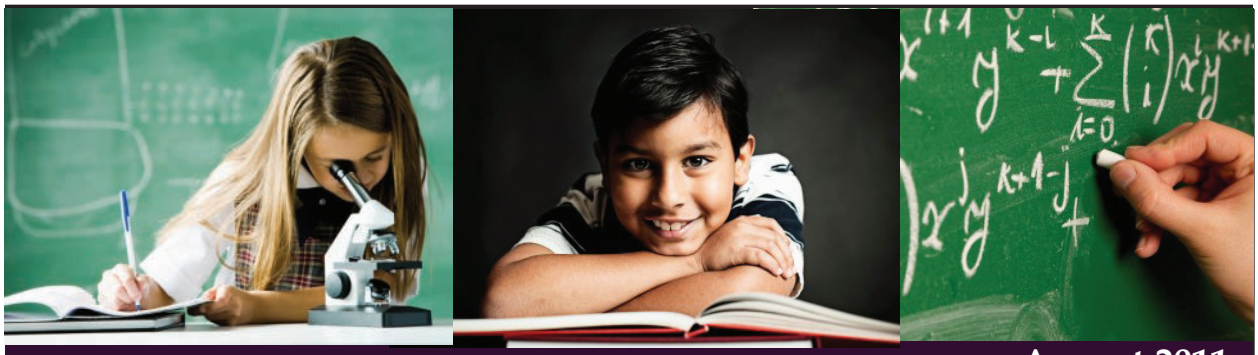


August 2011

Growing School Networks for Instructional Improvement in Jordan, 2009-2010

Prepared by Marian A. Robinson

Consortium for Policy Research in Education
Teachers College Columbia University

CPRE Research Report, #RR-70

The research presented in this report was funded by a USAID grant to the Consortium for Policy Research in Education (CPRE). Opinions expressed in this report are those of the authors and do not necessarily reflect the views of the USAID, QRTA, CPRE, or its institutional members. This report has been internally and externally reviewed to meet CPRE's quality assurance standards.

Research Reports are issued by CPRE to facilitate the exchange of ideas among policymakers, practitioners, and researchers who share an interest in education policy.

About the Consortium for Policy Research in Education (CPRE)

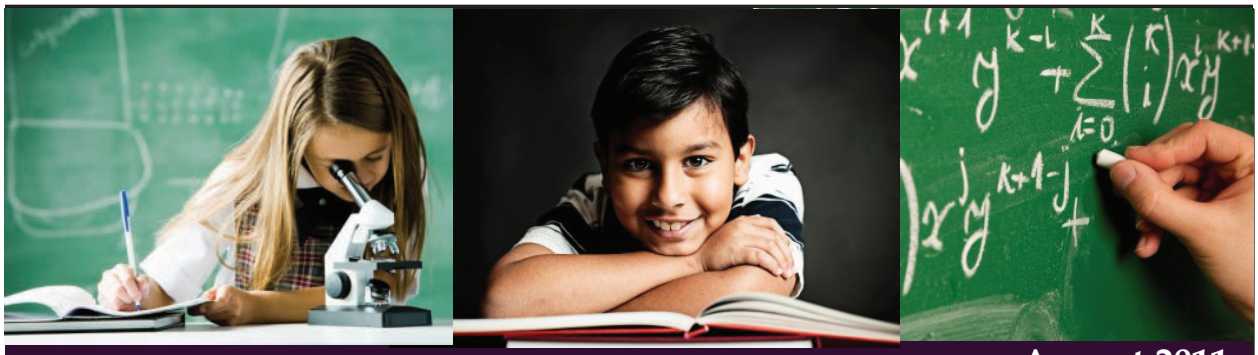
Established in 1985, CPRE unites researchers from seven of the nation's leading research institutions in efforts to improve elementary and secondary education through practical research on policy, finance, school reform, and school governance. CPRE studies alternative approaches to education reform to determine how state and local policies can promote student learning. The Consortium's member institutions are the University of Pennsylvania, Teachers College Columbia University, Harvard University, Stanford University, the University of Michigan, University of Wisconsin-Madison, and Northwestern University.

In March 2006, CPRE launched the Center on Continuous Instructional Improvement (CCII), a center engaged in research and development on tools, processes, and policies intended to promote the continuous improvement of instructional practice. CCII also aspires to be a forum for sharing, discussing, and strengthening the work of leading researchers, developers and practitioners, both in the United States and across the globe.

To learn more about CPRE and our research centers, visit the following web sites:

www.cpre.org (CPRE's main web site)
www.ccii-cpre.org (CCII)
www.sii.soe.umich.edu (Study of Instructional Improvement)

Want to learn more about new and upcoming CPRE publications, project research findings, or where CPRE researchers are presenting? Visit our website at **http://www.cpre.org** or sign up for our e-newsletter, *In-Sites*, at **insites@gse.upenn.edu**



August 2011

Growing School Networks for Instructional Improvement in Jordan, 2009-2010

Prepared by Marian A. Robinson

Consortium for Policy Research in Education
Teachers College Columbia University

Table of Contents

List of Tables

Acknowledgements

The report benefited from the assistance and advice of a number of individuals. The staff of the QRTA is committed to an ongoing cycle of action and reflection and this report benefited from data they collect to inform their daily work with public school educators. Specifically, the report benefited from access to network participation logs and network professional development feedback from teachers and principals. QRTA staff members also conducted the translation of the teacher surveys with thoughtful attention to accuracy, readability, and consistency. In addition, QRTA staff members were generous with their time throughout the development of the report, providing network instructional materials and descriptions of network site visit processes, conducting quality checks on data summaries, and clarifying network practices and purposes. They are an extraordinary group of education professionals. I also want to acknowledge the special contributions of my documentation partner, Dr. Zeena Tabbaa, who observed network events, shadowed QRTA staff during periodic school visits, reviewed translations for accuracy, and oversaw the administration of the network teacher surveys. She was instrumental in conceptualizing and conducting our site visits to 12 network schools. We extend our thanks to Dr. Hatem Alkhamra and Dr. Ahmad Qablan for their flexibility and expertise in conducting interviews and observations in some network schools with us. Finally, the report benefited from the comments and editing of Tom Corcoran and QRTA staff members. The report was copy-edited by Sara Scovronick.

The report was supported by funding from the Jordan Ministry of Planning and the United States Agency for International Development (USAID).

About the Author

Marian A. Robinson was recently a research scientist with the Consortium for Policy Research in Education at Teachers College, Columbia University. She was a co-principal investigator supporting the start-up and documentation of the Teachers College Jordan Initiative, 2008-2010. In the past, her research with CPRE colleagues examined a range of strategies for improving classroom practice from different levels of the education system, including district-based instructional coaching, state data reports for teachers and students, comprehensive school reform, school wide data-informed collaborative inquiry, and state policy supports for improving the quality of teacher education. Previously, she was a program officer in the research unit of the US Department of Education and worked on special initiatives with national and local education reform organizations. She holds a doctorate in Administration, Planning and Social Policy from Harvard University.

