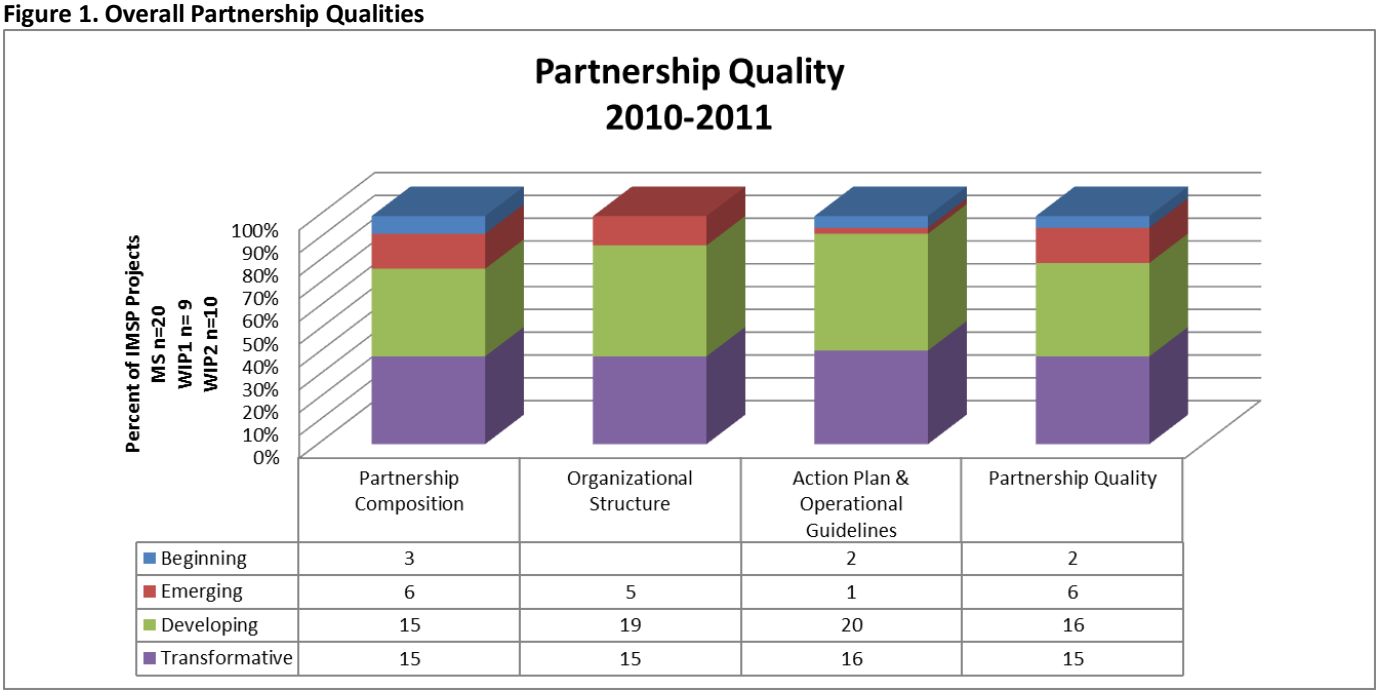
- Developing stages show clear, strong implementation is in place, although corrections for barriers, changes to plans, or consistency/satisfaction across stakeholders might be mixed. Positive outcomes are evident but all goals are not fully realized or not on track.

- Transformative stages show such a clear, strong enacted plan. It can be considered a model for others to use. Positive outcomes associated with the partnership seem inevitable or highly predictable.

Summary of Key Results

During the 2010-2011 school year progress in the quality of the partnerships was clear across the thirty-nine projects. The strongest development is evident in the action plan and operational guidelines where 92% of the projects are described by the site evaluators at the developing and transformative stages. Partnership composition (the decision-makers) and partnership quality (levels of trust and communication) are the areas where a number of grants are still lagging in their development of more integrated, collaborative relationships between partners (see Figure 1).

Figure 1. Overall Partnership Qualities



	Partnership Composition	Organizational Structure	Action Plan & Operational Guidelines	Partnership Quality
Beginning	3		2	2
Emerging	6	5	1	6
Developing	15	19	20	16
Transformative	15	15	16	15

Nature of the Partnerships

Site Interview Evidence

As indicated in past site interviews, many positive relationships between partners that developed in 2009-2010 continued in 2010-2011 Based on site interviews, many positive relationships were matured between partners. As a whole, the majority of partnerships were characterized as collaborative and positive with ongoing communication between partners. Many grants continue to operate with a more centralized model with restricted roles of outside partners. These partnerships were characterized by collaboration with partners outside the lead institution primarily focused in the planning stages. These partnerships were more difficult to describe confidently because no partners outside the project director participated in the interview session.

For many Master's Degree projects, similar to 2009-2010, many grants continued strong collaboration between university partners with more restricted roles of outside partners. Communication was often focused on the teacher participants with less collaboration between university grant leaders and school district leaders. Similarly in WIP programs, the lead agency tended to dominate the decision-making role, although this role was sometimes held by regional office of education staff as opposed to university staff. However, several MS, WIP-1, and WIP-2 projects worked to develop a higher, more transformational partnership between stakeholders hence a more balanced distribution of decision-making and collaboration was evident.

Finally, as evidenced in 2009-2010, some partnerships were difficult to describe confidently because no partners outside the project director participated in the interview session. With limited evidence from supporting sources, there was not sufficient support to corroborate the nature of the partnership.

Survey Evidence

Partnership qualities are also evident from the partners each grant named to complete state partnership surveys. For the implementation phase of the IMSP, all MS Degree projects named higher education, 95% (n=19) named school partners, and 20% (n=4) named industry partners to complete state surveys (see Table 4). Most WIP-1 projects named IHE partners to participate in surveys (89%, n=8), 78% (n=7) named school partners, and 50% (n=4) named industry partners to participate in the state survey. WIP-2 projects all named IHE partners to participate in surveys, 60% (n=6) named school partners, and 20% (n=2) named industry partners to participate in the state survey.

Table 4. Number of partners/participants named by grantees for State Implementation Phase Survey

Grant Model	Institution	Category	IHE	Industry	School	Teacher
MS Degree	Aurora	Biology	5	7	10	25
MS Degree	Aurora	Earth/Space	5	1	4	24
MS Degree	Aurora	Elementary	6	7	7	25
MS Degree	Aurora	Sec Math	5	7	10	21
MS Degree	ISU	Chemistry	4		2	19
MS Degree	ISU	Elementary	1		1	29
MS Degree	ISU	IT/pre-eng	3		1	27
MS Degree	ISU	Sec Math	5		3	22
MS Degree	NIU	IT/pre-eng	9		2	21
MS Degree	NIU	Sec Math	6		1	31
MS Degree	IIT	Physics	4		2	19
MS Degree	Loyola	Chemistry	2	1	1	19
MS Degree	Loyola	Sec Math	2			20
MS Degree	UIUC	Elementary	2	1		24
MS Degree	Bradley	Elementary	12		6	20
MS Degree	SIU-C	Elementary	7	1	54	27
MS Degree	NIU	Biology	9		2	27
MS Degree	DePaul	Sec Math	7		2	25
MS Degree	Bradley	Environment	18	7	5	15
MS Degree	SIU-E	Sec Math	1			25
WIP-1	Aurora University	MS / HS Mathematics (with connections to Physical Sciences)	7	4	2	24
WIP-1	Aurora University	MS / HS Physical Sciences (with connections to	7	4	2	14

Grant Model	Institution	Category	IHE	Industry	School	Teacher
		Mathematics)				
WIP-1	UIUC	HS STEM specifically Nanotechnology		1	1	25
WIP-1	ISU	MS / HS Science (primarily Geology)	1	1		20
WIP-1	ISU	HS Math	3		1	15
WIP-1	Lee/Ogle Counties ROE 47	6th - 9th grade Math and Science	2		2	23
WIP-1	Monroe-Randolph ROE 45	MS / HS Science specifically Biotechnology	2	1	2	30
WIP-1	Rock Island County ROE 49	4th - 9th grade Math and Science	4			29
WIP-1	St. Clair ROE 50	HS Math and Science	3			36
WIP-2	Aurora University	Elementary Math / Science	4	4	5	18
WIP-2	BHS ROE #28	7th - 12th grade Math / Science	11	3	20	28
WIP-2	ISU	MS Engaged STEM				19
WIP-2	ISU	Threatened Species, Threatened Environments				23
WIP-2	Rock Island ROE 49	NIMS 4th - 9th Physical/ Earth Science	5			61
WIP-2	Monroe-Randolph ROE 45	Elementary / MS Intel Math	2		5	49
WIP-2	NIU	MS / HS STEM	3	4		10
WIP-2	Lee/Ogle Counties ROE 47	5th - 9th NIMS - Rockford	2		2	11
WIP-2	SIU	MS / HS Science Partnership for Improved Achievement in Science Through Computational Science				22
WIP-2	St. Clair ROE 50	Elementary / MS Sprouting STEMS	5			40

Generally, the majority of survey respondents across partner types (industry, school, higher education, and teacher) were positive about their experiences in terms of the vision, leadership, communication, and technical support (see Table 5). Responding higher education partners (IHE) were generally consistent across all categories with most indicated high levels of satisfaction and confidence across the vision, leadership, communication, and technical support. General descriptive trends show lower satisfaction levels for the MS program for industry and teacher respondents. Similarly, lower satisfaction levels were apparent for WIP-2 school partner respondents. Descriptive statistics for all items for all partners are available in Appendix E.

Table 5. Aggregated Survey Results (Percent Agee or Strongly Agree/Satisfied or Highly Satisfied)

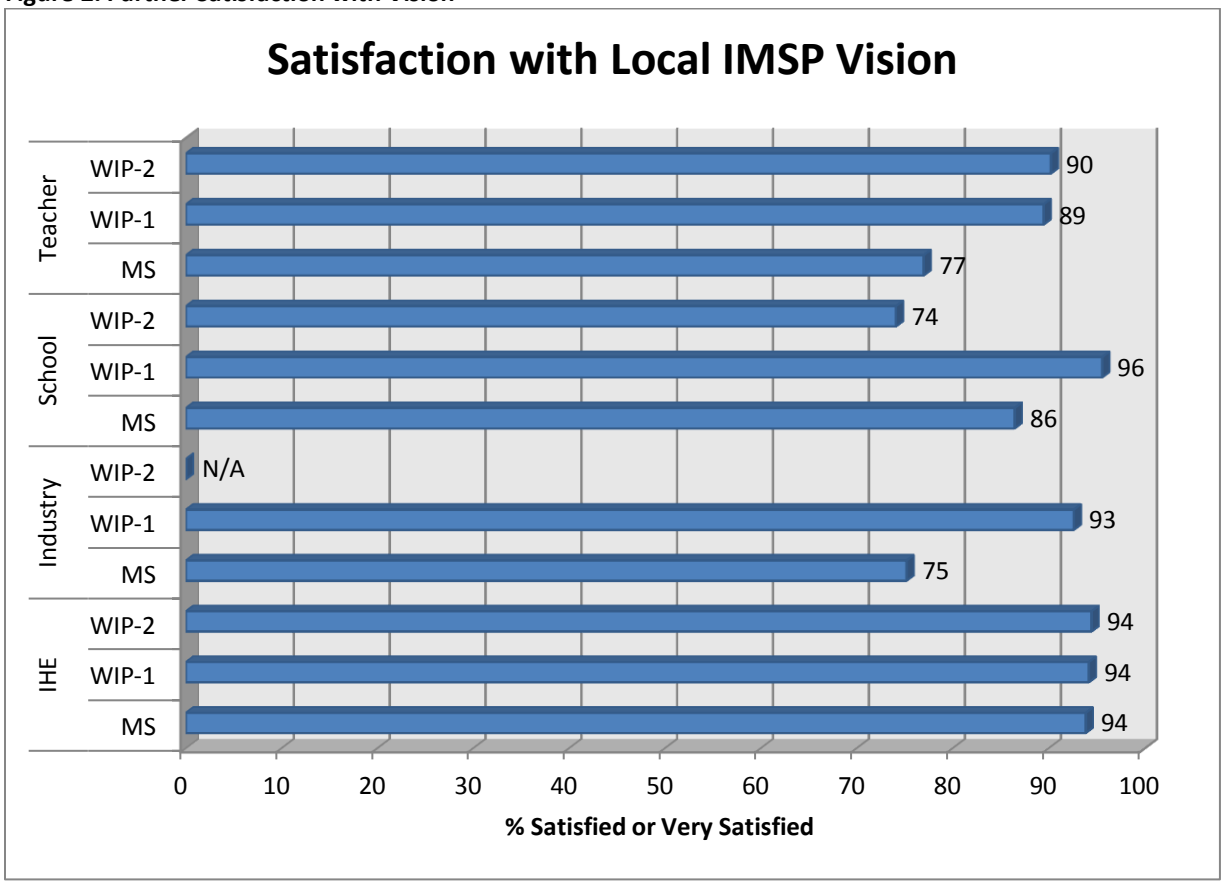
		Vision	Leadership	Communication	Technical Support
IHE	MS	94	96	90	94
	WIP-1	94	99	92	97
	WIP-2	94	97	97	97
Industry	MS	75	81	65	70
	WIP-1	93	89	85	91
	WIP-2	*	*	*	*
School	MS	86	86	85	88
	WIP-1	96	95	96	100
	WIP-2	74	67	67	64
Teacher	MS	77	76	82	78
	WIP-1	89	89	92	92
	WIP-2	90	88	92	93

*Low sample size

**Not surveyed

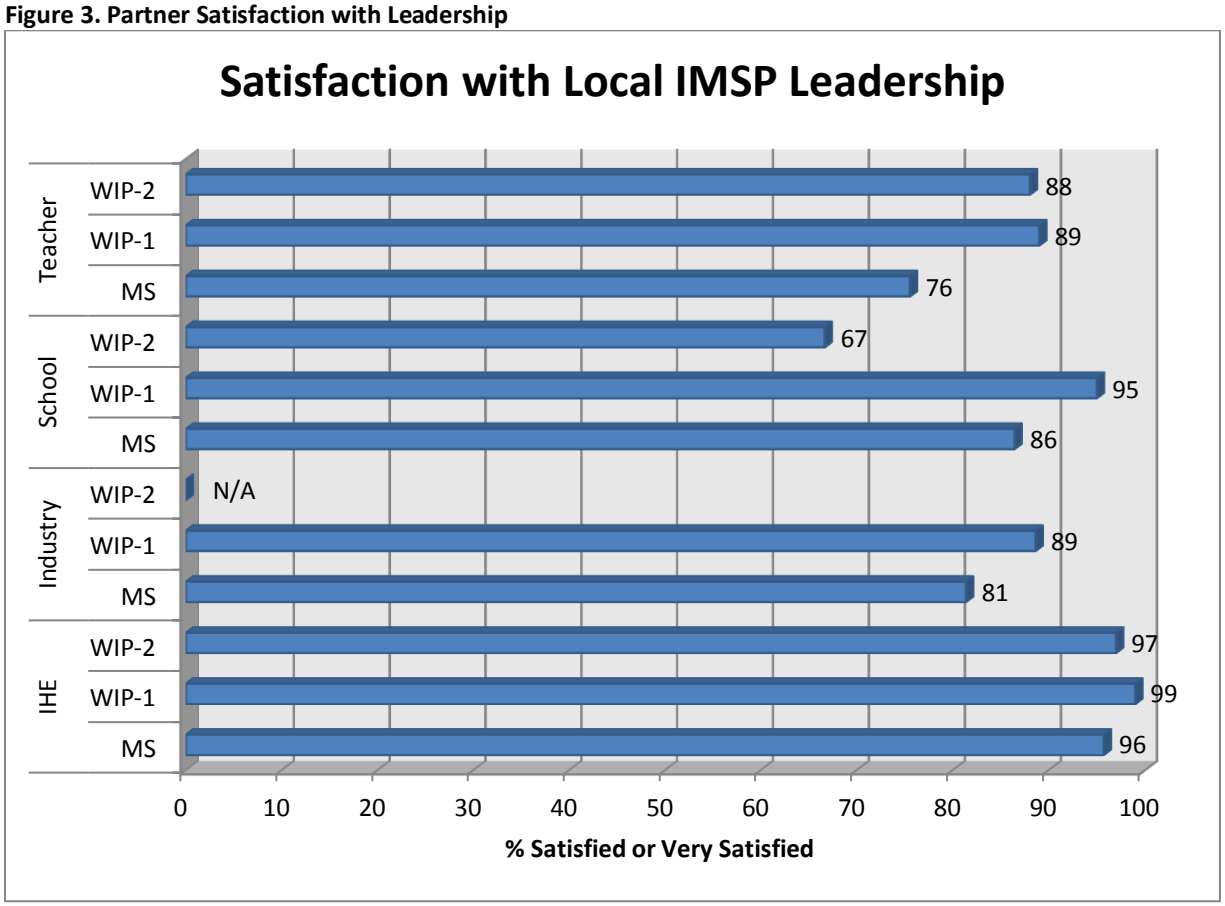
Vision was operationalized in terms of clarity of IMSP goals, planning process used to prepare objectives, follow-through on activities, efforts to promote collaboration, planned collaborative action between STEM professionals and teachers, processes used to assess needs, participation of representatives with a variety of interests, diversity of partners, respect for partner contributions, and shared resources. Partners and participants for all grant types (MS Degree and WIP programs) generally rated the vision highly (see Figure 2). MS Degree teachers and industry partners as well as WIP-2 school partners rated the vision elements somewhat lower overall than the school and IHE partners in their projects. (NOTE: the WIP-2 Industry Partner sample size is too low (n=1) to interpret).