I. Introduction

In the last decade, the Hashemite Kingdom of Jordan has made a substantial commitment to improving the quality of its public education system. The main vehicle for this work has been the Education Reform for Knowledge Economy (ERfKE) initiative. To date, key investments have been made in early childhood education, school infrastructure, technology, and curriculum development. The emphasis has been placed on the development of skills essential to Jordan's emerging knowledge economy and the use of technology both as a skill set and a delivery platform for the new curriculum. The second phase of this initiative, ERfKE II, which is underway at this writing, is focused on improving the quality of teaching and learning. The primary challenge facing Jordan is the improvement of the quality of instruction provided by the current teacher work force. Thus, a major priority for ERfKE II is the provision of high quality in-service training for current teachers.

In 2009, the Queen Rania Teacher Academy (QRTA) and Teachers College of Columbia University (TC/CU) formed a new partnership, which was facilitated by the Columbia University Middle East Research Center (CUMERC), to contribute to meeting this challenge. Funded by the Jordan Ministry of Planning and United States Agency for International Development, and supported by the Ministry of Education (MOE), the Partnership is developing and demonstrating a model of high quality professional development that is scalable within Jordan and supports the use of effective instruction in Jordan elementary and secondary schools. The Partnership creates and supports networks of schools as vehicles for providing professional development for teams of teachers in core content areas as well as leadership training for principals and education supervisors to support the desired changes in classroom practice. This strategy aims to support the implementation of the ERfKE curriculum.

Reaching these goals will take a number of years. The purpose of this interim report is to summarize the key activities of the Partnership and the development of the school network strategy to date. It also examines available evidence on the progress of the Partnership towards its goals with particular attention to the start-up and first year implementation of the cohort 1 school networks, April 2009 to May 2010.

The report is organized into four main sections. The first section describes the Partnership's approach to designing and delivering effective professional development through a school network strategy. The second section summarizes the key activities of the two cohorts of school networks established to date, including the programmatic content and goals of the mathematics, science, and writing networks. The third section draws upon data from teacher surveys, professional development questionnaires, and site visits to a sample of cohort 1 schools to assess early progress made in helping teachers use new content knowledge and instructional strategies to improve the quality of their classroom practice. Section four discusses efforts to help principals work to improve instruction by supporting teacher use of effective strategies and encouraging teacher growth through feedback strategies that can improve their teaching.

Key findings include the following:

- **The Partnership established six school networks by May 2011**. These include two cohorts of networks in each of the three subject areas of mathematics, science and English writing. The first cohort of three networks was established in early 2009 and the second in late 2010. Overall, instructional improvement in these subject areas is being supported in 145 public schools located in eighteen education directorates across Jordan. The Partnership is reaching a substantial number of educators and administrators; of the 886 participants, 622 are current schoolteachers, 145 are principals, and 97 are education supervisors. The Partnership has increased the size of the second cohort of networks considerably because of the smaller size of schools in the south of Jordan, as a result it is serving 21% more schools and 15% more teachers than the first cohort.

- **By May 2010, all three core components of the professional development program are supporting the school networks**. These include intensive professional development workshops, periodic network meetings focused on implementation, and periodic site visits to schools. The design and delivery of each subject-focused network are well aligned with the research-based principles of the professional development and program design guiding Partnership planning.

- **The QRTA is building its capacity to lead and support the school network model.** A cadre of educational staff with content expertise and familiarity with Jordan public schools is gaining experience supporting the school networks. QRTA staff members are assuming increased responsibilities for the planning and delivery of the workshops. QRTA staff members also are leading the follow-up professional development components: periodic network meetings and school visits. Additionally, QRTA staff has established organizational routines for monitoring the quality and effectiveness of the Partnership's professional development. Four information systems are being reviewed periodically by the Partnership to identify areas of strength and weakness and to plan future professional development.

- **Teacher participation in the school network is relatively high given the demands on their time and intensity of the workshops.** The teacher survey identified a common set of factors teachers report as inhibiting their participation. These include the time and costs of traveling to the QRTA facility; the length of the workshops; other jobs; and family responsibilities. The QRTA and Teachers College have been responsive to these factors and have adapted the workshops to reduce some of the obstacles to sustained attendance.

- **Feedback from teachers following network events reflect high marks for the design and delivery of the Partnership's professional development**. The results of a survey of cohort 1 teachers six months following the start of the science, English writing, and mathematics networks found that the vast majority of teachers view the network as helping them to improve their instruction and that participation is cultivating dispositions towards collegial cooperation and instructional improvement.

- **The vast majority of cohort 1 teachers across the three networks are attempting to use specific concepts and practices promoted during network professional development.** A sizeable proportion of teachers in each network report making

frequent use of some network concepts and practices, suggesting they are beginning to integrate them into their instructional repertoire. Interviews with teachers from a sample of 12 cohort 1 schools confirm teacher use of network practices and positive attitudes towards the Partnership's professional development.

- **The data also point to some areas that need strengthening.** Factors inhibiting teacher use of some practices recommended by the Partnership include: the high number of students per class, inflexible desk arrangements, time available per class, pressures to cover a packed curriculum, and limited basic resources such as access to photocopying, markers, and chart paper. In some instances, the Partnership needs to provide teachers access to demonstration proofs that these practices can work under the conditions prevailing in Jordanian schools and in other cases, more targeted on-site support is needed.

- **Through participation in network professional development, teachers are beginning to experience membership in professional learning communities**. Data from teacher surveys and school visits suggest that during network meetings, teachers are finding new opportunities to engage with their peers in conversation about instruction; are sharing their ideas and materials with teachers from other schools; and, are meeting with teachers from their own school to develop lessons and to plan for further implementation in their classrooms. However, at the school level, teachers report considerable obstacles to meeting as professional learning communities with regularity and depth. While many of the routines encouraged by the Partnership are taking place in some form in network schools for a third or more of teachers, this is also an area that needs strengthening. Both teachers and principals need additional encouragement to make use of existing school-based mechanisms for peer observation and feedback, which represent an untapped opportunity in most network schools at this writing. If not addressed, inadequate time for teachers to meet regularly in their schools may prove a strong barrier to sustaining and deepening new practices once teachers leave the network.

- **Through Leadership Institutes, the Partnership has been encouraging principals to expand their roles to include instructional leadership.** Data from interviews with cohort 1 year 1 principals and teachers in 12 schools with high teacher attendance suggest that principals are practicing some forms of instructional leadership by supporting the development of those teachers participating in school networks. However, evidence of principal engagement with the specific practices promoted through the Leadership Institutes is mixed. In the 12 schools, principal understanding and reported use of the high impact strategies and related methods for encouraging use by faculty ranged from low to moderate levels. Administrative burden, inexperience with instructional leadership and high principal turnover may help explain the limited progress found in the study schools at the end of year 1.

- **Overall, a great deal has been accomplished in two years.** The QRTA has established itself as a leader in professional development and its work is respected in the schools. The Partnership professional development model seems to be working well, especially for teachers, and small adjustments have been made to enhance its effectiveness. Six networks have been established and participation rates are high. Implementation rates vary but are relatively high for an initiative of this kind and can be expected to rise.

II. Developing a School Network Strategy for Jordan

The Partnership aims to contribute to the goals of ERfKE II by improving the quality of instruction in Jordan classrooms and the quality of instructional leadership in the schools (Robinson, 2008). To this end, the Partnership is developing a program of professional development that is scalable within the Jordan context. If well designed and implemented, the school network initiative will reach larger proportions of education professionals each year and spur improvements in teaching and learning in more classrooms and schools.

The leaders of the Partnership believe that improving student learning requires professional development that is subject matter specific and focused on evidence-based instructional practices. It requires cultivating classroom environments in which teachers engage students in critical thinking and regularly assess their learning progress to inform instructional decisions. This includes encouraging teachers to work together in learning communities to examine lessons and student work and collectively reflect on the effectiveness of their instruction. A premise of the Partnership's strategy is that principals can play a critical role in supporting teacher growth and must to take a leadership role in improving the quality of instruction across the school. The quality and consistency of feedback teachers receive from principals, education supervisors, and their peers can further stimulate and support improvements in instruction school-wide.

The Partnership has had considerable success in the first year of implementation, as evidenced by high rates of participation in and high levels of enthusiasm for the professional development program. Teachers and leaders report that they value many of the concepts and instructional tools central to the Partnership's vision of effective instruction. Implementation of the high-impact instructional practices strategies is more mixed but nonetheless encouraging. Most teachers are beginning to use elements of these new high-impact practices, and some are implementing at least some of the practices and strategies frequently in their classrooms.

However, the members of the Partnership are well aware of the many challenges in their path as they pursue this vision. Some Jordanian teachers may not believe the ideas and practices advanced by the network are possible within current classroom conditions. Some may not be willing to make the extra effort required to change their practice. The Partnership will have to address how new practices can be implemented given the small size of some classrooms, rigid desk configurations, and the limited availability of basic materials that is characteristic of Jordanian public schools. They will have to help teachers find the time required to integrate new practices into their lesson planning despite heavy course loads, large class sizes, and an administrative emphasis on grading and recording keeping and they will have to encourage principals to support teachers in this process as well. Teachers will need help in establishing new routines and structures in their schools to support the improvement of their practice. Teacher-centered instruction feels safe because it allows teachers to manage these challenging circumstances, particularly when pressed to cover a packed curriculum, and departing from this traditional practice may prove difficult for many. The absence of a culture of improvement within schools, in which teachers receive frequent, constructive feedback about their practice from principals, supervisors, and their peers is another challenge; new professional cultures have to be

built from the ground up. At first glance, these obstacles seem overwhelming, but each presents an opportunity for creative solutions. These include using feedback from the network schools to adapt the network structures, activities and content over time to better fit the conditions and contexts of teaching and learning in Jordan. Addressing these obstacles may also require changes in Jordanian policies so that the system becomes more supportive of the relationships, resources, and structures that support effective instruction.

This section presents the Partnership's strategy for reaching this vision. This includes a working theory of action underlying the Partnership's school network strategy as a vehicle for delivering high quality professional development. The Partnership's approach is to refine this theory of action through experience into an effective, scalable program design. The theory of action includes building capacity in Jordanian institutions, most immediately the QRTA, to use the school network strategy to reach greater numbers of educators and administrators.

School Networks: A Working Theory of Action

The design of the Partnership rests on a set of research-based design principles that guide its professional program and the core activities of its school network structure. These principles, or design features, have guided the initial network design implemented with cohort 1 schools and continue to inform adaptations to this design in response to changes in available resources and local conditions (Partnership Proposal, 2009). The Partnership also has set goals for interim implementation progress and identified strategies for reaching those goals, which aid in assessing the progress made to date.

Guiding Principles and Features of Effective Professional Development. The Partnership embraces two theories that shape the school network strategy: one is a general theory about adult learning and effective professional development; and the second is a theory about the implementation of new practices.

The research base for the first theory is international in scope but draws primarily from experience in developed countries in which investments in professional development and experimentation with its delivery are high (e.g. Corcoran, 2007; Darling-Hammond, et al., 2009; Desimone, 2009; Hattie, 2009; and Timperley, et al., 2007). The Partnership goals are to provide professional development that meets the following criteria:

- Focus. It helps teachers meet the needs of real students in real classrooms, and, as such, helps teachers address specific problems they encounter with their students.
- Form. It combines intensive off-site learning experiences with school-based, job-embedded opportunities to learn.
- Duration. It provides an intensive immersion in new content combined with ongoing, long-term experiences that total to a substantial number of hours each year. Some research suggests that teachers need 30 or more hours of professional development annually to change their practice. Others report that it takes 2-3 years for teachers to incorporate new approaches into their practice.

- Content-Based. It improves and deepens teachers' knowledge of the content of the curriculum they teach, specifically their understanding of common student misunderstandings or the problems students typically have in learning specific content, and effective instructional strategies to link the two.
- Practices with Large Effects. It emphasizes assessment and instructional strategies supported by evidence of effectiveness. Using "high impact" or "large effects" practices increases the possibility that teacher efforts may improve student learning.
- Active Learning. It engages teachers in meaningful analysis of teaching and learning through scoring student work and analyzing lessons, among other activities.
- Coherence. It helps teachers see and make connections between the students, content, and performance goal, they must teach; their material resources; external assessments; and, other goals for student learning.
- Collective Participation. It is organized around groups of teachers from a school who share responsibility for the same students and/or subject.
- School Leader Support. It takes place parallel to the engagement and preparation of school leaders who are learning to support teachers in the use of new content and practices.

The Partnership uses these principles as a "design frame" to guide the development and adaptation of professional development activities. During the first year of implementation, the Partnership was fine-tuning its design to fit the Jordan context. Important design questions include: what is an effective duration of professional development for Jordanian teachers or principals? How many hours of professional development are needed annually to support teacher implementation of effective lessons or units of study? What is the optimal mix of formal training and on-site support? Must the high impact strategies promoted by the Partnership be adapted to fit the conditions of Jordan classrooms and schools, and the characteristics of the teacher work force? What are the most effective roles for principals and supervisors in Jordanian schools?

The second theory focuses on the implementation of reforms in practice and is more specific to the particular needs and situations of Jordanian educators. These features also draw upon research about effective supports for teacher use of pedagogical content knowledge and assessment strategies promoted through professional development. They reflect strategic attention by the Partnership to designing supports that attend to the sustainability of teacher learning and practices over time. These include the following:

- Enhancing Teacher Use of the National Curriculum. Teachers need help implementing the new ERfKE curriculum required in all schools. Professional development should deepen teacher understanding of specific content topics in the new curriculum and offer effective instructional approaches to design lessons. It should provide on-site support to help teachers use new practices in their particular classroom setting and adapt them to work with their students.
- Using Experienced Professional Development Teams. Only experienced instructional teams who understand the content, pedagogy, and theories of adult learning and

some evidence of success should deliver professional development. These teams should include educators with extensive classroom experience.