Figure 2. Partner Satisfaction with Vision



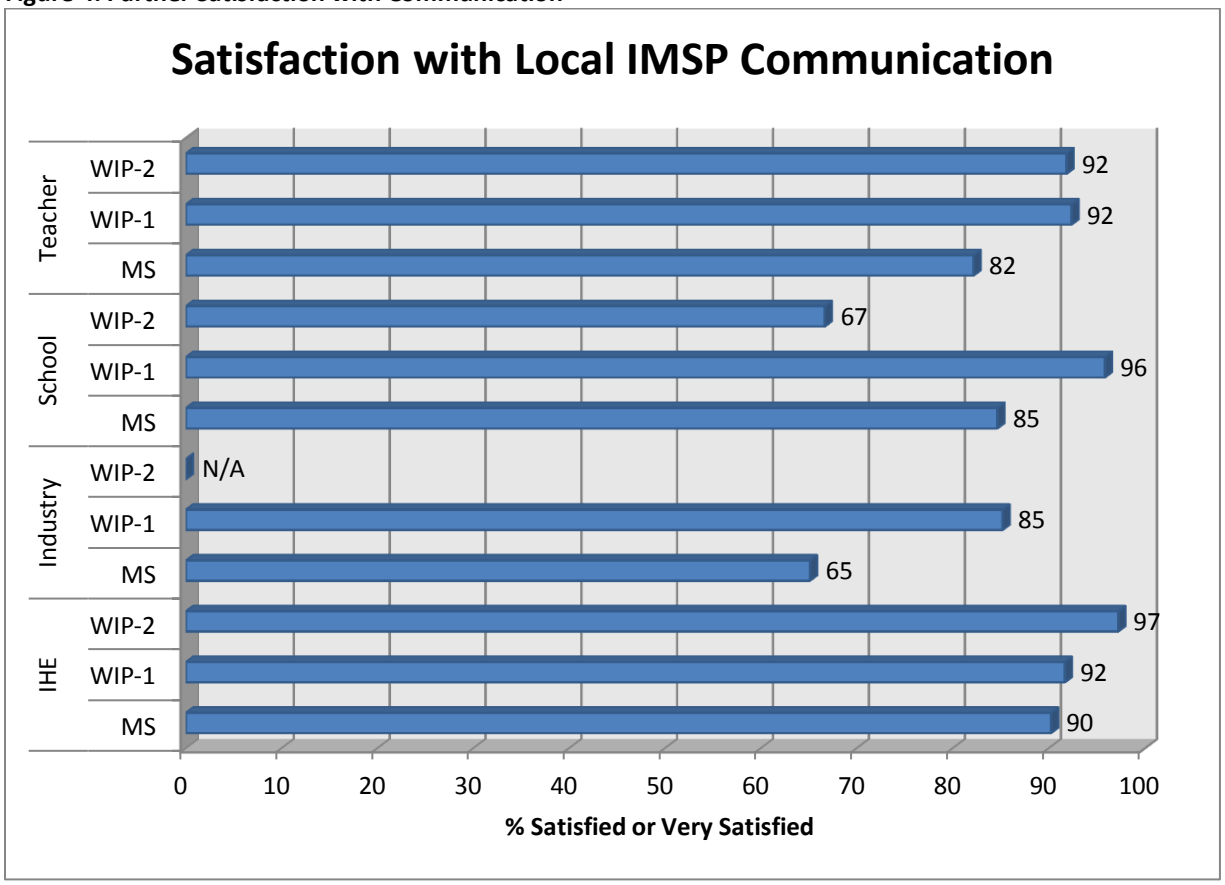
Leadership was defined in terms of the competence of the IMSP leader, sensitivity to cultural issues, opportunities for taking a leadership role, trust that partners afforded each other, and transparency of decision-making. Again, a majority of partners and participants for both MS Degree and WIP programs rated the project leadership highly (see Figure 3). MS Degree teachers and industry partners as well as WIP-2 school partners rated leadership elements somewhat lower overall than the school, IHE and industry partners in their projects. (NOTE: the WIP-2 Industry Partner sample size is too low (n=1) to interpret).

Figure 3. Partner Satisfaction with Leadership



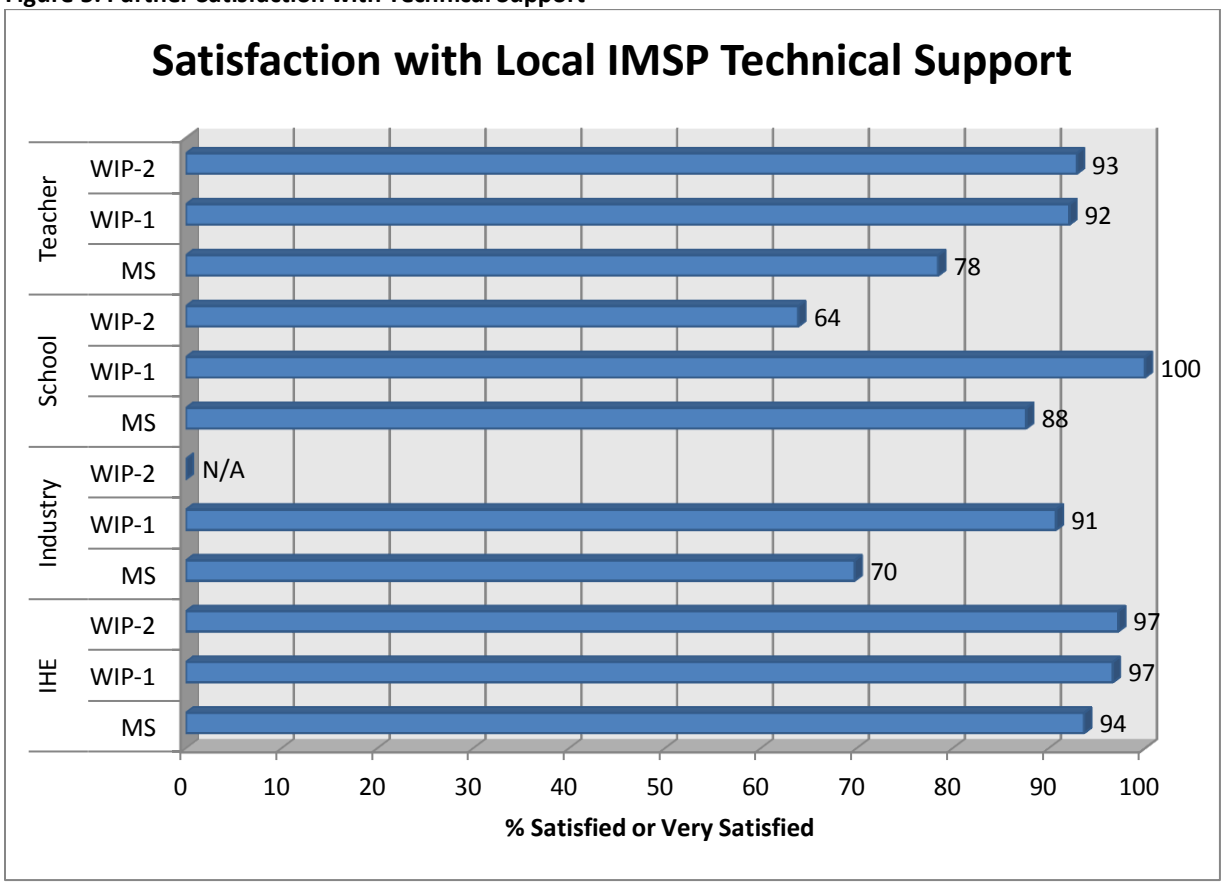
Communication was rated in terms of media use to promote IMSP, communication among partnership members, communication between IMSP and broader community, extent to with partners are listened to and heard, working relationships with school officials, and information on issues and available resources. A majority of partners for both MS Degree and WIP programs rated the project communication highly similar to the leadership and vision ratings. MS Degree industry partners and WIP-2 school partners rated communication elements somewhat lower overall than the school, IHE, and industry partners in their projects (see Figure 4). (NOTE: the WIP-2 Industry Partner sample size is too low (n=1) to interpret).

Figure 4. Partner Satisfaction with Communication



Respondents rated technical support in terms of training and technical assistance provided by IMSP faculty and staff, help given in understanding IMSP requirements, help given to address concerns, working relationships with industry and school partners, and information on issues and available (see Figure 5). Here, MS Degree teachers and industry partners rated the support somewhat lower than IHE and industry respondents. WIP-2 school partner respondents were also quite lower in their satisfaction (NOTE: the WIP-2 Industry Partner sample size is too low (n=1) to interpret).

Figure 5. Partner Satisfaction with Technical Support



Adequacy of Resources

In 2010-2011, resources were generally considered adequate by partnerships.

> *Co-PI: The resources have been sufficient. It has been the right amount. We would have had a better shot at linking classroom observations with student outcomes if we had many more observations – three times as many. We didn't have enough money for that. For what we planned to do, we did have enough resources. We could have been smarter at using teacher logs or something like that* (Site Evaluator Evidence, MS Grant).

Some projects indicated the costs for administering the grants exceeded the allotted resources.

> *According to the interview team, the grant funding has not been enough to support the PI or for classroom observations and school-based support for teachers as they implement what they have learned in the MSP. In order to increase available resources, the PI has convinced partners to offer in-kind support and reduce tuition and indirect costs to allow for funds to be used for direct teacher support* (Site Evaluator Evidence, WIP-1 Grant).

Grantees noted the importance of staff (e.g., evaluators and support staff), classroom observations, and evaluation tools (like experimental design and access to good assessments) as vital resources.

> *Evaluator: The fact that we can do a control group and a really great exam, the Praxis, at pre-post- and post-post are also good* (Site Evaluator Evidence, MS Grant).

Meta-Analysis Results

There were four phases of the meta-analyses conducted for 2010-2011 projects.

Phase 1: Obtaining Project-Level Effect Sizes for Teacher and Student Outcomes

The specific formulas used in calculating the site level effect sizes, standard errors, and weights are selected based on the design of the studies. Three projects included pre- and posttest student data for experimental and control groups. Five groups included pre- and posttest data for experimental and control groups for teacher data. For this reason, these projects were treated as independent-groups pretest-posttest design. The remaining projects in the student and teacher data provide only the pretest and posttest scores for the experimental group. Therefore, the analyses for these projects are based on the assumption that data were obtained using the single-group pretest-posttest design.

1. Single-group pretest-posttest design

The effect size estimates are obtained using Equation 4 of Morris and DeShon (2002). The formula is as follows:

$$d_{RM} = \frac{M_{D,E}}{SD_{D,E}} = \frac{M_{post,E} - M_{pre,E}}{SD_{D,E}}.$$

Here, $M_{D,E}$ is the sample mean change or the mean difference between pre- and posttest scores in the experimental group ($M_{pre,E}$ and $M_{post,E}$), and $SD_{D,E}$ represents the sample standard deviation of change scores. $SD_{D,E}$ is calculated as

$$SD_{D,E} = \sqrt{SD_{pre}^2 + SD_{post}^2 - 2 \times SD_{pre} \times SD_{post} \times \rho_{pre,post}},$$

where SD_{pre} and SD_{post} are sample standard deviations of the pre- and posttest scores, respectively, and $\rho_{pre,post}$ is the Pearson correlation between the pre- and posttest scores.

The sampling variance estimates were obtained using the first formula in Table 2 on page 117 of Morris & DeShon (2002). This formula is

$$Var(d_{RM}) = \left(\frac{1}{n}\right)\left(\frac{n-1}{n-3}\right)\left(1 + n\delta_{RM}^2\right) - \frac{\delta_{RM}^2}{[c(n-1)]^2}.$$

Here, *n* represents the number of paired observations in a single-group pretest-posttest design, δ_{RM} is the population effect size in the change-score metrics, and *c*(*df*) is the bias function defined as

$$c(df) = 1 - \frac{3}{4df - 1}.$$

2. Independent-groups pretest-posttest design

For projects with control groups, the effect size estimates are obtained using Equation 6 of Morris and DeShon (2002). This formula is

$$d_{RM} = \frac{M_{D,E}}{SD_{D,E}} - \frac{M_{D,C}}{SD_{D,C}}.$$

Here, $M_{D,E}$ is the sample mean change or the mean difference between pre- and posttest scores in the experimental group ($M_{pre,E}$ and $M_{post,E}$), and $SD_{D,E}$ represents the sample standard deviation of change scores, which has the same meaning and was calculated in the same way as the $SD_{D,E}$ in the single group design; $M_{D,C}$ is the sample mean change or the mean difference between pre- and posttest scores in the control group, and $SD_{D,C}$ represents the sample standard deviation of change scores. $SD_{D,C}$ is calculated in the same way as $SD_{D,E}$ except that the standard deviation and correlation information obtained from the control group are used.

The sampling variance estimates are obtained using the last formula in Table 2 of Morris and DeShon (2002):

$$Var(d_{RM}) = \left[\frac{1}{2(1-\rho)\tilde{n}}\right]\left(\frac{N-2}{N-4}\right)\left[1 + 2(1-\rho)\tilde{n}\delta_{RM}^2\right] - \frac{\delta_{RM}^2}{\left[c(N-2)\right]^2}.$$

In this formula, δ_{RM} is the population effect size in the change-score metrics, $c(df)$ is the bias function defined as $c(df) = 1 - \frac{3}{4df - 1}$, ρ is the Pearson correlation between pretest and posttest, $\tilde{n} = (n_E * n_C)/(n_E + n_C)$, and *N* is the combined number of observations from both groups (i.e., $n_E + n_C$). The standard errors of the site level effect size estimates and the weights are calculated based on these estimates.

Missing Data

Due to missing data, the numbers of pre- and posttest observations are not the same. To obtain an estimate of the number of paired observations, *n*, in the single-group pretest-posttest design needed in computing the necessary statistics, the harmonic mean of the pretest and posttest sample sizes (i.e.,

n_{pre} and n_{post}) is obtained. The harmonic mean was used because it is more conservative compared to the arithmetic mean and the geometric mean, but not as conservative as the using the minimum between n_{pre} and n_{post}.

Imputed Data

Several entries in the Pearson correlation column were missing or considered missing. That is, values equal or close to zero and negative were treated as missing because of the expectation that pretest and posttest scores have a positive correlation. To impute the missing values of the correlation coefficients, the pretest reliability and posttest reliability were used as predictors. Specifically, the natural logarithm of the correlation was used as the dependent variable, and the natural logarithm of the pretest reliability and posttest reliability were used as the two independent variables for the multiple regression models. The following models were used for the teacher and student data, respectively.
$\ln(\hat{\rho}) = -0.51 + 0.14\ln(R_{pre}) + 0.12\ln(R_{post})$, and
$\ln(\hat{\rho}) = -0.41 + 0.4\ln(R_{pre}) + 0.2\ln(R_{post})$.

Phase 2: Obtaining Overall Effect Sizes for Content Knowledge

Because some projects used more than one measure for teacher knowledge outcomes, observations were combined within a single project (see Appendix H for a list of measures by project). The combined effect size is the weighted average across the effect sizes within each project (NOTE: projects with the same "ProjectID" but different "Content" are split into two different projects and these projects are combined as a weighted average across the multiple effect sizes). That is,

$$\bar{d} = \frac{\sum_{i=1}^{n} d_i w_i}{\sum_{i=1}^{n} w_i}.$$

A total of 39 combined project effect sizes were created for the teacher data. In addition to the weighted effect sizes, the within project variances were also computed for each project using the following formula:

$$\sigma^2_{within} = \frac{1}{\sum_{i=1}^{n} 1/\sigma_i^2} + \frac{\sum_i^n w_i (d_i - \bar{d})^2}{\sum_i^n w_i},$$

where n is the number of observations within one project, σ_i^2 is the sampling variance, w_i is the weight, d_i is the effect size of the i^{th} observation, $\bar{d}$ is the weighted effect size across the

observations within one project. The multi-level analyses are based on the combined teacher data. The two covariates of interest for the teacher data, "content" (1-mathematics, 2-science or technology) and "type" (1-MS, 2-WIP), were dummy coded.

Using the same method, observations in the "student (adjusted)" data were also combined by "ProjectID"(n=36).

Dependency Relationship between Variables

The association between the effect size, content and type was investigated. The models used here were

$$d_{weighted} = \mu + Type + \varepsilon$$

$$d_{weighted} = \mu + Content + \varepsilon$$

For the teacher data, the results show that the "type" variable has no association with the effect size (p=0.45), and although the "content" variable has relatively larger association with the effect size (the mean effect size for "science" and "engineer" is higher than the mean effect size for "math"), the impact of content area is still not significant (p=0.08).

These two models were also applied to the student data. The analyses show that there was also no significant association between the effect size and the content area (p=0.78), and between the effect size and the grant type (p=0.42).

Analysis of Covariates

To investigate whether the effect size can be explained by some covariate variables other than the population mean, a multiple regression analysis was conducted.

Dependent Variables

The subject-specific effect sizes for student and teacher data were used as dependent variables.

Independent Variables

For the student data, the following four variables were considered most relevant to the grant focus:

- Content (% of teachers implementing most or all project content)
- Resources (% of teachers implementing most or all project resources)
- Strategies (% of teachers implementing most or all project instructional strategies)
- STEM (% of teachers implementing most or all project STEM technology resources)

The following three variables were considered school level variables that might be moderating variables:

- School Poverty (% of students based on school report card)

- Math State Test (percent of participating students at Meets or Exceeds Academic Level)
- Science State Test (percent of participating students at Meets or Exceeds Academic Level)

For the teacher data, these three were considered as project level teacher variables:

- Science Endorsement (percent of project teachers with endorsement in science content area)
- Math Endorsement (percent of project teachers with endorsement in math content area)
- Technology Endorsement (percent of project teachers with endorsement in technology)

The stepwise method was used to identify the subset of independent variables that has the strongest relationship to the dependent variable. Three regression models were built using the selected significant predictors.

First, student effect size (math project) = 0.14*Resources + 2.41*School Poverty (see Table 6 and Table 7).

Table 6. ANOVA results for covariates in student math effect size (resource use and school poverty) analysis

Analysis of Variance					
Source	**DF**	**Sum of Squares**	**Mean Square**	**F Value**	**Pr > F**
Model	2	71517	35759	46.27	<.0001
Error	15	11593	772.8367		
Uncorrected Total	17	83110			

Table 7. Parameter estimates for covariates in student math effect size (resource use and school poverty) analysis

Variable	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**
Resources	1	0.1421	0.0207	6.85	<.0001
School Poverty	1	2.4192	0.6446	3.75	0.0019

Analysis of the SAS output shows that both the model and the parameter estimates are statistically significant.

Second, student effect size (science project) = 0.48*Science Endorsement

The significance test supports that the percentage of teacher participants with at least one endorsement in science is a significant predictor of the student effect size for science (see Table 8 and Table 9).

Table 8. ANOVA results for covariates in student science effect size (science endorsement) analysis

Analysis of Variance					
Source	**DF**	**Sum of Squares**	**Mean Square**	**F Value**	**Pr > F**
Model	1	19111	19111	4.75	0.0447
Error	16	64426	4026.6502		
Uncorrected Total	17	83538			

Table 9. Parameter estimates for covariates in student science effect size (science endorsement) analysis

Parameter Estimates					
Variable	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**
Science Endorsement	1	0.4846	0.2224	2.18	0.0447

Third, teacher effect size (math project) = 0.99* Math Endorsement

The significance test supports that the percentage of teacher participants with at least one endorsement in math is a significant predictor of the teacher effect size for mathematics (see Table 10 and Table 11).

Table 10. ANOVA results for covariates in student math effect size (math endorsement) analysis

Analysis of Variance					
Source	**DF**	**Sum of Squares**	**Mean Square**	**F Value**	**Pr > F**
Model	1	10636	10636	15.21	0.0007
Error	23	16083	699.2394		
Uncorrected Total	24	26719			

Table 11. Parameter estimates for covariates in student math effect size (math endorsement) analysis

Parameter Estimates					
Variable	**DF**	**Parameter Estimate**	**Standard Error**	**t Value**	**Pr > |t|**
Math Endorsement	1	0.9850	0.2526	3.90	0.0007

Control-Experimental group study

An ANOVA analysis was conducted for the projects that included a control and experimental group pretest and posttest design. The dependent variable was the effect sizes of the observations in these two grant projects and the independent variable was the "group" (0-experimental, 1-control). The

following tables indicate that two groups have significantly ($p<0.0001$) different impacts on the effect sizes for the teacher data, but no significant difference on the effect sizes for the student data (see Table 12, Table 13, Table 14, Table 15).

Table 12. ANOVA analysis for control-experimental group – teacher effect size

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	4.45	4.45	24.38	<.0001
Error	30	5.47	0.18		
Corrected Total	31	9.92			

Table 13. Mean and SD of the effect sizes of the Experimental and Control group – student effect size

Group	Sample Size	Mean	Std Dev	Minimum	Maximum
Experimental	10	0.38	0.22	0.04	0.70
Control	10	0.42	0.23	0.13	0.88

Table 14. ANOVA analysis for control-experimental group – student effect size

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	1	27.48	27.48	1.07	0.3143
Error	20	516.01	25.8		
Corrected Total	21	543.5			

Table 15. Mean and SD of the effect sizes of the Experimental and Control group – teacher effect size

Group	Sample Size	Mean	Std Dev	Minimum	Maximum
Experimental	16	0.19	0.37	-0.57	0.74
Control	16	0.93	0.48	0.09	2.25

Phase 3: Test of Multi-Level Meta-Analyses

Multi-level Meta-analysis Model

To test for the predictors of effect size magnitude, a multi-level meta-analysis model was used. Multi-level models are appropriate because the current set of studies is considered a random sample from a larger population of studies. That is, each study-specific effect is sampled from the larger population of

effects. Therefore, the effects have two sources of variability: one was due to the variability of the effect parameters, and the other was due to the sampling variability of the observations.