- Scaffolding Professional Development Over 2-3 years. One-shot professional development is not effective. Professional development must extend over time to scaffold teacher understanding and use of new practices. Professional development should extend over multiple units of the ERfKE curriculum. It should reinforce and deepen new learning over time through demonstration and reflection on teacher use of new strategies in diverse classroom contexts.
- Emphasizing Hands-on Learning and Proven Instructional Tools. Professional development must include opportunities to practice new strategies and concepts with feedback from experienced educators. It should provide useful materials to facilitate teacher lesson planning and use of promoted practices. When professional development follows the curriculum pacing calendar and provides time to develop instructional materials and design lessons, teachers are more likely to implement new learning.
- Providing Follow-up Support to Teachers in Schools. High quality learning experiences have limited effects on classroom practice unless there is follow-up support to encourage and help teacher try new strategies. Teachers need help solving typical challenges associated with scheduling, time allocation, student response, principal support, and curriculum pacing.
- Fostering a Culture of Continuous Improvement Amongst Teachers. Through an ongoing focus on improving classroom practice, teachers should begin to work together on a regular basis to assess the effectiveness of their instruction and to take action together to improve their practice. Principals have an important role in supporting such professional learning communities in their schools.

While the Partnership's professional development program will evolve over time in response to experience and feedback, adherence to these articulated design principles is likely to endure.

The Initial School Network Design. The Partnership is using school networks (e.g., OECD, 2003; Penuel & Riel, 2007) as vehicles for providing professional development for teams of teachers and their principals and education supervisors. Each network of schools is subject-specific and focused on the improvement of instruction. The theory holds that over time the norms of collaboration to improve practice will spread in a school, from the teachers in the initial targeted subject area to teachers in other subject areas. Each network is composed of 18-25 schools drawn from the same geographic region and/or directorate to support access to periodic professional development sessions and to encourage collaboration across schools. Each school is expected to support the participation of a group of teachers who teach the same subject. The goal is for up to 100 teachers to participate in each network. Support for each network is expected to continue for three years.

After input from the MOE and stakeholder groups in Jordan, the Partnership has developed school networks in three core subject areas: mathematics, science, and writing in English. Principals and teachers selected by their school participate in a series of professional development activities during the school year. They are also expected to work together as a learning community within the school to support teacher use of new

knowledge and practices in their classrooms. Each network school participates in an annual program of professional development organized as four inter-related activities. The initial strategy pursued by the Partnership included:

Network Workshops. Teachers attend a series of 3-4 intensive workshops that are developmental and aligned with the content priorities of the MOE and supportive of teacher use of the ERfKE curriculum. Each workshop lasts 2-4 days and focuses on the use of research-based instructional strategies as well as the content knowledge needed to teach specific units of the ERfKE curriculum. The goal is intense, hands-on learning that engages teachers in the learning experiences that they want students to engage in. The focus is on the implementation of practices and instructional strategies that have been shown to have large effects in research conducted in diverse settings.

Network Support Meetings. In between the intensive workshops, teachers from network schools to attend periodic subject-specific 1-day or half-day meetings to share their experiences using the new practices and learn from each other. During these meetings, teachers review the main points from the previous workshop and have opportunities to ask questions, plan and share instructional units as a team, and review student work.

Network School Visits. Teachers and principals receive follow-up support on-site in their schools from QRTA staff and other partners. Site visits aim to support teacher and school leaders as they implement new practices and come together as a learning community in their school to support their ongoing efforts to improve instruction. During each visit, QRTA staff will conduct classroom observations and meet with teachers to learn about their successes and problems as they try new practices with their students. The information and insight gained from these visits would inform Partnership planning for future network meetings and workshops.

Leadership Institutes. As teachers are learning new practices, their principals and education supervisors participate in periodic professional development focused on instructional leadership. Institutes meet 3-4 times each year for 1-2 days each. The goal is to strengthen administrative support for the use and adaptation of new practices in schools by teacher teams and, more broadly, to enable school leaders to spread new practices across their schools.

For each network, the Partnership set an initial annual goal of conducting 3-4 workshops, holding 4-5 monthly network meetings, and making 3-4 school visits. Under this initial plan, each network teacher would receive a minimum of 50 hours of professional development and 6 hours of onsite support during the school year. As the work proceeds, the Partnership is seeking an optimum combination of network activities given available resources and evidence of implementation.

Building QRTA Capacity for Support and Expansion

The Partnership also seeks to build the organizational capacity of the QRTA to provide high quality, effective professional development. Two particular aspects of capacity are targeted: developing staff and establishing quality assurance mechanisms.

The first focuses on developing QRTA's capacity to lead and support instructional improvement in participating schools. This includes expanding QRTA's staff through a targeted recruitment strategy that seeks educators with appropriate content knowledge, pedagogical content knowledge, and familiarity with Jordan public schools, and an understanding of the core instructional concepts and practices advanced by the Partnership. Recruitment may target participating teachers in the current school networks, as well as university professors and educators from Jordan NGOS. The interim strategy is to recruit part-time subject matter specialists to support implementation of the network program.

The Partnership is using an apprenticeship model to prepare current QRTA staff to design and lead professional development over time. Table 1 presents the envisioned transfer of responsibilities from the TC/CU partners to the QRTA staff. With each new cohort of school networks, Jordanian staff will take on more responsibility. Beginning with the first cohort of school networks, training teams were designed to include QRTA staff and TC/CU partners. Initially, TC/CU partners designed and delivered the professional development with QRTA staff participating in planning, delivery, and review. With cohort 2 networks, QRTA staff began to co-lead the workshops with the TC/CU teams. When the cohort 3 networks are established in 2012, QRTA staff will be responsible for full delivery, with TC/CU partners serving as critical support—reviewing plans and providing advice during workshops as a form of quality assurance.

Table 1.
Planned Progression of QRTA Staff Developer Responsibility for Workshop Content and Delivery with Each New Cohort of Networks

	Cohort 1 Networks	Cohort 2 Networks	Cohort 3 Networks	Cohort 4 Networks
QRTA Staff Role	Support Role in Workshops and Planning	Co-deliver Workshop Sessions	Serve as Team Leaders and Members	Serve as Team Leaders and Members
TC/CU Partner Role	Lead in Content and Delivery	Co-deliver Workshop Sessions	Advise as QRTA Leads	Advise as QRTA Leads

Source: Partnership School Network Proposal, 2009.