1. The first multi-level model used was:

$$Y = \mu + \gamma + e$$

where Y is the weighted effect size, μ is the average population effect, γ is the random effect, which was assumed to have a normal distribution with a mean of zero and a common variance parameter τ. For this model, τ measures the between-study variation (in this analysis, it actually measures the between-project variation), whereas e measures the within-study variation, which is the project-specific chance error.

This model was used to conduct the multi-level analysis for the teacher data and student data, respectively (see Table 16). For both data sets, we aimed to assess the average IMSP effect and to gauge the amount of variability among these projects. In other words, we wanted to estimate the parameters μ and τ.

Table 16. Model 1 - Teacher and Student

	Model	Estimated Average Effect Size	Standard Error	p-value
Teacher Data	Overall (n=39)	1.00	0.14	0.0001
	MS Degree (n=19)	0.84	0.15	0.0001
	WIP (n=20)	1.13	0.23	0.0001
	Math (n=24)	0.78	0.19	0.0002
	Science (n=15)	1.29	0.22	0.0001
Student Data	Overall (n=36)	0.65	0.05	0.0001
	MS Degree (n=19)	0.61	0.07	0.0001
	WIP (n=17)	0.69	0.08	0.0001
	Math (n=19)	0.63	0.06	0.0001
	Science (n=17)	0.68	0.11	0.0001

2. To investigate whether the effect size can be explained by some covariate variables other than the population mean, the second multi-level model, *Model 2*, was defined as

$$Y = \mu + \beta_1 X_1 + \gamma + e$$

where μ is the average population effect conditional on the covariates. X_1 represents the covariate of interest, β_1 is the coefficient associated with the covariates. The remaining components of the model (i.e., Y, γ, τ and e) have the same interpretation as above. Using this model, the relationship between the effect size and other possible explanatory variables were also investigated. The SAS Proc Mixed procedure was used for the multi-level meta-analysis. Table 17 shows the background variables considered for the teacher data. It shows that none of the tested teacher background variables are significant predictors of the effect size for the teacher content knowledge.

Table 17. Multi-level model for teacher background variables

Covariate	Estimate	Standard Error	DF	t value	Pr>t	Bonferroni Adjusted p-value
% of Participants with Science Endorsement	0.0092	0.0048	1	1.89	0.07	0.667
% of Participants with Math Endorsement	0.0072	0.0089	1	0.81	0.42	1
% of Participants with Tech Endorsement	0.0749	0.0714	1	1.05	0.30	1
Cumulative Hours of PD	-0.0003	0.0017	1	-0.21	0.83	1
Quality of PD Design	0.0058	0.0081	1	0.72	0.48	1
Quality of PD Content	0.0068	0.0088	1	0.78	0.44	1
Quality of PD Instructional Materials	0.0077	0.008	1	0.96	0.34	1
% of Participants Teaching in Traditional Classroom (Not Looping, Block, Multiage, Academic Disciplines)	0.0001	0.0048	1	0.02	0.98	1
% of Participants with Teaching Assignment in School with Special Program Emphasis (Charter, Magnet, Special Focus)	-0.0191	0.0132	1	-1.45	0.15	1

Table 18 shows that none of the student background variables are significant predictors of the effect size for student content knowledge.

Table 18. Multi-level model for student background variables

Covariate	Estimate	Standard Error	DF	t value	Pr>t	Bonferroni Adjusted p-value
% of Participants with Math Endorsement	0.0004	0.0039	1	0.12	0.91	1

Covariate	Estimate	Standard Error	DF	t value	Pr>t	Bonferroni Adjusted p-value
% of Participants with Science Endorsement	0.0054	0.0069	1	0.79	0.44	1
% of Participants with Technology Endorsement	0.0189	0.0594	1	0.32	0.75	1
% of Teachers Implementing All or Most of the Project Content	-0.0005	0.0007	1	-0.72	0.48	1
% of Teachers Implementing All or Most of the Instructional Resources	-0.0004	0.0003	1	-1.28	0.21	1
% of Teachers Implementing All or Most of the Strategies	-0.0001	0.0038	1	-0.05	0.96	1
% of Teachers Implementing All or Most of the STEM Resources	-0.0001	0.0001	1	-0.47	0.64	1
Average of the % White Students in Participating Schools	-0.0052	0.005	1	-1.05	0.3	1
Average of the % Black Students in Participating Schools	0.0054	0.0055	1	1	0.32	1
Average of the % Hispanic Students in Participating Schools	-0.002	0.006	1	-0.33	0.74	1
Average of the % High Mobility Students in Participating Schools	0.0088	0.0056	1	1.58	0.12	1
Average of the % High Poverty Students in Participating Schools	-0.0067	0.0131	1	-0.51	0.61	1
Average of the % of Participating Students Meet/Exceed State Standards in Math	-0.0123	0.0078	1	-1.58	0.13	1
Average of the % of Participating Students Meet/Exceed State Standards in Science	-0.0053	0.0106	1	-0.51	0.62	1

For the teacher data, the results based on the Multi-level show that the estimated average overall IMSP effect ($\hat{\mu}$) across 39 projects is 1.00, with standard error 0.14. It is significantly different from zero

(p=0.0001). The between-study variance was 0.52 (not shown in the table) and it was larger than the average within-study variance (0.45, also not shown in the table). This supports the existence of a between-study variation. Therefore, the mixed-effect model is preferable to the fixed-effect model (the model used for investigating association between the effect size, content and type) for the current study. The GRAD degree program projects and workshop projects have positive effect sizes, and are very close to each other. The effect size of Science is larger than that of Mathematics in magnitude, but their difference is not statistically significant (Note: The 95% confidence interval of Science effect size is between 0.86 and 1.71, and that of Mathematics is between 0.43 and 1.13).

For the student data, the results based on multi-level model show that the estimated average overall IMSP effect across 36 projects is 0.65, with standard error 0.05. It is significantly different from zero (p=0.0001). The between-study variance was 0.15 (not shown) and it was close to the average within-study variance (0.18, also not shown). The workshop projects have a larger effect size than the GRAD degree projects. The student data also show that the effect size of Science is larger than that of Mathematics. However, the gaps between different project types and between different subjects are not statistically significant.

Phase 4: Interpreting the Effect Sizes

In this evaluation report, the multi-level meta-analysis was conducted to measure the average effect size and the total variation across projects. Meta-analysis has often been restricted to estimating (fixed) covariates effects based on fixed-effects linear models. However, in this analysis, non-negligible between-study (or between-project) variation can be observed. Therefore, a random-effect component is incorporated into the model to conceptualize the current set of projects under consideration as a random sample from a population of projects.

In this analysis, different mixed-effect models are considered and compared. The models include only the average effect size because these models fit the data better than those with background variables. The estimated effect sizes are significantly positive for all the models tested. This means that IMSP activities improve both the teacher and student performance in all the subject domains. In addition, the improvement in Science is quite close to that in Mathematics for both the teacher and student data. The type of the IMSP activities, GRAD degree program or workshop program, does not have much difference in terms of its impact on the improvement for the teacher and student data.

For 2010-2011, both the effect sizes in the 2009 CCSSO meta-analysis of national MSP trends (Blank & de la Alas, 2009) as well as the IMSP meta-analysis results 2008-2009, 2009-2010, and 2010-2011 are provided. In the CCSSO study, the pre-post mean effect size for student math was .21 (standard error=.08) with the 95% confidence interval (.06, .36) and for student science was .05 (standard error=.08) with the 95% confidence interval (-.11, .20). In this context, the IMSP effect sizes for mathematics and science are moderate to large. This is similar to the interpretation that would be generated by the traditional heuristic provided by Cohen (1988).

In a comparison against the last two year's IMSP meta-analysis results, IMSP effect sizes for 2010-2011 are mixed (2008-2009=.74; 2009-2010= .62; 2010-2011= TBD; see

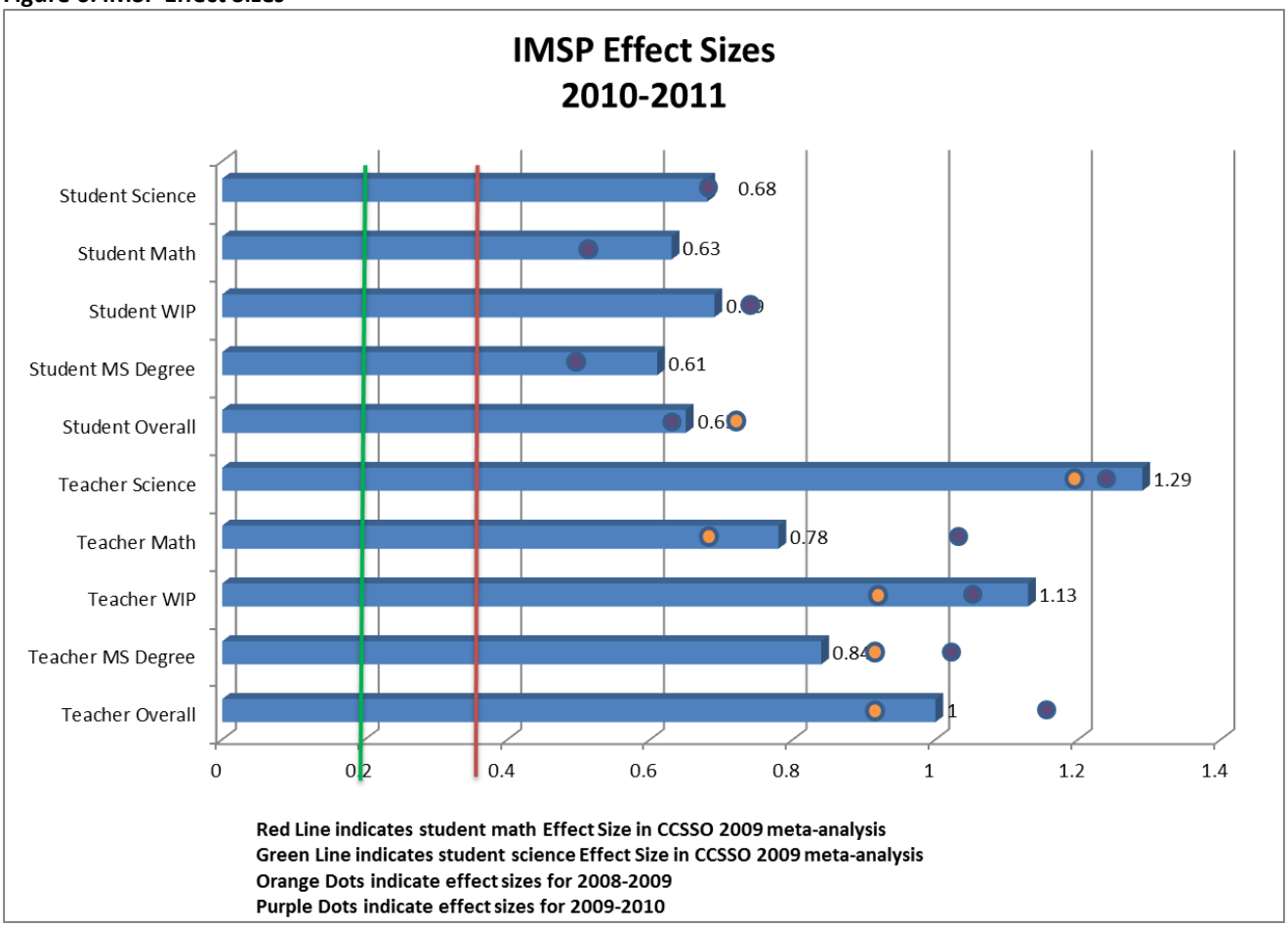
Table 19 and Figure 6). Teacher effect size for the MS degree grants was lower than any of the years of data collection, although it was still strong. It appears that the math teacher effect sizes were lower overall. WIP teacher effects were slightly higher than last year. For students, the overall effect size was similar to the last year. Student effect sizes were substantially larger for the MS degree grants and slightly smaller for the WIP projects.

Table 19. Longitudinal Trends in IMSP Effect Sizes

	IMSP Effect Sizes 2008-2009 (*n*)	**IMSP Effect Sizes 2009-2010 (*n*)**	**IMSP Effect Sizes 2010-2011 (*n*)**
Teacher Overall	0.9 (*28*)	1.17 (*51*)	1.00 (*39*)
Teacher MS Degree	0.9 (*14*)	1.04 (*25*)	.84 (*19*)
Teacher WIP	0.91 (*9*)	1.09 (*16*)	1.13 (*20*)
Teacher Math	0.68 (*13*)	1.05 (*21*)	.78 (*24*)
Teacher Science	1.19 (*12*)	1.24 (*30*)	1.29 (*15*)
Student Overall	0.74* (*7*)	0.62 (*34*)	.64 (*36*)
Student MS Degree	0.74* (*7*)	0.48 (*23*)	.61 (*19*)
Student WIP	N/A**	0.76 (*11*)	.69 (*17*)
Student Math	N/A***	0.5 (*19*)	.63 (*19*)
Student Science	N/A***	0.68 (*15*)	.68 (*17*)

***All student data was MS Degree Data**
****No classroom implementation for this year**
*****Sample Size did not allow for disaggregation**

Figure 6. IMSP Effect Sizes



Missing data issues were stable, although the same two projects that did not produce student data in 2009-2010 also failed to produce student results for 2010-2011. Gains indicated by the two projects with control group data effects for teachers but not for students. Because they represent only 5% of the IMSP data their generalizability is limited. Without more analyses involving control groups it is not clear how the IMSP gains compare to progress made under different models of professional development and learning conditions.

Site Interview and Survey Data Results

Detailed profiles of grants in the implementation stages were developed based on interviews and review of extant data conducted by the state evaluation team. Based on these profiles, projects were described in terms of the degree to which they were in the beginning, emerging, developing, or transformative stages.

In site interviews, **Performance & Outcomes** were judged for evidence of major outcomes or benefits for institutions, schools, or community in capacity, knowledge, or knowledge dissemination and the extent to which the IMSP has pursued major strategies originally planned, there has been positive performance of the collaboration between partners, or the capacity of the IMSP has increased. **Evaluation Implementation** indicates the degree to which evaluation activities provided data needed to fulfill state and federal reporting requirements.

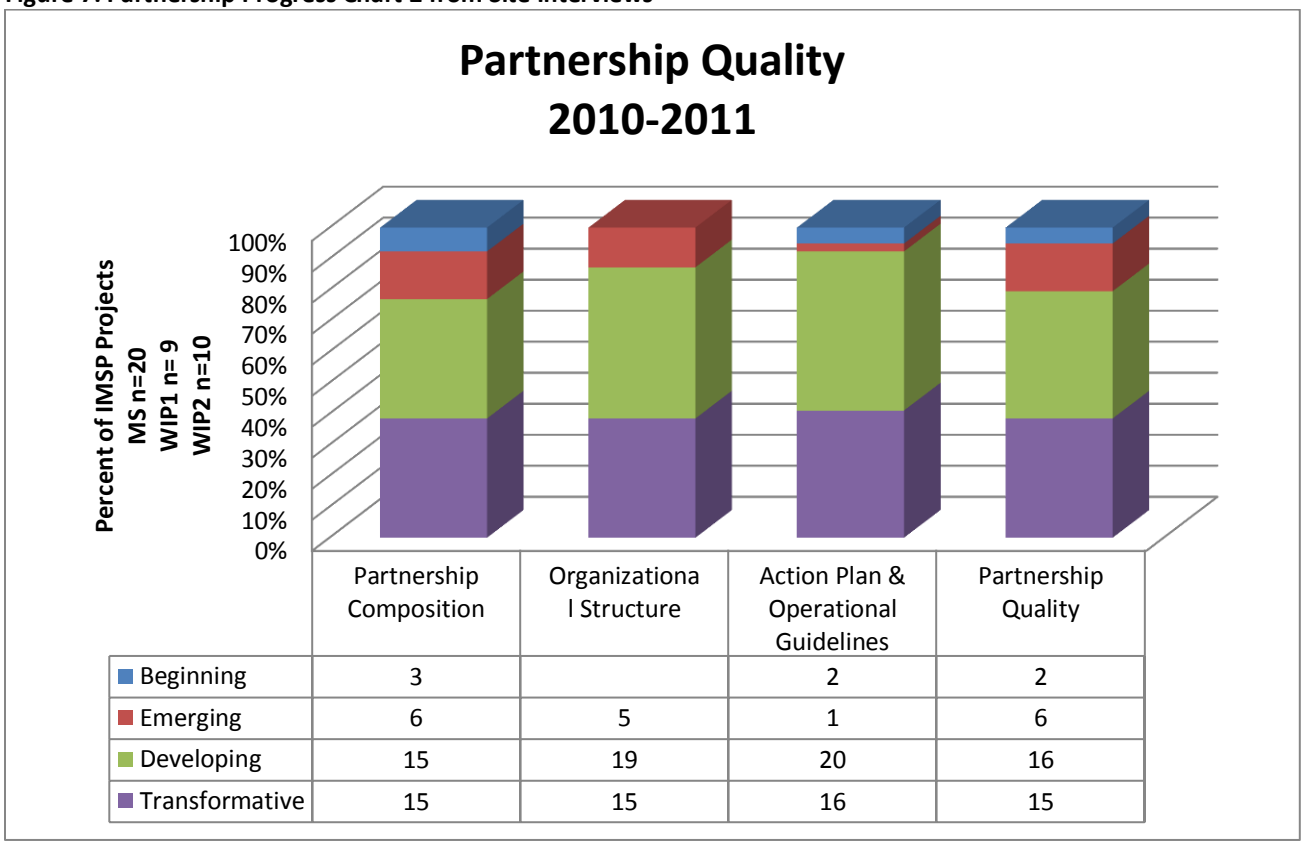
Beginning stages are represented by articulated plans but no actions. The element is "on the radar" but there is no substantive progress toward effective implementation. The quality of the plans is inconsistent. Outcomes are not possible because no plans have been put into action. Plans may not provide adequate foundation for full implementation. *Emerging stages* are represented by clear and articulated plans with some initial actions setting the stage for implementation, but not enough substantive activity to establish implementation. The quality of the articulated plan may be very strong or may have some apparent weaknesses amidst other strengths. Outcomes are not imminent or predictable because high quality implementation has not reached a minimum threshold. *Developing stages* show clear, strong implementation is in place, although corrections for barriers, changes to plans, or consistency/satisfaction across stakeholders might be mixed. Positive outcomes are evident but all goals are not fully realized or not on track. *Transformative stages* show such a clear, strong enacted plan. It can be considered a model for others to use. Positive outcomes associated with the partnership seem inevitable or highly predictable.

Partners were also surveyed for feedback on their experiences in the IMSP for 2009-2010. The surveys asked for satisfaction ratings in terms of progress toward objectives and sustainability.

Overview of Results

In 2010-2011, about 1/3 of the grants were at the transformative stage across all of the stages (see Figure 7). NOTE: 7 of the 15 programs at this stage are affiliated with Aurora University. Four are affiliated with Northern Illinois University, one with Loyola University, two with St. Clair County ROE, and one with Monroe Randolph.