A second focus has been developing organizational routines within the QRTA to collect and review information about the quality and impact of professional development. At an organizational level, QRTA has developed an internal information management system that monitors network activity and provides staff guidance about teacher needs. This system includes information about participant background and attendance, participants' views on the quality of professional development, their understanding of network practices, their levels of implementation, and emerging obstacles. Information is collected and analyzed following each of the network professional development activities and QRTA site visits. Information is accessible through various project databases and paper-based summaries for periodic analysis by project staff.

Intended Outcomes

The Partnership has identified a number of potential outcomes to be monitored over time. This report begins to address some of the specific goals associated with developing the capacities of teachers, principals, the QRTA, and Jordan. The following outcomes are guiding the work of the Partnership:

Teacher Level
- The use of effective instructional practices
- Strong knowledge of curriculum content and pedagogical content knowledge
- Willingness to reflect on and alter practice based on outcomes
- Membership in a functioning learning community within the school

Principal Level
- Increased attention to instruction and awareness of the high impact strategies
- Effective observation and feedback to teachers with attention to high impact strategies
- Establishment of norms and mechanisms for supporting evidence-based practice and continuous improvement of instruction
- Stronger monitoring of learning outcomes

Education Supervisor Level
- Effective observation and feedback to teachers with attention to high impact strategies
- Establishment of norms and mechanisms supporting evidence-based practice and continuous improvement of instruction
- Increased attention to learning outcomes

QRTA Level
- Staffing levels that support planned professional development for school networks
- Staffing with expertise and experience to deliver workshops and support schools
- Development and regular use of internal knowledge management system for continuous improvement

Country Level
- A well-articulated, proven professional development model for Jordan
- Establishment of norms and mechanisms supporting evidence-based practice and the continuous improvement of instruction
- Support for the Ministry of Education and other Jordan-based organizations to adopt the professional development model and network strategy

Data Supporting this Report

The purpose of this report is to examine the progress and impact of the school network strategy under development by the Partnership. The report addresses the following questions:

1. To what extent has the Partnership been able to implement the initial school network design? What modifications have been made and why?

2. What value do teachers and principals see in their participation in a school network focused on instructional improvement?

3. To what extent are teachers and principals using the new strategies? What factors appear to be facilitating their use? What inhibits their use?

4. What have been the observed effects and benefits of the new practices to date?

To address these questions, the report draws upon a wide variety of data that include participation rates, teacher survey responses, and notes from interviews and observations conducted during visits to a sample of cohort 1 schools. The report focuses on the first year of implementation in cohort 1 school networks, from April 2009 to May 2010. Subsequent research will focus on assessing the program's impact on teacher attitudes and practices over time and, ultimately, on improvements in student learning. A brief description of each data set is provided.

Professional Development Content. The documentation team conducted informal observations of workshops and planning sessions to track emerging issues and new developments. Observations and reviews of materials used by the Partnership have provided insight into the degree of alignment between the principles and features of professional development guiding network planning and the enacted workshops and meetings. A short questionnaire completed by the TC/CU Partners solicited changes in the professional development program.

Participation Levels. The QRTA tracks the participation of network members in professional development events, such as workshops and periodic meetings. These records provide insight into teacher and principal participation and attrition within each network and across networks.

Workshop Feedback. Through surveys administered at the conclusion of workshops and network meetings, the QRTA collects feedback from teachers, principals and supervisors about the quality of the workshop and their understanding of the concepts and practices presented. The surveys include open-ended questions for teachers and principals to identify areas of need and make suggestions about future topics.

QRTA Periodic Site Visits. A third component of the network strategy is the site visit process, in which the QRTA staff conducts planned visits to network schools to help teachers implement the promoted practices. To understand the design and evolution of the school network site visit process, we conducted a document review of the site visit templates used to guide each visit, and surveyed staff about their approach to conducting the periodic school visits. In April 2010, a member of the documentation team shadowed network staff during a routine visit to one school in each cohort 1 network to observe the activities undertaken and teacher responses to the visit, and to identify obstacles that may be inhibiting the full implementation of this key component.

Teacher Survey Data. During year 1, an extensive survey was administered to teachers in all three cohort 1 school networks. The administration of the survey took place six months after the start of the network during a scheduled network meeting. The survey

included items focused on school context, such as teacher professional culture, and sources of instructional support and leadership in the school. It also included items focused on network professional development, specifically factors inhibiting participation, teacher use of specific network practices in their classrooms, and the frequency and nature of periodic site visits to support implementation.

Table 2 on the next page presents key background information about the teacher respondents. Across the three networks, 231 teachers completed the surveys. Female teachers comprise 59% and male teachers 37% of the respondents. Almost all teachers in the science and English writing networks, 92% and 97% respectively, report holding a degree in the network content area. In contrast, the mathematics network includes both mathematics teachers (grades 4-7) and generalist teachers (grades 1-3), who report holding degrees appropriate to their teaching assignments. Within each of the three networks, teacher experience in the classroom was highly varied, including a mix of beginning and veteran teachers. Of note, in the English writing network the survey administration coincided with an orientation of new participants to the network, who also completed the survey.

Table 2.
Background Information of Cohort 1 Teacher Survey Respondents by Network[1]

	Cohort 1 Teachers			
	Science Network n=73	**English Writing Network** n=68	**Mathematics Network** n=90	**Totals** N=231
Survey Response Rate	82%	78%	84%	82%
Teacher Gender				
Female	55%	60%	62%	59%
Male	45%	31%	34%	37%
(blank/missing)	(0%)	(9%)	(3%)	(4%)
Degree in Content Area				
Yes	92%	97%	40%	73%
No	4%	0%	60%	25%
(blank/missing)	(4%)	(3%)	(0%)	(2%)
Years taught Network Content Area				
1-3 year	19%	29%	15%	20%
4-10 years	52%	31%	46%	44%
11-20 years	23%	25%	25%	24%
21+ years	5%	7%	14%	10%
(blank/missing)	(0%)	(7%)	(0%)	(2%)

[1]Numbers may not total 100 due to rounding error
Source: Cohort 1 School Networks, Year 1 Teacher Survey

Qualitative Research in a Sample of Cohort 1 Network Schools. In May 2010, one-day visits were conducted to 12 cohort 1 schools. Table 3 reports the sample by network affiliation and for boys and girls schools. During each visit, a team of two researchers conducted interviews with the principal and pairs of participating teachers and made informal lesson observations. The goal of the visits was to learn more about the

professional duties of participants and the school context, such as the professional culture, classroom conditions, and evaluation routines. Interviews explored teacher and principal interest in the network and their use of the concepts and practices promoted through professional development. The visiting team also sought teacher views on the support available to improve their instruction. Since site visits took place at the end of the school year, almost all of the classroom observations were of lessons the teacher had taught previously or had adapted with slight variations. Even so, these observations offer insight into the use of the network practices under different classroom conditions. The observations also offer insight into teacher enthusiasm for particular instructional practices learned through their network. A total of 54 interviews were conducted.

Schools selected for site visits constitute a purposeful sample and are not representative of the school networks. Schools were selected based on high teacher participation in network professional development and moderate to large school size (500-1200 students). Based on QRTA records, teacher participation in the selected schools was among the highest in their respective networks: three schools with 100% teacher participation, seven with 75 to 95% participation, and one with 40 to 75% participation. Principal participation was also among the highest (n=9), although by the time of the site visits a few principals had transferred schools. To understand opportunities available to teachers to work together as a professional learning community, we selected schools that had four or more teachers participating in a network. Since the networks include a sizable number of schools affiliated with the Madrasati ("My School") program in Jordan, which aims to improve the overall learning environment in participating schools, we also considered this in the selection process; eight of the schools visited were affiliated with Madrasati.

Table 3.
Interviews Conducted in a Sample of Cohort 1 Network Schools, May 2010

Network	Schools	Interviews	
		Girls Schools	Boys Schools
Science	4	10	7
English Writing	4	6	9
Mathematics	4	12	10
Totals	12	28	26

Together these diverse sources of data offer insight into the progress that the Partnership is making towards the establishment of functional school networks. We examined the implementation of the network framework, the ability to attract educators to network events, the perceived quality of professional development, teacher and principal attitudes towards network practices, and their initial use of network concepts and practices in their respective schools.

III. Establishing School Networks for Instructional Improvement

Since February 2009, the Partnership has been engaged in providing professional development for teachers in selected schools, establishing school networks focused on instructional improvement in Jordan, and fine-tuning its planned network design. This section describes the focus of the professional development provided through the science, mathematics, and English writing networks and the role of QRTA visits to network schools in supporting implementation. Finally, progress in building QRTA capacity to support and lead future school networks is reviewed.

School Network Participants and Activities, 2009- 2011

By May 2011, the Partnership had successful established two cohorts of school networks focused on instructional improvement: the first in 2009 and the second in late 2010. Table 4 shows the broad range of professional development provided to educators participating in the school networks. Each cohort is composed of three school networks, one each in math, science and English writing. Overall, through these networks the Partnership is supporting instructional improvement in 145 schools located in eighteen education directorates across Jordan and serving nearly 900 educators. The first cohort has focused on schools in the Amman area with teachers coming to the QRTA facility for training. The second cohort has expanded to the southern region of the country; Partnership instructional teams travel to the south to deliver the training. Each network reflects a balance of boys and girls schools. As planned, some network schools also are participants in the Madrasati program sponsored by Queen Rania.

The Partnership is reaching a substantial number of educators and administrators; of the 886 participants, 622 are current public school teachers, 145 are principals and 97 are education supervisors. With cohort 2 networks, the Partnership has increased the number of participating schools considerably, serving 21% more schools than cohort 1, from 68 to 82 schools, and 15% more teachers, from 289 to 333 teachers. This increase is a response to the fact that the schools in the southern part of the country tend to be smaller, and to offset any future teacher attrition. The QRTA has also included in the professional development Queen Rania Award Teachers and educators working with the Ministry on the USAID Education Reform Support Program, as well as Ministry officials. In each directorate, all education supervisors in the three subject areas and those supporting generalist teachers serving grades 1-3 are invited to participate in training, not just those overseeing network schools. The Partnership adopted this strategy after learning that the portfolio of schools each supervisor oversees changes annually. This inclusive approach aims to promote broad understanding among education supervisors to minimize disruptions in their support of the network teachers who are adopting new practices. A detailed scheduled of activities can be found in Appendix A.

Table 4.
Cohort 1 and 2 School Networks, Participants, and Professional Development, April 2009 to May 2011

Network Focus and Cohort Status	Science		English Writing		Mathematics		Totals
	Cohort 1	Cohort 2	Cohort 1	Cohort 2	Cohort 1	Cohort 2	
Start Date	April 2009	December 2010	May 2009	February 2011	November 2009	November 2010	
Directorates	Zarqa (1, 2), Ruseifeh	Karak, Tafieleh	Amman (1-5)	Aqaba	Salt, Madaba, Ein Al Basha	Karak, Al Aguar, Al Mazar, Al Qasir, Buseirah, Tafieleh	
Participating Schools							
# Boys Schools	9	13	9	9	11	11	62
# Girls Schools	7	14	11	7	12	5	56
# Mixed Schools	2	3	1	11	1	9	27
Total Schools	**18**	**30**	**21**	**27**	**24**	**25**	**145**
Participants by Network							
# Teachers	86	105	85	104	109	122	611
# Principals	18	30	21	27	24	25	145
# Education Supervisors	15	25	20	2	13	22	97
# Queen Rania Award Teachers	3	1	2	0	4	1	11
# Others	11	1	0	0	8	2	22
Total Participants	**133**	**162**	**128**	**133**	**158**	**172**	**886**
Professional Development Activities							
# Teacher Workshops (2-5 days)	6	2	7	2	5	2	24
# Network Meetings (.5-1 day)	4	1	6	1	3	1	16
# Leadership Workshops (1-2 days)	6	2	6	1	6	2	23
# School Visits (2-4 hours each)	78	20	84	4	74	20	280
Total Activities	**94**	**25**	**103**	**8**	**88**	**25**	**343**

Sources: QRTA Network Participation Records May 2011, QRTA Master Network Calendar, and QRTA Logs of Network School Visits

By May 2011, the planned three-tier professional development program was well underway in the six school networks comprising Cohorts 1 and 2. Staff had delivered 24 workshops, which ranged from two to five days in length. Over a two-year period, cohort 1 network teachers have attended five to seven workshops, representing an estimated 60 to 90 hours of professional development. The length of the workshop was typically longer during the first year. It was also extended in the English writing network given the newness and complexity of the writing workshop model introduced to teachers. All network workshops were shortened somewhat in the second year to accommodate teacher concerns about missing classes and to allow for more intense experiences for teachers from different grade levels.

The Partnership has also supported 16 periodic network meetings to provide teachers opportunities to discuss the use of new strategies with their students and to work on lessons and materials. These meetings ranged from five to six hours. Teachers in cohort 1 participated in two to three meetings each school year, totaling 10-18 hours. This represents a reduction in the number of planned network meetings due to a number of factors: workload demands on QRTA during the start-up period, and teacher and principal complaints about time absent from school.

Periodic visits to network schools, referred to as “site visits” or “school visits”, constitute the third core component of the Partnership’s network strategy. During the 2009-2011 school years, QRTA staff conducted 280 visits to network schools. During these visits, they provided technical assistance. Cohort 1 schools each averaged two to four visits from QRTA staff each school year. Site visits lasted for two to four hours and reportedly focused on observing lessons, assessing teacher use of network strategies, sharing good practices from others schools, and resolving problems of implementation.

The Partnership model represents a significant shift in the form, duration, intensity, and continuity of the professional development available to Jordan educators. Importantly, the design features of the operational school networks align well with the research-based principles of professional development and program design that has guided the Partnership’s planning. For example, networks are content-based and each provides intensive, ongoing training that totals to a substantial number of hours each year. Network workshops and meetings provide continuity and coherence to the professional development and are scaffolding teacher learning over two or more years. QRTA staff members are providing follow-up support to teachers in schools. Participation is organized around teams of teachers from each school who share responsibility for the same subject area.