Figure 7. Partnership Progress Chart 2 from Site Interviews

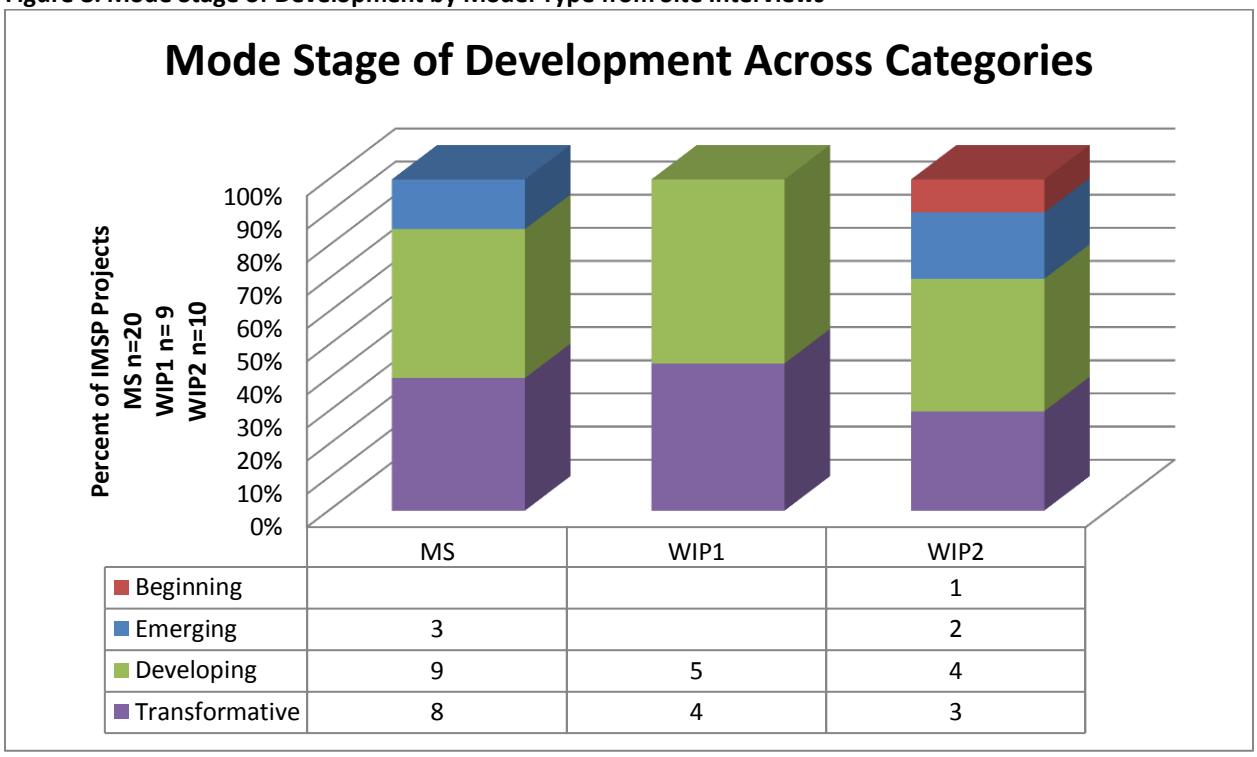


There are some projects that are still in lower stages of development across most of the areas discussed with the site interviewer. It appears that at the end of 2010-2011, grants from all three models are judged by the site evaluators to display higher levels of development (see Table 20 and Figure 8).

Table 20. Mode Level of Development across Categories

	Transformative	Developing	Emerging	Beginning
MS	8	9	3	
WIP1	4	5		
WIP2	3	4	2	1

Figure 8. Mode Stage of Development by Model Type from Site Interviews



	MS	WIP1	WIP2
Beginning			1
Emerging	3		2
Developing	9	5	4
Transformative	8	4	3

The majority of partners and participants were generally positive in their opinions in surveys about their local IMSP's progress toward objectives. Noticeably fewer industry, IHE, and school partners highly rated their ability to sustain policies, processes, or activities related to the IMSP (see Table 21). Teachers were generally consistent with a majority indicating high levels of satisfaction and confidence across the progress toward objectives and sustainability. IHE and School partners were slightly less optimistic about sustainability compared with teachers. Descriptive statistics for all items for all partners are available in Appendix E. (NOTE: the WIP-2 Industry Partner sample size is too low (n=1) to interpret).

Table 21. Aggregated Survey Results (Agee or Strongly Agree/Satisfied or Highly Satisfied)

		Progress Toward Objectives	Sustainability
IHE	MS	94	76
	WIP-1	91	78
	WIP-2	90	86
Industry	MS	69	92
	WIP-1	94	100
	WIP-2	*	*
School	MS	83	72
	WIP-1	84	82
	WIP-2	69	83
Teacher	MS	74	74
	WIP-1 Total	78	82
	MS Total	79	85

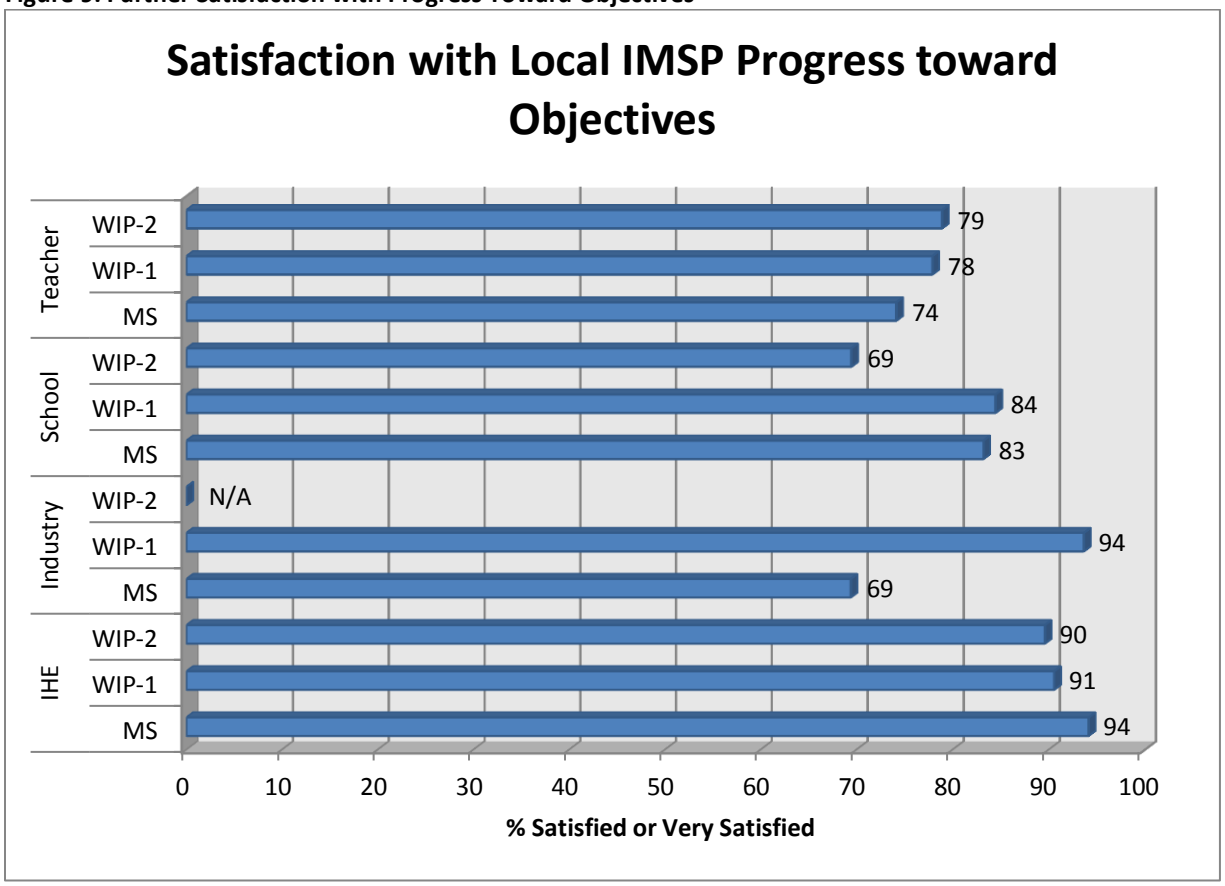
*Low sample size

**Not surveyed

Survey Results – Progress toward Objectives

Progress toward objectives encompasses improvement in teachers' content knowledge, access and use of new instructional resources and STEM technologies , progress toward meeting endorsement or certification requirements, effective collaboration between STEM industry experts and teachers, access to mentors, fairness with which resources and opportunities are distributed, capacity of the local IMSP teachers to give support to each other, and improvement in science and/or mathematics instruction in partner schools. For progress elements, more IHE respondents (over 90% average satisfied or very satisfied) rated strong progress compared with teacher and school respondents (69-84%) across all models (see Figure 9). WIP-1 industry partners also rated progress strongly (average 94%). (NOTE: the WIP-2 Industry Partner sample size is too low (n=1) to interpret).

Figure 9. Partner Satisfaction with Progress Toward Objectives



Site Profile Performance and Outcomes

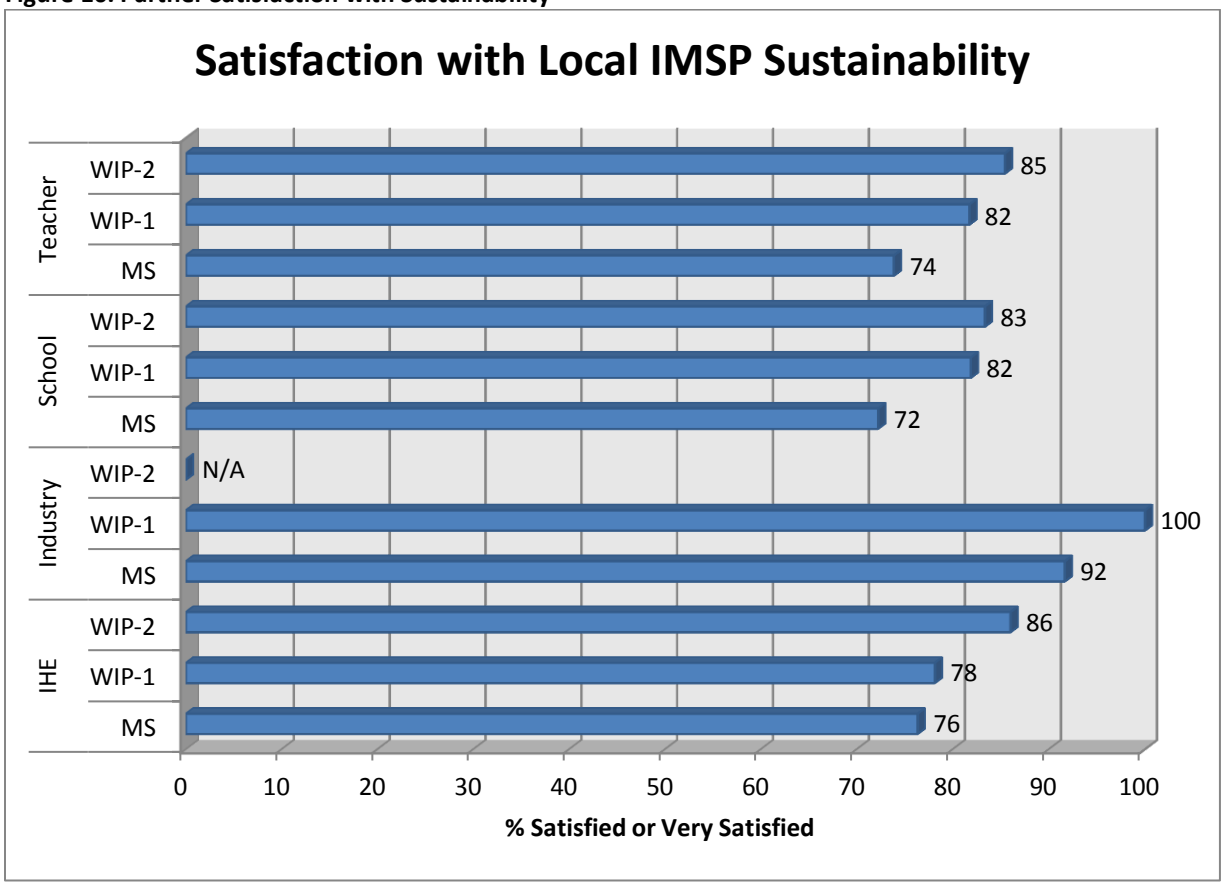
The most commonly described success for building capacity for the partnerships were changes noted in teachers' content knowledge, adoption of new instructional practices, changes in teachers attitudes, and increased access to instructional materials and resources.

> *Get to know the local community of STEM teachers, their needs and classroom practices* (IHE Partner Survey, MS Grant).
>
> *In-class learning experiences with IMSP faculty and staff as well as teaching peers* (Industry Partner Survey, WIP-1 Grant).
>
> *Getting to meet this wonderful cohort of teachers... seeing them grow as a group... seeing some of them move into leadership positions related to STEM and math in our systems* (School Partner Survey, MS Grant).
>
> *I have grown tenfold in my mathematics ability and I am able use what I learned to take learning to a deeper level* (Teacher Survey, MS Grant).
>
> *The most positive aspect of my participation is seeing the excitement in my students over learning what I was learning in my classes. They were actively engaged and it was also beneficial for them to see that learning never stops* (Teacher Survey, MS Grant).
>
> *I am amazed that as a Math teacher, I now feel comfortable relating topics in my classroom to things I have learned about biotechnologies over the last two years!* (Teacher Survey, WIP-1 Grant).
>
> *Bringing technology and current scientific practices into my classroom* (Teacher Survey, WIP-1 Grant).

Survey Results – Sustainability

Finally, sustainability was rated in terms of the extent to which the partners believed they had received important professional benefits from participation in the IMSP, that benefits received were worth the time, effort, and cost invested in the IMSP, and that benefits were commensurate with the contributions made to the IMSP. Respondents also described their belief in whether the IMSP should be continued, whether they will participate fully in this IMSP's activities in the future, whether the IMSP activities need to be dramatically improved to make it worth their investment, and whether the composition of their IMSP needs to be expanded or changed to be more effective (see Figure 10). They rated if there were changes in structure, policies, or functions to institutionalize the IMSP goals and activities and whether alternative funds to sustain IMSP activities after the expiration of grant were being actively sought. Respondents across groups were generally positive about the sustainability of IMSP practices. (NOTE: the WIP-2 Industry Partner sample size is too low (n=1) to interpret).

Figure 10. Partner Satisfaction with Sustainability



The comments by survey respondents demonstrated both the hope for sustainability in individual teachers as well as the reality for many that the core elements may not continue without additional funding.

> *I think teachers, if empowered with strong content and pedagogy, are by themselves a force of sustainability for an IMSP. We are also seeking NSF and other grants to provide continued support for the Math/Sci teachers in the region. The IMSP activities certainly paved the way for our recent Robert Noyce Grant award* (IHE Partner Survey, WIP-2 Grant).
>
> *Our district has reached out to program participants to take on more leadership roles* (School Partner Survey, MS Grant).
>
> *We have established relationships and policies that pave the way for future IMSP activities and would make it easier to do this a second time. But we have learned that most teachers who need this program simply can't afford [the university's] high tuition, and they need the tuition subsidy that the grant provides in order to afford the program. There are also hidden costs for them -- child care, giving up summer and after-school tutoring/teaching opportunities, etc. The tuition subsidy that the grant provided made all the difference to the teachers. They are very*

pleased that they were able to get a [university] degree, and it just couldn't have happened without the grant. So while we are in a better position at [the university] to offer a similar program again, we don't feel like we would get a solid cohort of teachers from a high-needs district without the tuition subsidy. Additionally, if we are to evaluate the program in an ongoing manner, we need grant funds to support that (IHE Partner Survey, MS Grant).

Site Profile Sustainability

Partners generally reported that they received benefits commensurate with their contributions. Grantees consistently stated that the main elements of the projects will not continue without new funding. Generally, sustainability was most commonly described by grantees in terms of changes made to participants' content knowledge, pedagogical knowledge, and access to STEM resources. At the university level, sustainability was noted in terms of on-going collaboration between colleges. Some grantees are actively pursuing National Science Foundation (NSF) grants to continue their work.

Co-Director: The MSPs have been important. We've had a number of them over a few years. We're reaching out across other math faculty who are getting involved. MSPs in general, have been a nice push, a nice carrot for [the University] to do some neat things and build relationships (Site Evaluator Evidence, MS Grant).

Co-Director: There are costs from this, but at the same time, the University funding is based on the development. . So I don't know how that counts for graduate students, but I know because most of the enrollment they all talk about is undergrad. But in terms of enrollment, you cannot have 27 graduate students in one Master's degree program. It's very hard to find that on campus. For this program to have 27 that's a very large number. The graduate school is proud, as well, and that's why we are able to give tuition waivers. So in terms of resources, yes, there's a loss in terms of tuition, that's a lot of money. But, they get a lot of money from the student involvement. So every student at [the University] has a price tag. So here's what the dean said, he said, we are very proud at the graduate school to be part of this and give out tuition waivers because we know our gains are more than this (Site Evaluator Evidence, MS Grant).

Evaluator: If we hadn't sent [evaluator] out to do the observations and interview teachers about why they were doing what they were doing in the class, I don't think that we'd have the story behind any changes that we've seen, particularly the pedagogical instrument. Content-knowledge-wise, it's not hard for her to say that the teachers are better in math. But she could see what they were doing, how they were organizing their class, the activities that they were doing and then interview them about what they had done and why.. But they could make links to her back to the program, which was critical to me (Site Evaluator Evidence, MS Grant).

In what areas does the IMSP need to improve?

Participants identified several areas of needed improvement in site interviews and surveys. The areas included evaluation methodology, project management, recruitment,

Evaluation

The lack of available student outcome measures was a barrier for grants. Alternatives to the state tests (like performance assessment) might be considered if funding for standardized tests (or piloting new assessments) is not available.

> *Difficulty measuring and documenting student outcomes and affecting the instruction of content-area professors were identified as areas in which the MSP was less successful* (Site Evaluator Evidence, MS Grant).

> *PI: Over the years, we have changed and evolved and gotten to be a pretty smooth machine but there are always things that can be improved. The challenge with regards to evaluation is how to get student and teacher information in a meaningful way and balancing the state evaluation additions. We need to streamline things and take things away if we add components to the evaluation* (Site Evaluator Evidence, WIP-1 Grant).

> *PI: We're still not happy with the approach that we are taking to getting at the student content knowledge. Well, ok let me. Let me back up and say, what we, where I think we're going and what we're poising ourselves to do and we've already started work with both of the groups. We're still working with the allied folks, by the way, not. They're not cut off. They're hanging loosely but…*(Site Evaluator Evidence, MS Grant).

> *PI: We are, you know. And I, I assume that other groups are struggling with the same, the audience is too diverse. Whereas we can capture what the teachers are learning, once we get into their classrooms, we've got twenty extremely different classrooms, and how to sum up, how to do the meta-analysis over that group is something that we haven't cracked yet. And yet, and yet, we would be ok with nonstandardized measures, in fact that's where we're going but the state keeps saying you need to show us the standardized tests. So we're like, "look, give us the standardized tests. You tell us which tests are they, because they aren't there"* (Site Evaluator Evidence, MS Grant).

Communication

Clear communication to teachers and school districts about project activities and expectations in advance of participation is an important element of participant satisfaction.

> *ROE partner: When they signed up, they didn't know that action research was a requirement. But when we started talking with Lindenwood about the graduate program, we realized that would be a good part of the graduate program. We kind of sprung it on them* (Site Evaluator Evidence, WIP-1 Grant).

Teacher Participant: There's been some resistance to some people's understanding of what the program was, what it truly was, in that it was challenging for some people to not have a methods type course, to have more content related, I think, you guys probably heard more of it, but I think there was a lot of resistance at first, like why am I learning college level math when I teach kindergarten? And I don't know if it just wasn't communicated to everyone the same way, or if they just didn't listen, or if they just didn't know what to expect or what, but that's the only kind of conflict I saw (Site Evaluator Evidence, MS Grant).

Better organization and documentation of requirements given to the participants in advance rather than continuously changed throughout the program (Teacher Survey, WIP-2 Grant).

Recruitment

Projects struggle with effectives processes for recruiting individual teachers. A new perspective on recruiting is needed at the state level to help coordinate and support more efficient, effective recruiting for individual grants.

PI: We've been having difficulty in terms of recruiting teachers for the program...So right now my target was 25 students, and I'm only at 12 for this year. And so basically I think we need to have better means of communicating with schools and getting ourselves there and I do understand that the schools are always in a state of crisis. They have [inaudible] issues, budget issues. I know that last year was very horrid for schools. They lost so many teachers. That's why we had a very staggering number. As a matter of fact we lost 1 or 2 teachers from west aurora and one from Harlem (Site Evaluator Evidence, WIP-1 Grant).

PI: So, I think they're just having a hard time recruiting teachers to come up to campus- I don't know. I don't know the reason. Just to make the travel, or to um, come over to campus or maybe it's not a topic, you know, that pertains (Site Evaluator Evidence, WIP-2 Grant).

School Partners: You picked from who applied, but if you could hand-pick who was in the program, you could see a lot more change. Some people maybe already had a master's or weren't interested, or there were different reasons why they went participating but you could get a different group of teachers. Even groups of teachers from the same school would make a difference (Site Evaluator Evidence, MS Grant).

PI: The one area that I don't feel like I've learned much is how to do recruitment better and how to have a better sense of what the demand is (Site Evaluator Evidence, MS Grant).

Local Resources

As districts struggle with budget issues locally, implementation of grant activities is strained to adapt and stretch resources to meet needs that go beyond original grant goals.

That was a big frustration, was the lack of technology a lot of schools have. So we're talking about breaking in and using technology, and showing technology, and then them saying, well, maybe we'll get a projector someday (Site Evaluator Evidence, WIP-2 Grant).

PI: I can say more about unsuccessful with the first group than the second group. The first group, because of the barriers in the district about getting the technology implemented, was a problem. It was solved in a second by providing more technology for each teachers and a software platform that can be installed for free. That was big (Site Evaluator Evidence, WIP-2 Grant).

Co-PI: The only part that is tough is that teachers love the field trip. But they can't do the kind of field trip that we did. If they live near a quarry, they might be able to take their kids there. The constraints of going into the field, is that it has to be within the six hour time constraint of the school day. It's not really practical; it only works if you're going to see three or four sites. If you go to see one thing, you've only seen one thing (Site Evaluator Evidence, WIP-1 Grant).

The matching of resources from our districts would really assist in carrying out activities and provide additional supplies (Teacher Survey, WIP-1 Grant).

More resources that are in my school district so that they are easily accessible. I really appreciate the money that was given to our school to purchase supplies. It was very generous and will make it much easier to teach project based engineering lessons in my classroom, however we could not purchase everything that we would have liked to have to implement all the lessons. For instance, my team decided to use our materials money to buy the supplies needed to teach the lessons about simple machines. We did not have enough money to get the materials to teach about robotics (Teacher Survey, WIP-2 Grant).

Additional resources in our school building (Teacher Survey, WIP-2 Grant).

Teacher Background

Diverse teacher background and needs in terms of content and pedagogical knowledge creates important issues that need to be addressed by grants. Flexibility and more agile approaches need to be considered to adjust and accommodate the range of teacher needs.

PI: One of the difficult things and it's been difficult reporting it, we have math and science teachers and it's an integrated curriculum but math teachers don't have science content knowledge and science teachers don't have the math content knowledge. We struggle with that (Site Evaluator Evidence, WIP-1 Grant).

Co-Director: It's not like we're asking them to do high level calculus. It amazes me that they don't have the content knowledge. I wish that I could say that it was only the science teachers' math content that we have to deal with but it's also with the science teachers' science content. Some

of it is that they have specialized in their own area – they taught earth science for 10 years and haven't taught chemistry (Site Evaluator Evidence, WIP-1 Grant).

PI: I had hoped that we would integrate the math and science, with math and science teachers creating units, using common tools. That didn't happen so well. The science people looked at the science and the math looked at the math and didn't see how to integrate. They asked me how I would do it. When I brought the TI-Nspire calculators in, they use math but also probes insert into them so they could collect data and the math people could use the data. The science people asked why they had to use the calculator. That blew my mind (Site Evaluator Evidence, WIP-2 Grant).

Teacher Participant - I think a challenge, and I don't know if it's so much with collaboration, but a challenge that I saw within a course that I facilitated last year is the extremely diverse backgrounds of the people involved. We have John who could have taught that course. And then we had people that hadn't had a chemistry class, literally, for decades. And that was tremendously challenging to the professor and to everybody involved with the course. I think it was managed pretty well. I think, you know, John pitched in, and helped out a lot. There were a lot of teachers in there. There weren't a lot of people that really didn't probably have the background to be there. So we sort of had to try and bring them up to speed in a hurry. That was a challenge, to have that broad of a base with backgrounds (Site Evaluator Evidence, MS Grant).

LEA Collaboration and Participation

The issues that are created by weaker, more tertiary commitment and collaboration between the LEA of the teachers and grant lead agencies are evident in the problems identified by project staff and teachers who are not receiving the needed support for systemic change.

PI: Our major frustration is attendance at the follow-up meetings. That's been my major frustration. I've tried sending the principal form out but I still hear, "so and so can't come" (Site Evaluator Evidence, WIP-1 Grant).

ROE partner: Not all of the 40 participants were as committed as we would have liked them to be. About 20 or 25 were outstanding. The direction that we got is to recruit as many teachers as you can from failing schools. Not all teachers are as dedicated (Site Evaluator Evidence, WIP-2 Grant).

PI: And from my point of view, working on this project from this end was that we had some other school districts that came in. But I never made that relationship with those principals and superintendents. But in retrospect, I should have spent more time doing that because it would have just made the process a lot better. And that's my fault, well it's kind of like when do I do that? (Site Evaluator Evidence, MS Grant).

I think the program should have more visibility in the district. I think that some of the courses should be revised to be more thoughtful of how those subjects are applicable to elementary education. Some courses that contain too much content should be split so that students can get a deeper understanding of the content matter (School Partner Survey, MS Grant).

I would of had our principal on board with what currently was happening in the program. They needed to be sold on IMSP and have them evaluate us instead of observation visits. They expect us to have a magic wand, but they do not know its philosophy (Teacher Survey, MS Grant).

I wish my school knew more about IMSP and at an administrative level that they would implement something! (Teacher Survey, MS Grant).

The school has to be behind the teacher. I felt I did all the hard work so the district could get some new technology. I needed some improvements to my room to help me use the technology and the school didn't provide them until I needed to do my action research project (Teacher Survey, WIP-2 Grant).

I basically know next to nothing about the IMSP program as a building principal. I'm not even sure what to do with this survey other than I was instructed to fill it out. Sorry, but I have nothing to share. It never comes up in my daily work and I never hear about it (School Partner Survey, MS Grant).

Conclusions and Discussion

Evaluation Framework

There are several key guidelines for effective STEM evaluations (Lawrenz & Huffman, 2006). The incorporation of qualitative and quantitative methodologies, performed according the relevant rigorous standards for each, provides a more complete understanding of outcomes. Mixing philosophies, designs, and devices are all important ways that quantitative and qualitative approaches are combined in STEM educational evaluation.

There are other considerations in addition to methodology that are important for an effective STEM evaluation. In the evaluation of recruitment and retention in one Texas MSP program (Scott, Milam, Stuessy, Blount, & Bentz, 2006), the fruits of close collaboration between colleges in a university and the learning communities in which their students had field experiences were explored. The attention to the community context, learner-diversity, knowledge needs, and the use of assessment to provide feedback was key to increasing the recruitment and retention in STEM education programs.

The pivotal role of context, respect, communication, and cooperation recur in various accounts of partnerships between organizations focused on STEM initiatives (Miller, Williamson McDiarmid, Luttrell-Montes, 2006). Further, STEM evaluations must examine both the implementation and outcomes of program work in order to describe the context of each program (Miller, Williamson McDiarmid, Luttrell-Montes, 2006) and help to connect outcomes to project activities. Similarly, evaluation of professional development in STEM projects or other school-based evaluations must examine not only perceptions of the professional development, but also its outcomes and impact on instruction (Guskey, 2000).

Quality of the Partnerships

One of the guiding principles of the IMSP is that the program funds partnerships, not individual institutions, to accomplish project goals. Research has identified a number of factors that contribute to successful collaborations, including an environment that provides a context for bringing together partners with common needs; membership characterized by diversity and respect; a process/structure that reflects flexibility, collaborative decision-making and clearly defined roles; group members with a stake in outcomes; open and frequent communication; a vision that is shared and developed collaboratively; and resources including in-kind contributions from all stakeholders in addition to outside resources (Mattessich & Monsey, 1992).

As indicated in past reports, mutual need, respect, trust, and enthusiasm are strengths consistently identified across these IMSP grants with only some exceptions. These exceptions are represented by

some grants that operate with a model centralized around a single institution for decision-making and administration of the grant. This approach fosters a different nature to the collaboration and institutionalization of project practices. Those grants that have adopted a more integrated collaboration with project partners represent implementation that characterizes both the spirit of the federal program as well as the promise of positive results from the resources ISBE has provided to promote collaboration between higher education faculty, industry STEM professionals, and K-12 school stakeholders.

Progress toward Outcomes

In this evaluation report, the multi-level meta-analysis indicated that the estimated effect sizes are significantly positive for all the models tested. This means that the IMSP activities improved both the teacher and student performance in all the subject domains. In addition, the improvement in Science is quite close to that in Mathematics for both the teacher and student data. The type of the IMSP activities, GRAD degree program or workshop program, did not have much difference in terms of impact on the improvement for the teacher and student data. IMSP effect sizes for 2010-2011 are mixed compared to the last two years' results. Teacher effect size for the MS degree grants was lower than any of the years of data collection, although it was still strong. It appears that the math teacher effect sizes were lower overall. WIP teacher effects were slightly higher than last year. For students, the overall effect size was similar to the last year. Student effect sizes were substantially larger for the MS degree grants and slightly smaller for the WIP projects.

Participants were generally positive about their perceptions of their local IMSP progress toward objectives. The most commonly described successes for the IMSP were in teachers' content knowledge, adoption of new instructional practices, changes in teachers attitudes, and increased access by teachers to needed instructional materials and resources.

Sustainability

Finally, sustainability was rated in terms of the extent to which the partners believed they had received important professional benefits from participation in the IMSP, that benefits received were worth the time, effort, and cost invested in the IMSP, and that benefits were commensurate with the contributions made to the IMSP. Respondents also described their belief in whether the IMSP should be continued, whether they will participate fully in this IMSP's activities in the future, whether the IMSP activities need to be dramatically improved to make it worth their investment, and whether the composition of their IMSP needs to be expanded or changed to be more effective. They rated if there were changes in structure, policies, or functions to institutionalize the IMSP goals and activities and whether alternative funds to sustain IMSP activities after the expiration of grant were being actively sought. Respondents across groups were generally positive about the sustainability of IMSP practices.

Partners generally reported that they received benefits commensurate with their contributions. Grantees consistently stated that the main elements of the projects will not continue without new funding. Generally, sustainability was most commonly described by grantees in terms of changes made

to participants' content knowledge, pedagogical knowledge, and access to STEM resources. At the university level, sustainability was noted in terms of on-going collaboration between colleges. Some grantees are actively pursuing National Science Foundation (NSF) grants to continue their work.

Recommendations for Improvement at the State Level

Evaluation

Guidance is needed for student outcome measures.

Recommendation:

Evaluation activities related to student and teacher outcomes and implementation fidelity should be centralized using the Illinois Data Portal. Tools on the data portal should be supplemented to include surveys and observation protocols appropriate to the goals of the IMSP to be used by all grants. Student data requirements should be changed in future IMSP programs to incorporate student performance assessments (through the portal).

Communication

Improved communication between local grants and participants as well as between grantees is needed.

Recommendation:

As recommended in 2009-2010, the state MSP program can provide a better structure to improve communication. First, the state IMSP should provide guidelines for the local communication of the IMSP goals during recruitment phases as well as throughout the program. All grantees can benefit from more access and opportunity for communication with the state coordinator as well as with other grantees.

LEA Collaboration, Participation and Recruitment

Provide structure to support more consistent relationships between grants and LEA partners.

Recommendation:

As recommended in 2009-2010, a more formal application and recruitment process needs to be considered by the state IMSP for LEA eligibility to participate. Districts should formally identify local needs and acknowledge formally their commitment to a deeper participation in the IMSP program. Alternative strategies to local IMSP partners recruiting participating teachers individually needs to be considered to improve the commitment, relevance, and coherence of the program for the local LEA.

Teacher Background

Provide structure to address issues faced by local grants that include teachers with diverse backgrounds and needs.

Recommendation:

As reported in 2009-2010, there is no evidence that the two models (graduate versus workshop institute) are different in their student and teacher outcomes. There is some evidence that serving teachers from mixed grade and content areas is not as effective at serving the teachers' needs generally. The IMSP should consider re-formulating the distribution of grants to provide more targeted opportunities that can address the needs of the schools and teachers more flexibly. District level commitment to multiple IMSP grants that more specifically target content or grade level needs may be an appropriate alternative. Centralized evaluation data collection through the portal will help minimize the burden of participating in multiple grants.

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Appendix A

IMSP Logic Model

Program Logic Model
Meta-Analyses to Examine the Effectiveness of Illinois Math Science Partnerships
Developed by Elizabeth Oyer for the Illinois Evaluation Research Coordination

<table>
<tr><th>Inputs</th><th>Partnership
Strategies / Activities</th><th>Prerequisite
Outcomes</th><th>Intermediate
Outcomes</th><th>Long Term
Outcomes</th></tr>
<tr><td>Resources</td><td>CCSSO Outcome A

High Quality, Rigorous PD</td><td>CCSSO Outcomes B & C

Changes in Teacher Content Knowledge, Instructional Practice and Curriculum</td><td>Rigorous, High Quality Math & Science Programs</td><td>CCSSO Outcome D & E

Student Ach, Sustained Administrative Support Systems</td></tr>
<tr><td rowspan="6">Federal $$

State $$

K-12 In-Kind $$ Support

Community Matching $$

<u>Partners</u>

State Agencies

Local K-12 Agencies

Institutions of Higher Ed

STEM Professional Organizations

STEM Industry</td><td>Incentive programs for new teachers as well as in-service teachers; Needs Assessment</td><td>Recruiting Programs targeting under-represented groups</td><td rowspan="5">Increased Pool of Highly Qualified Math & Science Teachers
-Increased % of elementary & secondary school teachers with academic majors or minors or group majors or minors, in math/eng/or the sciences</td><td rowspan="5">•Increased student ach in Math/Science
•Increased enroll. in advanced Math/Science courses
•Increased part. in AP/IB prog. for Math /Science (as applicable)
•Increased enroll/matriculation in STEM post-sec. programs (as applicable)
•Increased student confidence</td></tr>
<tr><td>•Needs Assessment
•High Quality/Rigorous
–Workshops/Institutes
–Graduate Degrees/Endorsements
–Distance Learning Programs
–Training Teachers to Train Others
•Partnerships between STEM professionals and teachers</td><td>Sustainable high quality graduate and endorsement programs producing teachers with increased subject matter knowledge in Math/Science</td></tr>
<tr><td>•Needs Assessments
•Instruction on using data, Curricula selection, technology use, critical use of research, questioning</td><td>Teachers with improved teaching skills in Math/Science</td></tr>
<tr><td>•Mentoring by experienced teachers
•Upgrading status of math/science teaching
•Vision of math/science career as lifelong learning</td><td>Teachers with higher job satisfaction in K-12 school settings</td></tr>
<tr><td rowspan="4">Needs assessment, Curriculum alignment, articulation locally and with Institutes of Higher Education</td><td>Curricula that has scientific, research basis</td><td rowspan="4">Improved K-12 Math & Science Curriculum</td><td rowspan="4">•IHEs committed to sustained program support
•LEA Admin. support and sustained collaborative decision-making with participating teachers</td></tr>
<tr><td>Appropriate integration of technology</td></tr>
<tr><td>Object-, experiment-, or problem-based learning activities</td></tr>
<tr><td>Rigorous state & local standards aligned with post-secondary standards for STEM majors</td></tr>
</table>

Appendix B

Data Dictionaries

	Teacher Background Variables
Teacher_ID	This ID should be used consistently in all data submitted.
Undergrad_degree	Report the undergraduate degree held by each teacher.
Undergraduate_degree_granting_school	Report the institution awarding the teacher his/her undergraduate degree.
Undergrad_degree_major	Report the undergraduate major for which the undergraduate degree was awarded for each teacher.
Undergrad_degree_year	Report the year the teacher was awarded his/her undergraduate degree in the "yyyy" format.
Credits_completed	Report the number of graduate credits completed for the IMSP program through June 30, 2011. For Workshop/Institute programs, insert "999" code.
GPA	Report the average GPA for all graduate courses completed for the IMSP program through June 30, 2011. For Workshop/Institute programs, insert "999" code.
GPA_Range	Report the possible range for the GPA. Report the lowest value and highest value separated by a comma. For example, for a 4 point scale, enter "0.0, 4.0" in this field. For Workshop/Institute programs, insert "999" code.
Current_Educator_Certification_Level	Enter the code for the current Educator Certification based on the Illinois three-tiered certification system as of June 30, 2011. (Initial, Standard, Master, Not Certified)
Current_endorsements	Enter the code for the current teacher endorsements assigned before June 30, 2011. Separate multiple endorsements with a comma.
Baseline_HQS	Enter the code for the current Educator Highly Qualified Status as of June 30, 2011in the core area of your Master's Degree Program. For Workshop/Institute grantees, enter the status as of June 30, 2011 in the core area of your PD focus.
Curr_HQS	Enter the code for the current Educator Highly Qualified Status as of June 30, 2009 in the core area of your Master's Degree Program. For Workshop/Institute grantees, enter the Not Applicable "9" code.

Current_Assigned_Grade_Level	Enter the code for the assigned grade level for the 2010-2011 academic year for the content area your grant targets. Separate multiple grade level assignments with a comma.
Current_Core_Content_Area	Enter the code for the assigned core content area for the 2010-2011 academic year. Separate multiple codes with a comma if applicable.
Years_current_content_Assigned	Enter the number of years teacher has held the current content area assignment as of June 30, 2011. Round to nearest whole number.
2008_School_%_White	Report the % of students based on school report card (About students tab - Race/Ethnicity). Round to nearest whole number. For Workshop/Institute programs, insert "999" code.
2008_School_%_Black	Report the % of students based on school report card (About students tab - Race/Ethnicity). Round to nearest whole number. For Workshop/Institute programs, insert "999" code.
2008_School_%_Hispanic	Report the % of students based on school report card (About students tab - Race/Ethnicity). Round to nearest whole number. For Workshop/Institute programs, insert "999" code.
2008_School_%_Asian	Report the % of students based on school report card (About students tab - Race/Ethnicity). Round to nearest whole number. For Workshop/Institute programs, insert "999" code.
2008_School_%_NativeAmerican	Report the % of students based on school report card (About students tab - Race/Ethnicity). Round to nearest whole number. For Workshop/Institute programs, insert "999" code.
2008_School_%_Multiracial	Report the % of students based on school report card (About students tab - Race/Ethnicity). Round to nearest whole number. For Workshop/Institute programs, insert "999" code.
2008_School_%_mobility	Report the % of students based on school report card (About students tab - Educational Environment). Round to nearest whole number. For Workshop/Institute programs, insert "999" code.
2008_School_%_poverty	Report the % of students based on school report card (About students tab - Educational Environment). Round to nearest whole number. For Workshop/Institute programs, insert "999" code.