The Content Focus of Network Professional Development

The Partnership is designing and delivering a professional development program that is well-aligned with its guiding principles. A description of the concepts and practices emphasized in each content area is provided below. This includes any modifications or adaptations made by network leadership to better meet teacher needs, classroom conditions, or work within the limited resources of the Partnership.

The Science School Network. The Partnership is helping teachers use inquiry-based learning methods in their science instruction. The aim is to help teachers learn ways to design and structure inquiry-based lessons to make their instruction more effective. Teachers are learning to use the "5E Instructional Model" for designing inquiry-oriented lessons, which divides science learning into five stages: Engagement, Exploration, Explanation, Elaboration, and Evaluation. Science teachers also learn the "Five Features of Inquiry" which describe what students should be doing in inquiry-oriented classrooms. These five features and related instructional strategies are helping teachers make the shift towards student centered instruction. In inquiry-oriented lessons, students learn to value evidence in developing and elaborating their own explanations for observed phenomena and to address scientific questions. They learn to evaluate their explanations by comparing them to the possible alternatives and to communicate and justify their reasoning. Teachers are learning instructional strategies supportive of the five features. For example, the Think-Pair-Share strategy supports the engagement stage in the learning process and student explanations and evaluations of scientific phenomenon.

In each workshop the participants review the two frameworks and focus on one or two stages in the 5E Instructional Model and Features of Inquiry. Workshops are organized around concepts and topics drawn from the ERfKE textbooks, such as Newton's Second Law, electric circuits, and osmosis, and are aligned with the pacing calendar to facilitate the immediate use of the strategies and materials acquired in the workshop. Teachers work in teams to develop shared understandings of classroom inquiry, with groups alternating between school affiliation and subject area, e.g., physics, chemistry, or biology. Teachers also are learning a range of teaching strategies that facilitate classroom management, instruction, assessment of student thinking, and sharing within the inquiry process. These strategies are modeled throughout the workshops, which provide teachers with opportunities to experience their value from the viewpoint of the learner. Such strategies include "Round Robin" which allows all students to share their ideas while others listen; the "Poster Session" which allows the presentation of the ideas of a team as others ask questions; and, "Exit Ticket" for which students complete a task before departure from the classroom to help teachers assess their student learning progress. Teachers are given time to design lessons during workshops and to provide feedback to each other on those plans using a rubric. To further support the immediate use of what is being learned, the network instructional team shows teachers how to use simple everyday materials and local resources to support student inquiry and to collaborate with other science teachers in their planning. Network instruction is being conducted in English with immediate translation in Arabic. All materials are translated into Arabic.

*Adjustments***.** The initial large group sessions are being supplemented with frequent break sessions to facilitate group work and dialogue. The length of each workshop has gradually shifted from 7 to 6 hours to accommodate transportation time. These smaller sessions facilitate more interaction and personalized feedback and build team capacity to support each other. Since the start of the network, the instructional leadership team has increased the attention given to modeling the inquiry lessons across all of the disciplinary areas in science, e.g. chemistry and physics, and to building upon specific lessons in the Jordanian textbooks and teacher guides. They are providing teachers more time for reflection on their use in the classroom and for developing lesson plans and rubrics for assessing the effectiveness of their teaching. The teaching strategies being emphasized have become more aligned with the classroom conditions in Jordan following site visits by the instructional team.

The Mathematics School Network. Through the mathematics schools network, the Partnership is strengthening teachers' pedagogical content knowledge and ability to diagnose and address student misconceptions of specific mathematics concepts and procedures. Following a review of the ERfKE curriculum and textbooks by network leaders, each workshop focuses on one or more core concepts important to the development of mathematical reasoning such as fractions, early number development, measurement, algebra, geometry, multiplicative reasoning, equivalence, and proportionality. For each focus, teachers review research to understand the process by which students may differently comprehend these mathematical concepts. Effective instructional strategies for teaching these specific concepts are discussed and modeled. The teachers are learning to identify the common errors or misconceptions that students may have when learning particular concepts which then helps them understand why some students face difficulties in learning mathematics and how to help them overcome those difficulties. They also are learning how student work can be an important resource for understanding the development of mathematical reasoning and are practicing techniques for assessing it to inform their teaching. Teachers are learning questioning strategies to both monitor student understanding and stimulate their thinking. Attention is being given to helping teachers access materials they need to assess and teach students, some of which is being donated by the QRTA and Teachers College.

During the professional development, teachers work in pairs or small teams to review student work from the classrooms to assess student understanding. They watch video clips of classroom instruction to examine teacher use of questions to stimulate student conversation and different strategies the students use in their mathematical reasoning; a group discussion identifies different instructional responses that would move students forward. The teachers meet by grade and by school to integrate the materials and learning from the workshop with ERfKE textbooks. Teachers learn to use frameworks for each concept as a reference for identifying student misconceptions and to better target their instruction. There is time during workshops and network meetings for teachers to design lessons using new ideas. Network leaders are modeling many of the instructional strategies during the professional development. Network instruction is conducted in English with immediate translation in Arabic. All materials are translated into Arabic.

Adjustments. Following teacher feedback on the first workshop, the subsequent workshops have been organized with an introductory session for all participants followed by specialized sessions focused on lower and upper grades instruction. The customization is focused on the mathematics that teachers need to meet their instructional goals. For example the upper grade sessions have focused on fraction operation, while the lower grades sessions have focused on early number development concepts. Materials have been further customized to support the new sessions. In year 2, the length of the workshops had been reduced from four days for all network members to two 2-day sessions with half of network members attending each. The resulting smaller sessions has made for more personalized conversations with no loss in the coverage of selected mathematics concepts or planned activities. The revised schedule also eased pressure on schools by not requiring release of all participating teachers at the same time; this change was particularly important given that half of the participants were grade 1-3 generalist teachers.

The English Writing School Network. Through the English writing network, the Partnership is helping teachers adopt a well-articulated writing workshop model developed by the Teachers College Reading and Writing Project and widely used in the United

States and other countries. The writing workshop model supports student-centered instruction. Students choose their writing topics and teachers use conversation about their writing to improve their vocabulary, grammar, and style. Importantly, the writing workshop model also develops critical thinking as students learn to use more complex and precise language to express their ideas, experiences, and opinions and to engage in a revision process that sharpens their work and thinking over time.

Through the workshop model, English teachers are developing students' narrative and informational writing skills. The model helps teachers to assess student learning needs as they are able to review and give feedback on writing drafts and to differentiate their instruction based on observed student needs. Teachers are learning to use demonstration texts to model language and literacy. They also are learning to draw from their own experiences to model the writing process to students who are developing and improving a personal story or information essay through multiple drafts over many weeks. Teachers are learning to implement many features of the writing workshop including the mini-lesson structure, independent writing time when students write on a topic of their choice, and the use of partners or small group discussion to support student work.