School_Type	Enter the code for the class organization for the teaching assignment for the 2010-2011 academic year. (Regular elementary/secondary; Special Program emphasis/magnet/charter; Special Education; Career/Technical/Vocational; Alternative/Other
Class_organization	Enter the code for the class organization for the teaching assignment for the 2010-2011 academic year. Separate classifications with a comma. (Traditional grades; Academic disciplines; Looping; Multi-age; Block; Other)

	Professional Development Quality
PD Quality	Report the average percent (whole number) of teacher-participant course ratings that were classified as very low quality, low quality, average quality, high quality, very high quality for Course Design, Content, and Instructional Materials. Report the average across ALL courses through June 30, 2011. For the Workshop/Institute Program, report the average across all Professional Development activities through September 30, 2011.
PD Hours	Provide the Average (Mean, Median, Standard Deviation, N) hours of PD outside IMSP in STEM - (if not available in SEC data). If you have submitted SEC data that has this information, enter the Not Applicable Code 999 in this space. You must confirm these data will be reported for your teachers. Round data to .000 (thousandths) as appropriate.

	Teacher Content Knowledge
Report on the pretest mean for your teachers for 2010-2011. For the Workshop/Institute Program, report the pretest mean for Summer Workshop I.	
Test	Test name
Grade_level	Enter the code for the grade level for the -data you are reporting. If you have teachers from multiple grade levels taking the same test, enter "0" for this field and then specify the actual grade levels for all teachers for each test in your narrative.
Pretest_Mean	Report the mean of your local teacher content test for 2010-2011 or Summer Workshop I. Report the means separately for each test given.
Pretest_SD	Report the standard deviation of your local teacher content test for 2010-2011 or Summer Workshop I. Report the standard deviations separately for each test given.
Pretest_Range_Low	Report the lowest value possible on your local teacher content test for 2010-2011 or Summer Workshop I. Report separately for each test given.
Pretest_Range_High	Report the highest value possible on your local teacher content test for 2010-2011 or Summer Workshop I. Report separately for each test given.
Pretest_N	Report the N of all teachers used to calculate the pretest mean your local teacher content test for 2010-2011 or Summer Workshop I. Report the sample sizes separately for each test given.
Pretest_Missing	Report the N of missing teacher data for the pretest mean your local teacher content test for 2010-2011 or Summer Workshop I. Report the missing data separately for each test given.
Report on the posttest mean for your teachers for 2010-2011. For the Workshop/Institute Program, report the pretest mean for Summer Workshop I.	
Posttest_Mean	Report the mean of your local teacher content test for 2010-2011 or Summer Workshop I. Report the means separately for each test given.
Posttest_SD	Report the standard deviation of your local teacher content test for 2010-2011 **or Summer Workshop I**. Report the standard deviations separately for each test given.

Posttest_Range_Low	Report the lowest value possible on your local teacher content test for 2010-2011 or Summer Workshop I. Report separately for each test given.
Posttest_Range_High	Report the highest value possible on your local teacher content test for 2010-2011 or Summer Workshop I. Report separately for each test given.
Posttest_N	Report the N of all teachers used to calculate the posttest mean for your local teacher content test for 2010-2011 or Summer Workshop I. Report the sample sizes separately for each test given.
Posttest_Missing	Report the N of missing teacher data for the posttest mean for your local teacher content test 2010-2011 or Summer Workshop I. Report the missing data separately for each test given.
Pearson	Calculate the Pearson correlation coefficient between Pre and Posttest for each teacher test separately for your grant.
Pretest_reliability	Provide the reliability coefficient for each Pretest.
Posttest_reliability	Provide the reliability coefficient for each Posttest.

	Student Demographic Information
Report on the students with a SIS Demographic Race Indicator=05.	
White%	Report the % of your teachers' students only for 2010-2011. Round to nearest whole number.
WhiteN	Report the N of students for 2010-2011.
Report on the students with a SIS Demographic Race Indicator=03.	
Black%	Report the % of your teachers' students only for 2010-2011. Round to nearest whole number.
BlackN	Report the N of students for 2010-2011.
Report on the students with a SIS Demographic Race Indicator=04.	
Hispanic%	Report the % of your teachers' students only for 2010-2011. Round to nearest whole number.
HispanicN	Report the N of students for 2010-2011.
Report on the students with a SIS Demographic Race Indicator=02.	
Asian%	Report the % of your teachers' students only for 2010-2011. Round to nearest whole number.
AsianN	Report the N of students for 2010-2011.
Report on the students with a SIS Demographic Race Indicator=01.	
NativeAm%	Report the % of your teachers' students only for 2010-2011. Round to nearest whole number.
NativeAmN	Report the N of students for 2010-2011.
Report on the students with a SIS Demographic Race Indicator=06.	
Multiracial%	Report the % of your teachers' students only for 2010-2011. Round to nearest whole number.
MultiracialN	Report the N of students for 2010-2011.
Report on the students with a SIS Demographic Race Indicator Missing.	
Race_Missing%	Report the % of your teachers' students only for 2010-2011. Round to nearest whole number.
Race_MissingN	Report the N of students for 2010-2011.
Report on the students with a SIS Demographic FRL/Low Income Indicator=1.	
Low_Income%	Report the % of your teachers' students only for 2010-2011. Round to nearest whole number.
LowIncomeN	Report the N of students for 2010-2011.
Report on the students with a SIS Demographic Income Indicator Missing.	
Income_Missing%	Report the % of your teachers' students only for 2010-2011. Round to nearest whole number.
Income_MissingN	Report the N of students for 2010-2011.
Report on the students with a SIS Demographic Migrant (Mobility) Indicator=1.	
Mobility%	Report the % of your teachers' students only for 2010-2011. Round to nearest whole number.
MobilityN	Report the N of students for 2010-2011.

Report on the students with a SIS Demographic Migrant (Mobility) Indicator Missing.	
Mobility_Missing%	Report the % of your teachers' students only for 2010-2011. Round to nearest whole number.
Mobility_MissingN	Report the N of students for 2010-2011.
Report on the total students used to calculate percents for race, income, and mobility. You should use the same number of students to calculate % in for all demographics in this report.	
TotalN	Report the N of all students used to calculate % for student demographics for 2010-2011.

	Student Content Knowledge
Report on the pretest mean for your teachers' students for 2010-2011 by grade level and total.	
Test	Test name
Grade_level	Enter the code for the grade level for the -data you are reporting.
Pretest_Mean	Report the mean of your local student content test for 2010-2011 for each grade level tested.
Pretest_SD	Report the standard deviation of your local student content test for 2010-2011 for each grade level tested.
Pretest_Range_Low	Report the lowest value possible on your local student content test for 2010-2011 or Summer Workshop I. Report separately for each test given.
Pretest_Range_High	Report the highest value possible on your local student content test for 2010-2011 or Summer Workshop I. Report separately for each test given.
Pretest_N	Report the N of all students used to calculate the pretest mean your local student content test for 2010-2011 for each grade level tested.
Pretest_Missing	Report the N of missing student data for the pretest mean your local student content test for 2010-2011 for each grade level tested.
Report on the posttest mean for your teachers' students for 2010-2011.	
Posttest_Mean	Report the mean of your local student content test for 2010-2011 for each grade level tested.
Posttest_SD	Report the standard deviation of your local student content test for 2010-2011 for each grade level tested.
Posttest_Range_Low	Report the lowest value possible on your local student content test for 2010-2011 or Summer Workshop I. Report separately for each test given.
Posttest_Range_High	Report the highest value possible on your local student content test for 2010-2011 or Summer Workshop I. Report separately for each test given.
Posttest_N	Report the N of all students used to calculate the pretest mean your local student content test for 2010-2011 for each grade level tested.
Posttest_Missing	Report the N of missing student data for the pretest mean your local student content test for 2010-2011 for each grade level tested.

Student_Pearson	Calculate the Pearson correlation coefficent between Pre and Posttest for each grade level.
Pretest_reliability	Provide the reliability coefficient for each Pretest.
Posttest_reliability	Provide the reliability coefficient for each Posttest.

Appendix C

IMSP Protocols and Survey Instruments

Site Visit Evaluation Framework			
Partnership Process	**Focus**	**Analysis Question**	**Data Source**
1) Partnership Composition	Size and diversity of partnership decision-makers and stakeholders	Who are the partners across Illinois MSP grants? How diverse are the stakeholders in positions of power? What are the contributions of the partners? What is the geographic dispersion of the partnership?	Interview and Site Visit Protocols
2) Organizational Structure	MSPs will categorize their organizational structure based on HUD's Office of University Partnerships (HUD, 2002, pp. 5.20-5.22).	How are the IMSPs organized? Where is the IMSP located? Who are the decision-makers?	Artifact Analyses Interview and Site Visit Protocols
3) Action Plan and Operational Guidelines	Review of the IMSP program and articulation of formal commitments and understandings between all partners.	What is the scale of the IMSP project? What formal agreements are in place to define, establish, and support communication and collaboration between partners?	Artifact Analyses Interview and Site Visit Protocols
4) Qualities of the Partnering Relationship and Maintaining the Partnership	Characteristics are associated with quality partnerships: • Mutuality & trust • Leadership • Resources • Collaboration and mechanisms of communication.	To what extent is there a mutual need, trust, equality in decision-making, resource exchange, transparency, respect, representation, enthusiasm, and sustained understanding between partners and stakeholders across MSP grants? To what extent is leadership collaborative and transformational?	Artifact Analyses Interview and Site Visit Protocols Interview and Site Partner Satisfaction Survey (Adapted from Wolf, 2003).

Protocol for Implementation Phase

1. Partnership Composition.

History: What is the history of the university in the community or with the partners? Did the university (or parts of it) have experience with or a record of engagement in community outreach, community service or applied research in the past? [Were these efforts coordinated? Was there a pre-existing partnership/program within the University that preceded the IMSP? If so, what role does that office have on the work of the IMSP? What is the relation between the IMSP and the program? Is there a University unit that oversees the work of this center? What was the relationship between the university and the community partners in the IMSP prior to the ISBE application?]

> For collaboration between colleges within IHE: What was the relationship among the colleges prior to the IMSP? Were their prior relationships with each other similar or different? In what way?

Process. What was the process for creating the IMSP? [How did the IMSP partners develop the application to ISBE? Did community or school partners contribute to the application, review the draft, etc.? How did the IMSP partners refine the partnership relationships after receiving the grant? Are there any groups that should have been included that were not part of the IMSP?]

> For collaboration between colleges within IHE: Did both/all schools participate in developing the IMSP proposal? How were the roles defined? How were responsibilities assigned?

Staffing. How is the IMSP staffed? [Have new staff been hired to conduct the work of the IMSP? What positions were filled? Where did the candidates come from? How many staff members work (will work) for the IMSP? What policies are in place for the replacement of staff as needed?]

> For collaboration between colleges within IHE: Are IMSP staff drawn from both/all institutions? Are faculty and students from both/all institutions involved in IMSP?

Context. What is the school environment for IMSP reform? [What are the major educational initiatives in the city/region/state? How has the IMSP related to these efforts? Can the IMSP have improved coordination with other programs to achieve greater outcomes? Are there resources for and attention to these issues? What is the context for university funding? What other programs are competing for university resources and attention?]

> For collaboration between colleges within IHE: How does the institutional context for the IMSP differ among the schools?

2. Organizational Structure of Partnership.

Structure. What is the structure of this IMSP? Does the IMSP have an advisory board(s) and what is its role? Is there a sense of equity among the partners? [Who are the board members and what are their respective affiliations? What is the governance of the IMSP? How are decisions made? By whom? Are community / school perspectives valued and respected? What are the roles of the university, community/ school in the IMSP? To what degree have university-community/school relationships constituted a partnership? (Not at all, somewhat, to a moderate degree, to a great degree)]

> For collaboration between colleges within IHE: What are the respective roles of the colleges in the IMSP? Do all schools participate equally in governance and decision-making? How is accountability by each school to the partnership determined? How are imbalances in institutional resources compensated for? Is the IMSP seen as an opportunity for faculty and student collaboration among the schools, or as individual efforts under a single banner?

Location within the University. Is there a specific space designated for the IMSP within the university? What parts of the university are involved with the IMSP? What structures, policies and/or practices of the university support community outreach or hinder outreach activities? [Where is the IMSP physically housed? What was the rationale for its placement? Is the IMSP embraced by the leadership of the university? If so, how?]

> For collaboration between colleges within IHE: Where is the IMSP located in the consortium? Why?

Artifacts: IMSP Membership list, IMSP/ IHE organizational chart

3. Action Plan and Operational Guidelines

IMSP Program Areas. What is the nature of the IMSP program and how ambitious is it? [What program areas does the IMSP address? What is the scope and sequence of the new program?]

> For collaboration between colleges within IHE: Are program areas divided by schools? If so how? Or do the schools work jointly on the same project areas?

Operational Guidelines. What formal agreements are in place to define, establish, and support communication and collaboration between partners? Who established these guidelines?

Artifacts: Logic Model, Evaluation Framework, Data Analysis Plans, IBHE proposal

4. Quality of Partnerships

Mutuality & Trust. Do the goals and objectives of the IMSP address mutual needs across partners? What are the perceptions of trust across partners? Is there a sense of safety for sharing of information and resources? What steps have partners taken to build trust? What is the nature of most interactions between partners? Face-to-face? Email? What was the nature of relationships between partners before the IMSP? How respectful is the IMSP to differences in cultural and organizational norms, values, and beliefs? How transparent are the IMSP operations? Is their equality in decision-making? Is there reciprocal accountability? Is there a balance in the representation of all partners in the IMSP? Does leadership across partners work closely together? Is there enthusiasm surrounding IMSP goals and activities?

> For collaboration between colleges within IHE: What is the nature of relationships between colleges? Is there a sense of equality in decision-making and resources? Is there a respect for differences in cultures? Is there shared enthusiasm for the IMSP?

Artifacts: Meeting agendas, minutes

Leadership. Who are the leaders of the IMSP? [Who led the development of the IMSP application? Are there one or more persons taking leadership? What is their role in the institution? What is their continuing role in the IMSP? Was there participation from the top levels of the institution?]

> For collaboration between colleges within IHE: Is leadership for the IMSP shared among the colleges? Is there a key person at each school leading the IMSP? Is there participation from top levels at both/all schools?

Resources. Has the IMSP received matching funds? [From what sources? How does this compare with the initial proposal? Are there adequate resources to accomplish IMSP goals? Are resources sufficient for all partners?] limited not just to financial resources but extending to managerial and technical skills, contacts, information and the like;

> For collaboration between colleges within IHE: How will resources be divided among the institutions? Did all/both schools provide matching funds?

Artifacts: Budget summary/narrative

Communication. What are the guiding principles for your IMSP? Is there shared decision-making between partners? What are the primary vehicles for communication? Is there a formal management and communication plan? How are conflicts resolved in the partnership?

Artifacts: Meeting agendas, meeting minutes, newsletters, websites, other forms/policy statements

IMSP Teacher Satisfaction Survey[1]

(This Survey Omitted for Year One Planning Phase)

Please indicate your level of satisfaction with each aspect of your MSP participation.
(Likert scale: Very Satisfied – Very Dissatisfied)

Vision and Mutuality

1. Clarity of the vision for IMSP goals and objectives
2. Planning process used to prepare the IMSP objectives
3. Follow-through on IMSP activities
4. Efforts to promote collaborative action with other educators
5. Efforts to promote collaborative action with STEM professionals outside the university
6. Processes used to assess teachers' needs
7. Processes used to assess my students' needs
8. Participation of influential people in the IMSP that represent teachers' interests
9. Diversity of partners and participants
10. Respect, acceptance and recognition of my contributions to reaching the IMSP goals
11. Resources provided by my district and/or school to support my commitment to the IMSP grant

Leadership

12. Strength and competence of IMSP leadership
13. Sensitivity to cultural issues
14. Opportunities for me to take leadership roles
15. Trust that partners and participants afford each other

Communication

16. Use of the media to promote awareness of the IMSP goals, actions, and accomplishments
17. Communication among members of the partnership
18. Communication between the IMSP and the broader community
19. Extent to which IMSP participants are listened to and heard
20. Working relationships established with school officials
21. Information provided on issues and available resources

Comments:

Technical Assistance:

22. Strength and competence of IMSP faculty and staff
23. Training and technical assistance provided by faculty and staff
24. Help given the participants in meeting IMSP requirements
25. Help given the participants to become better able to address and resolve their concerns

[1] Adapted from Annual Satisfaction Survey for Community Coalitions. Wolff,T (2003).. A practical approach to evaluating coalitions. In T.Backer(Ed.) Evaluating Community Collaborations. Springer Publishing

Progress and Outcomes:

26. My progress in learning new content through the IMSP grant.
27. My progress in using new instructional resources through the IMSP grant.
28. My progress in using new STEM technologies through the IMSP grant.
29. My progress toward meeting endorsement or certification requirements.
30. My access to STEM industry experts through the IMSP grant.
31. My access to mentors because of the IMSP grant.
32. Fairness with which resources and opportunities are distributed
33. Capacity of IMSP teachers to give support to each other
34. IMSP grant's contribution to improving science and/or mathematics instruction in my school.

Please indicate how much you agree or disagree with the following statements.
(Likert scale: Strongly Agree – Strongly Disagree)

Job Satisfaction

35. In most ways, being a STEM teacher is close to my ideal.
36. My conditions of being a STEM teacher are excellent.
37. I am satisfied with being a STEM teacher.
38. So far I have gotten the important things I want to be a STEM teacher.
39. If I could choose my career over, I would change almost nothing.

Sustainability

40. I received important professional benefits from my participation in the IMSP.
41. The benefits I received were worth the time, effort, and cost I invested in the IMSP.
42. The benefits I received were commensurate with the contributions I made to the IMSP.
43. I strongly believe the IMSP should be continued.
44. I will participate fully in IMSP activities in the future.
45. The IMSP activities need to be dramatically improved to make it worth my investment.
46. I will continue to integrate IMSP strategies and materials into my classroom instruction.
47. I have access to the resources I need to continue to integrate IMSP strategies and materials into my classroom instruction.
48. My district will support my continued integration of IMSP strategies and materials into my classroom instruction.

IMSP School Partner Satisfaction Survey[2]

Please indicate your level of satisfaction with each aspect of your IMSP partnership.
(Likert scale: Very Satisfied – Very Dissatisfied)

Vision and Mutuality

1. Clarity of the vision for the IMSP goals and objectives
2. Planning process used to prepare the IMSP objectives
3. Follow-through on IMSP activities
4. Efforts to promote collaborative action
5. Efforts to promote collaborative action between STEM professionals and teachers
6. Processes used to assess teachers' needs
7. Processes used to assess students' needs
8. Participation of influential people in the IMSP that represent a variety of interests
9. Diversity of partners and participants
10. Respect, acceptance and recognition of my contributions to reaching the IMSP goals
11. Resources provided by the partner districts and/or school to support the IMSP grant

Leadership

12. Strength and competence of IMSP leadership
13. Sensitivity to cultural issues
14. Opportunities for me to take a leadership role
15. Trust that partners and participants afford each other
16. Transparency of decision-making.

Communication

17. Use of the media to promote awareness of the IMSP goals, actions, and accomplishments
18. Communication among members of the partnership
19. Communication between the IMSP and the broader community
20. Extent to which IMSP participants are listened to and heard
21. Working relationships established with school officials
22. Information provided on issues and available resources

[2] Adapted from Annual Satisfaction Survey for Community Coalitions. Wolff,T. (2003). A practical approach to evaluating coalitions. In T.Backer(Ed.) Evaluating Community Collaborations. Springer Publishing

Technical Assistance:

23. Strength and competence of IMSP faculty and staff
24. Training and technical assistance provided by faculty and staff
25. Help given the participants in meeting IMSP requirements
26. Help given the participants to become better able to address and resolve their concerns

Progress and Outcomes:

27. Progress in improving teachers' content knowledge through the IMSP grant
28. Progress in teachers' access and use of new instructional resources through the IMSP grant
29. Progress in teachers' access and use of new STEM technologies through the IMSP grant
30. Teachers' progress toward meeting endorsement or certification requirements
31. Effective collaboration between STEM industry experts and teachers' through the IMSP grant
32. Teachers' access to mentors through the IMSP grant
33. Fairness with which resources and opportunities are distributed
34. Capacity of IMSP teachers to give support to each other
35. IMSP grant's contribution to improving science and/or mathematics instruction in schools

Please indicate how much you agree or disagree with the following statements.
(Likert scale: Strongly Agree – Strongly Disagree)
Sustainability:

36. My district received important professional benefits from participation in the IMSP.
37. The benefits my district received were worth the time, effort, and cost invested in the IMSP.
38. The benefits my district received were commensurate with the contributions made to the IMSP.
39. I strongly believe the IMSP should be continued.
40. I will participate fully in IMSP activities in the future.
41. The IMSP activities need to be dramatically improved to make it worth my district's investment.
42. The composition of the IMSP needs to be expanded or changed to be more effective.
43. My district has changed the structure, policies, or functions to institutionalize the IMSP goals and activities.
44. My district intends to sustain IMSP activities after the expiration of grant funds.
45. My district is actively seeking alternative funds to sustain IMSP activities after the expiration of grant funds.

IMSP Industry Partner Satisfaction Survey[3]

Please indicate your level of satisfaction with each aspect of your IMSP partnership.
(Likert scale: Very Satisfied – Very Dissatisfied)

Vision and Mutuality:

1. Clarity of the vision for the IMSP goals and objectives
2. Planning process used to prepare the IMSP objectives
3. Follow-through on IMSP activities
4. Efforts to promote collaborative action between partners
5. Efforts to promote collaborative action between STEM professionals and teachers
6. Participation of influential people in the IMSP that represent a variety of interests
7. Diversity of partners and participants
8. Respect, acceptance and recognition of my contributions to reaching the IMSP goals
9. Resources provided by the partner organizations to support the IMSP grant

Leadership:

10. Strength and competence of IMSP leadership
11. Sensitivity to cultural issues
12. Opportunities for me to take a leadership role
13. Trust that partners and participants afford each other
14. Transparency of decision-making.

Communication:

15. Use of the media to promote awareness of the IMSP goals, actions, and accomplishments
16. Communication among members of the partnership
17. Communication between the IMSP and the broader community
18. Extent to which IMSP participants are listened to and heard
19. Working relationships established with school officials
20. Information provided on issues and available resources

Technical Assistance:

21. Strength and competence of IMSP faculty and staff
22. Training and technical assistance provided by faculty and staff
23. Help given the participants in meeting IMSP requirements
24. Help given the participants to become better able to address and resolve their concerns

[3] Adapted from Annual Satisfaction Survey for Community Coalitions. Wolff,T. (2003). A practical approach to evaluating coalitions. In T.Backer(Ed.) Evaluating Community Collaborations. Springer Publishing

Progress and Outcomes:

25. Progress in improving teachers' content knowledge through the IMSP grant
26. Progress in teachers' access and use of new instructional resources through the IMSP grant
27. Progress in teachers' access and use of new STEM technologies through the IMSP grant
28. Teachers' progress toward meeting endorsement or certification requirements
29. Effective collaboration between STEM industry experts and teachers' through the IMSP grant
30. Teachers' access to mentors through the IMSP grant
31. Fairness with which resources and opportunities are distributed
32. Capacity of IMSP teachers to give support to each other
33. IMSP grant's contribution to improving science and/or mathematics instruction in schools

Please indicate how much you agree or disagree with the following statements.
(Likert scale: Strongly Agree – Strongly Disagree)

Sustainability:

34. My organization received important professional benefits from participation in the IMSP.
35. The benefits my organization received were worth the time, effort, and cost invested in the IMSP.
36. The benefits my organization received were commensurate with the contributions made to the IMSP.
37. I strongly believe the IMSP should be continued.
38. I will participate fully in IMSP activities in the future.
39. The IMSP activities need to be dramatically improved to make it worth my organization's investment.
40. The composition of the IMSP needs to be expanded or changed to be more effective.
41. My organization has changed the structure, policies, or functions to institutionalize the IMSP goals and activities.
42. My organization intends to sustain IMSP activities after the expiration of grant funds.
43. My organization is actively seeking alternative funds to sustain IMSP activities after the expiration of grant funds.

Appendix D

Member Check Survey

Illinois MSP

Grant Profile Member Check

Each grant has been sent a .pdf representing the profile written by your state site evaluator focusing on four specific areas: Partnership Composition, Organizational Structure, Action Plan and Operational Guidelines, and Qualities of the Partnering Relationship.

The profiles across all grants will be analyzed to report on trends across the state in terms of the funded IMSP partnerships. Individual profiles will be submitted to the ISBE in an Appendix as part of yearend report. A redacted version will be submitted as needed using pseudonyms for partners as indicated by individual grants. The redacted version will be disseminated as appropriate at the discretion of the ISBE.

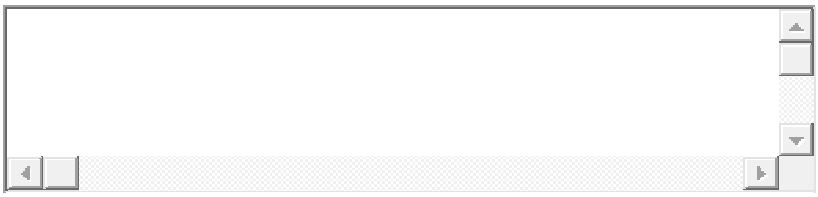
The purpose of this survey is to provide grantees an opportunity to clarify or provide alternative perspectives on the profiles being submitted to the ISBE in the year-end report. If you are comfortable with the content of the profile as written by the site evaluator, no response is needed. All responses submitted on this form will be appended to your site evaluator profile unedited.

Comments about your IMSP **Partnership Composition** profile summary:

Comments about your IMSP **Organizational Structure** profile summary:

Comments about your IMSP **Action Plan and Operational Guidelines** profile summary:

Comments about your IMSP Qualities of the **Partnering Relationships** profile summary:



Identification in redacted report:	**Yes**	**No**
Would you like the redacted report to use a pseudonym for university partners?	○	○
Would you like the redacted report to use a pseudonym for school partners?	○	○
Would you like the redacted report to use a pseudonym for industry partners?	○	○

Appendix E

Partner Descriptive Survey Results

Table 22. Aggregated Survey Responses - IHE

IHE	MS							WIP-1							WIP-2						
	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid Total	Grand Total	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid Total	Grand Total	Missing	Valid %
Clarity of the vision for the IMSP goals and objectives	2	64	1	67	66	0	97	1	19	0	20	20	0	95	0	6	0	6	6	0	100
Planning process used to prepare the IMSP objectives	2	62	3	67	64	0	97	1	17	2	20	20	0	85	0	6	0	6	6	0	100
Follow-through on IMSP activities	3	64	0	67	67	0	96	0	20	0	20	20	0	100	0	6	0	6	6	0	100
Efforts to promote collaborative action	1	64	2	67	65	0	98	0	20	0	20	20	0	100	0	6	0	6	6	0	100
Efforts to plan collaborative action between STEM professionals and teachers	4	62	1	67	66	0	94	1	19	0	20	20	0	95	0	6	0	6	6	0	100
Processes used to assess teachers' needs	7	58	2	67	65	0	89	0	20	0	20	20	0	100	0	6	0	6	6	0	100
Processes used to assess students' needs	9	53	5	67	62	0	85	3	16	1	20	20	0	80	0	4	2	6	6	0	67
Participation of influential people in the IMSP that represent a variety of interests	1	64	2	67	65	0	98	0	20	0	20	20	0	100	0	6	0	6	6	0	100

IHE	MS							WIP-1							WIP-2						
	Not Sure, Dis, or Very Dissat	Satisor Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satisor Very Satis	Not Appl	Valid Total	Grand Total	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid Total	Grand Total	Missing	Valid %
Diversity of partners and participants	1	64	2	67	65	0	98	1	19	0	20	20	0	95	0	6	0	6	6	0	100
Respect, acceptance and recognition of my contributions to reaching the IMSP goals	4	62	1	67	66	0	94	0	20	0	20	20	0	100	0	6	0	6	6	0	100
Resources provided by the partner districts and/or schools to support the IMSP grant	5	59	3	67	64	0	92	0	18	2	20	20	0	90	0	6	0	6	6	0	100
Resources provided by the partner industry organizations to support the IMSP grant	7	45	14	66	52	1	87	1	18	1	20	20	0	90	1	4	1	6	6	0	67
Average % Vision							94							94							
Strength and competence of IMSP leadership	2	65	0	67	67	0	97	0	20	0	20	20	0	100	0	6	0	6	6	0	100
Sensitivity to cultural issues	1	64	2	67	65	0	98	1	19	0	20	20	0	95	0	6	0	6	6	0	100
Opportunities for me to take a leadership role	3	59	5	67	62	0	95	0	20	0	20	20	0	100	0	6	0	6	6	0	100
Trust that partners and participants afford each other	3	64	0	67	67	0	96	0	20	0	20	20	0	100	0	6	0	6	6	0	100

IHE	MS							WIP-1							WIP-2						
	Not Sure, Dis, or Very Dissat	Satisor Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satisor Very Satis	Not Appl	Valid Total	Grand Total	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid Total	Grand Total	Missing	Valid %
Transparency of decision-making	5	61	0	66	66	1	92	0	20	0	20	20	0	100	1	5	0	6	6	0	83
Average % Leadership							99							99							100
Use of the media to promote awareness of the IMSP goals, actions, and accomplishments	13	47	6	66	60	1	78	4	15	1	20	20	0	75	0	6	0	6	6	0	100
Communication among members of the partnership	3	62	1	66	65	1	95	0	20	0	20	20	0	100	0	6	0	6	6	0	100
Communication between the IMSP and the broader community	8	52	4	64	60	3	87	3	17	0	20	20	0	85	0	6	0	6	6	0	100
Extent to which IMSP participants are listened to and heard	3	60	2	65	63	2	95	0	20	0	20	20	0	100	0	6	0	6	6	0	100
Working relationships established with school officials	5	57	4	66	62	1	92	1	18	1	20	20	0	90	0	5	1	6	6	0	83
Information provided on issues and available resources	4	60	2	66	64	1	94	0	20	0	20	20	0	100	0	6	0	6	6	0	100
Average % Communication							90							92							97

IHE	MS							WIP-1							WIP-2						
	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid Total	Grand Total	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid Total	Grand Total	Missing	Valid %
Strength and competence of IMSP faculty and staff	4	59	3	66	63	1	94	0	20	0	20	20	0	100	0	6	0	6	6	0	100
Training and technical assistance provided by IMSP faculty and staff	4	56	6	66	60	1	93	0	20	0	20	20	0	100	0	6	0	6	6	0	100
Help given by IMSP faculty and staff in understanding IMSP requirements	4	57	5	66	61	1	93	1	18.0	1	20	20	0	90	0	6	0	6	6	0	100
Help given by IMSP faculty and staff to become better able to address and resolve their concerns	5	54	7	66	59	1	92	1	19.0	0	20	20	0	95	0	6	0	6	6	0	100
Working relationships established with school and industry partners	3	56	7	66	59	1	95	0	19.0	1	20	20	0	95	1	5	0	6	6	0	83
Information provided on issues and available resources	3	59	4	66	62	1	95	0	19.0	0	19	20	1	100	0	6	0	6	6	0	100
Average % Technical Support							94							97							97

IHE	MS							WIP-1							WIP-2						
	Not Sure, Dis, or Very Dissat	Satisor Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satisor Very Satis	Not Appl	Valid Total	Grand Total	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid Total	Grand Total	Missing	Valid %
Improvement in teachers' content knowledge	1	62	3	66	63	1	98	0	20.0	0	20	20	0	100	0	6	0	6	6	0	100
Teachers' access and use of new instructional resources	1	62	3	66	63	1	98	0	20.0	0	20	20	0	100	0	6	0	6	6	0	100
Teachers' access and use of new STEM technologies	4	58	4	66	62	1	94	1	19.0	0	20	20	0	95	0	6	0	6	6	0	100
Teachers' progress toward meeting endorsement or certification requirements	3	57	6	66	60	1	95	2	14.0	4	20	20	0	70	0	4	2	6	6	0	67
Effective collaboration between STEM industry experts and teachers	3	51	12	66	54	1	94	2	17.0	1	20	20	0	85	1	4	1	6	6	0	67
Teachers' access to mentors	5	54	7	66	59	1	92	2	17.0	1	20	20	0	85	1	5	0	6	6	0	83
Fairness with which resources and opportunities are distributed	2	60	4	66	62	1	97	1	18.0	0	19	20	1	95	0	6	0	6	6	0	100
Capacity of IMSP teachers to give support to each other	4	57	4	65	61	2	93	0	20.0	0	20	20	0	100	0	6	0	6	6	0	100

IHE	MS							WIP-1							WIP-2						
	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid Total	Grand Total	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid Total	Grand Total	Missing	Valid %
Improvement in science and/or mathematics instruction in your partner schools	6	54	6	66	60	1	90	0	18.0	1	19	20	1	95	0	6	0	6	6	0	100
Average % Progress toward objectives							94							90							91
My college received important professional benefits from participation in the IMSP.	5	58	4	67	63	0	92	0	20.0	0	20	20	0	100	0	5	1	6	5	0	100
The benefits my college received were worth the time, effort, and cost invested in the IMSP.	4	59	4	67	63	0	94	0	20.0	0	20	20	0	100	0	5	1	6	5	0	100
The benefits my college received were commensurate with the contributions made to the IMSP.	6	57	4	67	63	0	90	0	20.0	0	20	20	0	100	0	5	1	6	5	0	100
I strongly believe this IMSP should be continued.	4	61	2	67	65	0	94	1	19.0	0	20	20	0	95	0	5	1	6	5	0	100

IHE	MS							WIP-1							WIP-2						
	Not Sure, Dis, or Very Dissat	Satisor Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satisor Very Satis	Not Appl	Valid Total	Grand Total	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid Total	Grand Total	Missing	Valid %
I will participate fully in this IMSP's activities in the future.	6	59	2	67	65	0	91	1	19.0	0	20	20	0	95	0	5	1	6	5	0	100
The IMSP activities need to be dramatically improved to make it worth my college's investment.	28	35	0	63	63	4	56	10	10.0	0	20	20	0	50	3	2	0	5	5	1	40
The composition of this IMSP needs to be expanded or changed to be more effective.	34	29	3	66	63	1	46	14	6.0	0	20	20	0	30	2	3	1	6	5	0	60
My college has changed its structure, policies, or functions to institutionalize the IMSP goals and activities.	19	39	9	67	58	0	67	6	12.0	2	20	18	0	67	1	4	1	6	5	0	80
My college intends to sustain IMSP activities after the expiration of grant funds.	18	44	5	67	62	0	71	6	12.0	2	20	18	0	67	1	4	1	6	5	0	80

IHE	MS							WIP-1							WIP-2						
	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid Total	Grand Total	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid Total	Grand Total	Missing	Valid %
My college is actively seeking alternative funds to sustain IMSP activities after the expiration of grant funds.	22	37	7	66	59	0	63	4	14.0	2	20	18	0	78	0	4	2	6	4	0	100
Average % Sustainability							76							78							86

Table 23. Aggregated Survey Responses - Industry

Industry	MS							WIP-1							WIP-2						
	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %
Clarity of the vision for the IMSP goals and objectives	2	15	1	18	17	0	88	1	8	0	9	9	0	89	0	1	0	1	1	0	100
Planning process used to prepare the IMSP objectives	4	13	1	18	17	0	76	0	9	0	9	9	0	100	0	1	0	1	1	0	100
Follow-through on IMSP activities	4	13	1	18	17	0	76	1	8	0	9	9	0	89	0	1	0	1	1	0	100
Efforts to promote collaborative action	5	12	1	18	17	0	71	0	9	0	9	9	0	100	0	1	0	1	1	0	100
Efforts to plan collaborative action between STEM professionals and teachers	5	13	0	18	18	0	72	0	9	0	9	9	0	100	0	1	0	1	1	0	100
Participation of influential people in the IMSP that represent a variety of interests	4	12	2	18	16	0	75	1	8	0	9	9	0	89	0	1	0	1	1	0	100
Diversity of partners and participants	5	12	1	18	17	0	71	2	7	0	9	9	0	78	0	1	0	1	1	0	100

Industry	MS							WIP-1							WIP-2						
	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %
Respect, acceptance and recognition of your contributions to reaching the IMSP goals	4	13	1	18	17	0	76	0	8	1	9	8	0	100	0	1	0	1	1	0	100
Resources provided by your organization to support the IMSP grant	5	12	1	18	17	0	71	1	8	0	9	9	0	89	0	1	0	1	1	0	100
Average % Vision							75							93							100
Strength and competence of IMSP leadership	3	15	0	18	18	0	83	0	9	0	9	9	0	100	0	1	0	1	1	0	100
Sensitivity to cultural issues	2	15	1	18	17	0	88	2	7	0	9	9	0	78	1	0	0	1	1	0	0
Opportunities for me to take a leadership role	5	12	1	18	17	0	71	1	7	1	9	8	0	88	0	1	0	1	1	0	100
Trust that partners and participants afford each other	2	15	0	17	17	1	88	1	8	0	9	9	0	89	0	1	0	1	1	0	100
Transparency of decision-making	4	13	1	18	17	0	76	1	8	0	9	9	0	89	0	1	0	1	1	0	100
Average % Leadership							81							89							80
Use of the media to promote awareness of the IMSP goals, actions, and accomplishments	6	8	4	18	14	0	57	2	7	0	9	9	0	78	1	0	0	1	1	0	0

Industry	MS							WIP-1							WIP-2						
	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %
Communication among members of the partnership	6	12	0	18	18	0	67	2	7	0	9	9	0	78	0	1	0	1	1	0	100
Communication between the IMSP and the broader community	6	8	4	18	14	0	57	2	7	0	9	9	0	78	0	1	0	1	1	0	100
Extent to which IMSP participants are listened to and heard	4	12	2	18	16	0	75	2	7	0	9	9	0	78	0	1	0	1	1	0	100
Working relationships established with school officials	6	10	2	18	16	0	63	0	9	0	9	9	0	100	0	1	0	1	1	0	100
Information provided on issues and available resources	5	13	0	18	18	0	72	0	9	0	9	9	0	100	0	1	0	1	1	0	100
Average % Communication							65							85							83
Strength and competence of IMSP faculty and staff	3	15	0	18	18	0	83	0	9	0	9	9	0	100	0	1	0	1	1	0	100
Training and technical assistance provided by faculty and staff	4	12	2	18	16	0	75	0	9	0	9	9	0	100	0	1	0	1	1	0	100

Industry	MS							WIP-1							WIP-2						
	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %
Help given to the partners by IMSP faculty and staff in understanding IMSP requirements	5	12	1	18	17	0	71	1	8	0	9	9	0	89	0	1	0	1	1	0	100
Help given to the partners by the IMSP faculty and staff to become better able to address and resolve your concerns	5	11	2	18	16	0	69	2	7	0	9	9	0	78	0	1	0	1	1	0	100
Working relationships established with school officials	7	9	2	18	16	0	56	1	8	0	9	9	0	89	0	1	0	1	1	0	100
Information provided on issues and available resources	6	11	1	18	17	0	65	1	8	0	9	9	0	89	0	1	0	1	1	0	97
Average % Technical Support							70							91							100
Improvement in teachers' content knowledge	4	14	0	18	18	0	78	0	7	2	9	7	0	100	0	1	0	1	1	0	100
Teachers' access and use of new instructional resources	5	12	1	18	17	0	71	0	7	2	9	7	0	100	0	1	0	1	1	0	100
Teachers' access and use of new STEM technologies	6	11	1	18	17	0	65	0	7	2	9	7	0	100	0	1	0	1	1	0	100

Industry	MS							WIP-1							WIP-2						
	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %
Teachers' progress toward meeting endorsement or certification requirements	5	10	3	18	15	0	67	2	5	2	9	7	0	71	0	1	0	1	1	0	100
Effective collaboration between STEM industry experts and teachers	7	10	0	17	17	1	59	0	7	2	9	7	0	100	0	1	0	1	1	0	100
Teachers' access to mentors	6	11	1	18	17	0	65	1	6	2	9	7	0	86	0	1	0	1	1	0	100
Fairness with which resources and opportunities are distributed	5	12	1	18	17	0	71	1	6	2	9	7	0	86	0	1	0	1	1	0	100
Capacity of IMSP teachers to give support to each other	5	12	1	18	17	0	71	0	7	2	9	7	0	100	1	0	0	1	1	0	0
Improvement in science and/or mathematics instruction in partner schools	3	12	3	18	15	0	80	0	7	2	9	7	0	100	0	1	0	1	1	0	100
Average % Progress toward objectives							69							94							89
My organization received important professional benefits from participation in the IMSP.	0	1	17	18	1	0	100	0	1	8	9	1	0	100	0	0	1	1	0	0	N/A

Industry	MS							WIP-1							WIP-2						
	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %
The benefits my organization received were worth the time, effort, and cost invested in the IMSP.	0	1	17	18	1	0	100	0	1	8	9	1	0	100	0	0	1	1	0	0	N/A
The benefits my organization received were commensurate with the contributions made to the IMSP.	0	1	17	18	1	0	100	0	1	7	8	1	0	100	0	0	1	1	0	0	N/A
I strongly believe this IMSP should be continued.	3	9	6	18	12	0	75	0	6	3	9	6	0	100	0	1	0	1	1	0	100
I will participate fully in this IMSP's activities in the future.	5	7	6	18	12	0	58	0	6	3	9	6	0	100	0	1	0	1	1	0	100
The IMSP activities need to be dramatically improved to make it worth my organization's investment.	0	1	17	18	1	0	100	0	1	8	9	1	0	100	0	0	1	1	0	0	N/A
The composition of this IMSP needs to be expanded or changed to be more effective.	0	1	17	18	1	0	100	0	1	8	9	1	0	100	0	0	1	1	0	0	N/A

Industry	MS							WIP-1							WIP-2						
	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %
My organization has changed its structure, policies, or functions to institutionalize the IMSP goals and activities.	0	1	17	18	1	0	100	0	1	8	9	1	0	100	0	0	1	1	0	0	N/A
Average % Sustainability							92							100							100

Table 24. Aggregated Survey Responses - School

School	MS							WIP-1							WIP-2						
	Not Sure, Dis, or Very Dissat	Satisor Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satisor Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satisor Very Satis	Not Appl	Valid N	Total N	Missing	Valid %
Clarity of the vision for the IMSP goals and objectives	5	37	0	42	42	0	88	0	5	0	5	5	0	100	1	2	0	3	3	1	67
Planning process used to prepare the IMSP objectives	4	36	0	40	40	2	90	0	5	0	5	5	2	100	1	2	0	3	3	1	67
Follow-through on IMSP activities	4	37	0	41	41	1	90	0	5	0	5	5	2	100	1	2	0	3	3	1	67
Efforts to promote collaborative action	6	35	0	41	41	1	85	0	5	0	5	5	2	100	1	2	0	3	3	1	67
Efforts to plan collaborative action between STEM professionals and teachers	5	37	0	42	42	0	88	0	5	0	5	5	2	100	0	3	0	3	3	1	100
Participation of influential people in the IMSP that represent a variety of interests	4	38	0	42	42	0	90	0	5	0	5	5	2	100	1	2	0	3	3	1	67
Diversity of partners and participants	8	34	0	42	42	0	81	1	4	0	5	5	2	80	1	2	0	3	3	1	67

School	MS							WIP-1							WIP-2						
	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %
Respect, acceptance and recognition of your contributions to reaching the IMSP goals	5	36	0	41	41	1	88	0	5	0	5	5	2	100	1	2	0	3	3	1	67
Resources provided by your organization to support the IMSP grant	9	30	0	39	39	3	77	1	4	0	5	5	2	80	0	3	0	3	3	1	100
Average % Vision							86							96							74
Strength and competence of IMSP leadership	5	37	0	42	42	0	88	1	3	0	4	4	3	75	1	2	0	3	3	1	67
Sensitivity to cultural issues	7	34	0	41	41	1	83	0	4	0	4	4	3	100	1	2	0	3	3	1	67
Opportunities for me to take a leadership role	3	35	0	38	38	4	92	0	4	0	4	4	3	100	1	2	0	3	3	1	67
Trust that partners and participants afford each other	6	36	0	42	42	0	86	0	4	0	4	4	3	100	1	2	0	3	3	1	67
Transparency of decision-making	7	35	0	42	42	0	83	0	4	0	4	4	3	100	1	2	0	3	3	1	67
Average % Leadership							86							96							67

School	MS							WIP-1							WIP-2						
	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %
Use of the media to promote awareness of the IMSP goals, actions, and accomplishments	8	31	0	39	39	3	79	0	3	0	3	3	4	100	1	2	0	3	3	1	67
Communication among members of the partnership	6	36	0	42	42	0	86	0	4	0	4	4	3	100	1	2	0	3	3	1	67
Communication between the IMSP and the broader community	8	31	0	39	39	3	79	1	3	0	4	4	3	75	1	2	0	3	3	1	67
Extent to which IMSP participants are listened to and heard	5	36	0	41	41	1	88	0	3	0	3	3	4	100	1	2	0	3	3	1	67
Working relationships established with school officials	6	35	0	41	41	1	85	0	4	0	4	4	3	100	1	2	0	3	3	1	67
Information provided on issues and available resources	4	36	0	40	40	2	90	0	3	0	3	3	4	100	1	2	0	3	3	1	67
Average % Communication							85							96							67

School	MS							WIP-1							WIP-2						
	Not Sure, Dis, or Very Dissat	Satisor Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satisor Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satisor Very Satis	Not Appl	Valid N	Total N	Missing	Valid %
Strength and competence of IMSP faculty and staff	5	35	0	40	40	2	88	0	3	0	3	3	4	100	1	2	0	3	3	1	67
Training and technical assistance provided by faculty and staff	6	32	0	38	38	4	84	0	3	0	3	3	4	100	1	2	0	3	3	1	67
Help given to the partners by IMSP faculty and staff in understanding IMSP requirements	4	32	0	36	36	6	89	0	3	0	3	3	4	100	1	2	0	3	3	1	67
Help given to the partners by the IMSP faculty and staff to become better able to address and resolve your concerns	3	34	0	37	37	5	92	0	3	0	3	3	4	100	1	2	0	3	3	1	67
Working relationships established with school officials	6	32	0	38	38	4	84	0	4	0	4	4	3	100	1	1	0	2	2	2	50
Information provided on issues and available resources	4	33	0	37	37	5	89	0	3	0	3	3	4	100	1	2	0	3	3	1	67

School	MS							WIP-1							WIP-2						
	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %
Average % Technical Support								88						100							64
Improvement in teachers' content knowledge	6	35	0	41	41	1	85	1	4	0	5	5	2	80	1	3	0	4	4	0	75
Teachers' access and use of new instructional resources	3	38	0	41	41	1	93	0	5	0	5	5	2	100	0	4	0	4	4	0	100
Teachers' access and use of new STEM technologies	6	35	0	41	41	1	85	1	4	0	5	5	2	80	1	3	0	4	4	0	75
Teachers' progress toward meeting endorsement or certification requirements	5	36	0	41	41	1	88	0	3	0	3	3	4	100	1	3	0	4	4	0	75
Effective collaboration between STEM industry experts and teachers	9	29	0	38	38	4	76	1	3	0	4	4	3	75	2	2	0	4	4	0	50
Teachers' access to mentors	8	31	0	39	39	3	79	0	4	0	4	4	3	100	2	2	0	4	4	0	50
Fairness with which resources and opportunities are distributed	6	33	0	39	39	3	85	1	3	0	4	4	3	75	1	2	0	3	3	1	67

School	MS							WIP-1							WIP-2						
	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %
Capacity of IMSP teachers to give support to each other	7	32	0	39	39	3	82	1	3	0	4	4	3	75	1	2	0	3	3	1	67
Improvement in science and/or mathematics instruction in partner schools	9	27	0	36	36	6	75	1	3	0	4	4	3	75	1	2	0	3	3	1	67
Average % Progress toward objectives							83							84							69
My organization received important professional benefits from participation in the IMSP.	5	32	5	42	37	0	86	0	5	2	7	5	0	100	0	3	1	4	3	0	100
The benefits my organization received were worth the time, effort, and cost invested in the IMSP.	6	31	5	42	37	0	84	0	5	2	7	5	0	100	0	3	1	4	3	0	100
The benefits my organization received were commensurate with the contributions made to the IMSP.	5	32	5	42	37	0	86	0	5	2	7	5	0	100	0	3	1	4	3	0	100

School	MS							WIP-1							WIP-2						
	Not Sure, Dis, or Very Dissat	Satisor Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satisor Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satisor Very Satis	Not Appl	Valid N	Total N	Missing	Valid %
I strongly believe this IMSP should be continued.	3	38	1	42	41	0	93	0	5	2	7	5	0	100	1	2	1	4	3	0	67
I will participate fully in this IMSP's activities in the future.	7	30	5	42	37	0	81	1	4	2	7	5	0	80	1	2	1	4	3	0	67
The IMSP activities need to be dramatically improved to make it worth my organization's investment.	20	16	5	41	36	1	44	2	2	3	7	4	0	50	2	1	1	4	3	0	33
The composition of this IMSP needs to be expanded or changed to be more effective.	17	19	6	42	36	0	53	1	3	3	7	4	0	75	0	3	1	4	3	0	100
My organization has changed its structure, policies, or functions to institutionalize the IMSP goals and activities.	17	17	8	42	34	0	50	2	2	3	7	4	0	50	0	3	1	4	3	0	100
Average % Sustainability							72							82							83

Table 25. Aggregated Survey Responses - Teacher

Teacher	MS							WIP-1							WIP-2						
	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %
Clarity of the vision for the IMSP goals and objectives	61	235	2	298	296	1	79	15	111	1	127	126	0	88	20	257	3	280	277	1	93
Planning process used to prepare the IMSP objectives	72	213	12	297	285	2	75	14	108	5	127	122	0	89	27	240	13	280	267	1	90
Follow-through on IMSP activities	61	233	3	297	294	2	79	8	118	1	127	126	0	94	28	246	3	277	274	4	90
Efforts to promote collaborative action with other educators	35	257	2	294	292	5	88	2	124	1	127	126	0	98	14	265	1	280	279	1	95
Efforts to promote collaborative action with Science Technology Engineering or Math (STEM) professionals outside the university	89	196	13	298	285	1	69	11	111	3	125	122	2	91	28	244	8	280	272	1	90
Processes used to assess your needs	80	215	3	298	295	1	73	14	111	1	126	125	1	89	31	246	2	279	277	2	89
Processes used to assess your students' needs	96	195	6	297	291	2	67	28	96	2	126	124	1	77	53	223	3	279	276	2	81

Teacher	MS							WIP-1							WIP-2						
	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %
Participation of influential people in the IMSP that represent a variety of interests	62	230	5	297	292	2	79	20	106	1	127	126	0	84	21	257	1	279	278	2	92
Diversity of partners and participants	41	252	4	297	293	2	86	7	117	1	125	124	2	94	7	270	2	279	277	2	97
Respect, acceptance and recognition of your contributions to reaching the IMSP goals	56	240	2	298	296	1	81	6	119	1	126	125	1	95	19	257	4	280	276	1	93
Resources provided by your district and/or school to support the IMSP grant	84	202	10	296	286	3	71	19	103	4	126	122	1	84	47	220	10	277	267	4	82
Average % Vision							77							89							90
Strength and competence of your IMSP leadership	54	243	2	299	297	0	82	5	120	1	126	125	1	96	12	261	4	277	273	4	96
Sensitivity to cultural issues	41	242	16	299	283	0	86	8	113	5	126	121	1	93	29	236	12	277	265	4	89
Opportunities for you to take a leadership role	60	231	7	298	291	1	79	12	110	4	126	122	1	90	24	241	10	275	265	6	91
Trust that partners and participants afford each other	45	249	4	298	294	0	85	7	116	3	126	123	1	94	16	254	6	276	270	5	94

Teacher	MS							WIP-1							WIP-2						
	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %
Average % Leadership							99							188							8
Use of the media to promote awareness of the IMSP goals, actions, and accomplishments	61	228	7	296	289	3	79	10	115	2	127	125	0	92	22	251	5	278	273	3	92
Communication among members of the partnership	121	163	11	295	284	4	57	31	94	2	127	125	0	75	73	195	10	278	268	3	73
Communication between the IMSP and the broader community	80	208	5	293	288	6	72	13	112	1	126	125	1	90	30	243	4	277	273	4	89
Extent to which IMSP participants are listened to and heard	77	208	11	296	285	3	73	19	107	1	127	126	0	85	41	225	10	276	266	5	85
Working relationships established with school officials	66	221	7	294	287	5	77	10	115	1	126	125	1	92	19	255	2	276	274	5	93
Information provided on issues and available resources	54	243	2	299	297	0	82	5	120	1	126	125	1	96	12	261	4	277	273	4	96
Average % Communication							76							89							88
Strength and competence of IMSP faculty and staff	44	248	6	298	292	1	85	8	117	2	127	125	0	94	16	260	4	280	276	1	94

Teacher	MS							WIP-1							WIP-2						
	Not Sure, Dis, or Very Dissat	Satisor Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satisor Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satisor Very Satis	Not Appl	Valid N	Total N	Missing	Valid %
Training and technical assistance provided by faculty and staff	57	232	10	299	289	0	80	10	115	2	127	125	0	92	21	255	4	280	276	1	92
Help given to the participants by the IMSP faculty and staff in meeting IMSP requirements	53	238	6	297	291	2	82	11	113	2	126	124	1	91	23	252	5	280	275	1	92
Help given the participants by the IMSP faculty and staff to become better able to address and resolve your concerns	53	236	7	296	289	3	82	9	115	2	126	124	1	93	30	247	2	279	277	2	89
Average % Technical Support							82							92							92
Improvement in your content knowledge	48	245	5	298	293	1	84	9	116	1	126	125	1	93	9	268	2	279	277	2	97
Your access and use of new instructional resources	52	242	3	297	294	2	82	4	120	0	124	124	3	97	7	271	1	279	278	2	97
Your access and use of new Science Technology Engineering or Math (STEM) technologies	81	205	11	297	286	2	72	8	112	5	125	120	2	93	27	245	8	280	272	1	90

Teacher	MS							WIP-1							WIP-2						
	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %
Your progress toward meeting endorsement or certification requirements	42	232	22	296	274	3	85	6	103	16	125	109	2	94	25	210	45	280	235	1	89
Your collaboration with Science Technology Engineering or Math (STEM) industry experts	99	178	20	297	277	2	64	17	105	3	125	122	2	86	25	242	12	279	267	2	91
Your access to mentors	80	204	14	298	284	1	72	13	109	3	125	122	2	89	28	243	10	281	271	0	90
Fairness with which resources and opportunities are distributed	40	253	4	297	293	2	86	7	116	0	123	123	4	94	10	267	3	280	277	1	96
Capacity of IMSP teachers to give support to each other	39	255	3	297	294	2	87	8	115	1	124	123	3	93	14	263	3	280	277	1	95
Improvement in science and/or mathematics instruction in your school	72	214	11	297	286	2	75	14	109	2	125	123	2	89	25	249	5	279	274	2	91
Average % Progress toward objectives							78							92							93
In most ways, being a Science Technology Engineering or Math (STEM) teacher is close to my ideal.	38	245	14	297	283	2	87	16	97	13	126	113	1	86	37	218	26	281	255	0	85

Teacher	MS							WIP-1							WIP-2						
	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %
My school conditions as a Science Technology Engineering or Math (STEM) teacher are excellent.	122	153	20	295	275	4	56	45	67	14	126	112	1	60	92	164	25	281	256	0	64
I am satisfied with being a Science Technology Engineering or Math (STEM) teacher.	41	231	23	295	272	4	85	11	100	15	126	111	1	90	33	213	32	278	246	3	87
So far I have gotten the important things I want to be an effective Science Technology Engineering or Math (STEM) teacher.	81	198	16	295	279	4	71	22	91	13	126	113	1	81	40	212	29	281	252	0	84
If I could choose my career over, I would change almost nothing.	79	209	8	296	288	3	73	32	87	7	126	119	0	73	70	201	10	281	271	0	74
Average % Job Satisfaction							74							78							79
I received important professional benefits from participation in the IMSP.	45	250	2	297	295	2	85	8	117	1	126	125	1	94	12	267	2	281	279	0	96

Teacher	MS							WIP-1							WIP-2						
	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %	Not Sure, Dis, or Very Dissat	Satis or Very Satis	Not Appl	Valid N	Total N	Missing	Valid %
The benefits I received were worth the time, effort, and cost invested in the IMSP.	54	242	2	298	296	1	82	11	114	1	126	125	1	91	15	263	3	281	278	0	95
The benefits I received were commensurate with the contributions I made to the IMSP.	45	250	2	297	295	2	85	12	113	1	126	125	1	90	20	257	2	279	277	2	93
I strongly believe this IMSP should be continued.	42	255	1	298	297	1	86	9	117	0	126	126	1	93	9	271	1	281	280	0	97
I will participate fully in this IMSP's activities in the future.	70	221	6	297	291	2	76	28	96	2	126	124	1	77	31	247	1	279	278	2	89
I received important professional benefits from participation in the IMSP.	166	125	0	291	291	8	43	67	59	0	126	126	1	47	132	140	0	272	272	9	51
The benefits I received were worth the time, effort, and cost invested in the IMSP.	83	206	9	298	289	1	71	17	108	1	126	125	1	86	40	236	3	279	276	2	86
Average % Sustainability							74							82							85