Through these workshops, teachers have opportunities to observe and practice the workshop model. The organization of each professional development session parallels the workshop structure teachers will use with their students in their own classrooms. This model enables the teacher to think about the process of writing from the student perspective. It also enables teachers to develop as writers, which in turn provides them with specific experiences and materials they can later use to plan lessons and to teach their students.

Workshop instructors have identified specific classrooms, known as "lab sites", which the network teachers visit during the workshop to observe classes together, assess student work, and identify methods for diagnosing and responding to different student needs. Lab sites offer opportunities for teachers to seek advice about adapting the workshop to their specific classroom conditions or clarify workshop practices. At the start of the network, the instructional team also identified a small group of "teacher leaders" who are serving as advisors on the initial integration and adaptation of the workshop model to local classroom contexts. Some of these teacher leaders will serve as workshop leaders in cohort 2 and 3 networks. All network instruction and materials are in English.

Adjustments. As this discussion reflects, the writing workshop model is a radical departure from the ERfKE English textbook, known as "Action Pack." Writing in the official curriculum is integrated with chapter themes and students are asked to respond to short prompts that emphasize vocabulary and grammar recall and to factual comprehension questions. The initial presentation of the workshop model included some minor adaptations from the delivery model used in the United States. The instructional team had high expectations that teachers would be able to use 2-3 days of their English classes weekly for writing workshop. The teachers were unwilling to displace the official ERfKE curriculum without MOE approval to alter coverage requirements. In February 2010, the MOE granted permission for the workshop model to replace the use of writing prompts in ERfKE textbook lessons on an experimental basis; the official allocation for writing workshop was for up to two periods a week.

The instructional team also revised workshop materials for three genres that simplify the mini-lesson structure, are culturally sensitive, and acknowledge the limited literature

resources available to teachers. Although teachers are expected to develop their own mini-lessons over time, the network materials provide draft lessons teachers can use or modify to encourage teacher efforts. To further support implementation, the Partnership is preparing a small cadre of Jordanian "master teachers" who are using the workshop model well and often in their classrooms to become trainers. The Partnership also has taken steps to secure resources the writing teachers need, such as chart paper, notebooks, and pens to the working workshop in their classrooms. This includes donations of "mentor texts" which teachers can use to stimulate student thinking before writing.

Network Leadership Institutes. Through periodic 1-2 day institutes, principals of network schools are encouraged to extend their typical roles as head administrator and manager of their school to include the role of instructional leader. Principals are being introduced to a set of "big ideas," evidence-based decision making, the value of collaborative work relations to support the growth of teacher knowledge and sharing of resources, and attention to student learning and achievement levels. Principals are also learning about "high impact" instructional practices and strategies so as to be able to promote them in their schools. This is focusing their attention on lesson design, the structure and academic rigor of lessons, the presence of student-centered discussion, student team learning in classrooms, and the use of formative assessment techniques and adaptive instruction to meet the different learning needs of students. Using videotapes and school visits, principals are learning to identify the presence and absence of these strategies in classroom teaching by using observation protocols. These protocols aim to call principal attention to these important practices and encourage the recording of "evidence" from the lesson to support feedback to teachers about their practice and about student learning. Importantly, principals also are learning effective approaches to engage teachers in conversations about their use of the high impact practices following the lesson observation. The Partnership is using observation protocols that focus explicitly on high impact practices rather than MOE official classroom observation and reporting forms.

Principals also are learning strategies for encouraging and supporting network teachers as they implement new concepts and practices and for spreading the network teachers' instructional improvement efforts to others in their schools. Through the periodic institutes, QRTA staff members are providing principals with an overview of the professional development their teachers are receiving in their particular network. This typically includes engaging principals in a simulated learning activity so they can experience the particular instructional strategies from a student's viewpoint as they engage in scientific inquiry, narrative writing in English, or mathematical reasoning.

The workshops for principals are organized around the subject-matter networks. Principals whose schools are in the science network, for example, attend the same Leadership Institute. Off-site trainings are supplemented with school visits in which small groups of principals led by a member of the QRTA instructional team visit a network school together to conduct a "Learning Walk" to observe a series of lessons. From these observations, principals reflect on the observed patterns of instruction and on teacher use of the high impact strategies. They also consider how best to initiate and guide a conversation with teachers to influence their instructional choices. Instruction during Leadership Institutes is conducted in English with immediate translation in Arabic. All materials are translated into Arabic.

Adjustments. There have been a number of adjustments. With the initial focus on off-site training to introduce and familiarize principals and supervisors with evidence-based practices, the impact on administrators' daily work was uncertain. Readings from the research literature or summaries also may have been a shift in the professional development paradigm for administrators as it was not clear that they were experienced with text-based discussions. In response, the training is now focused specifically on the instructional strategies teachers were learning to use in the subject area. Increasing attention to the relevance of the evidence-based practices within the context of Jordanian schools, and the transfer of practice into specific school settings, took on a stronger role in the professional development design. School visits, or "Learning Walks," were introduced to allow principals to visit each other's schools and to use a formal protocol for discussing classroom practices. These changes have facilitated conversations around the high impact practices and engaged principals more deeply in substantive conversation about teaching and learning.

Periodic School Site Visits to Support Implementation

The QRTA staff members have been conducting periodic site visits to the network schools. While the staff working with the different networks held common goals and use some common practices in conducting site visits to schools, the emphasis varies. A primary goal of network site visits has been lesson observation and discussion with teachers about the quality of implementation of specific practices. During each site visit, staff members are conducting observations of lessons in which teachers were using network strategies. Following the observations, the QRTA staff members provide feedback to the teachers on their implementation. The mathematics and English writing staff also have engaged in co-teaching and videotaping to demonstrate practices. Feedback to teachers has been verbal in the mathematics and science network. The staff members do not use protocols and have much discretion over what they choose to focus on. In contrast, staff members leading the English network used a detailed and structured observation form developed by their TC/CU partners to record observations of the use of specific writing workshop components. This observation form was presented to all network writing teachers who were encouraged to use it themselves to facilitate teacher-to-teacher feedback. Potential advantages of using a structured observation form and sharing it with teachers are that it can help set clear standards of practice, lead to focused conversations among teachers, and help staff provide consistent feedback.

A second common goal of periodic site visits has been the promotion of professional learning communities within the school. During visits, staff members have encouraged network teachers to meet to discuss their use of network strategies and to reach out to other teachers to share their new knowledge. In the English and mathematics networks, staff attempted to meet with as many teachers as possible. Also the mathematics and science network staffs have emphasized the use of group meetings to help teachers plan future activities and to share good teaching practices.

A third common goal has been collecting data about professional development or other issues within the school that may affect teacher participation or use of network practices. This also includes QRTA staff identifying good practices by teachers who are applying new strategies in their classrooms and spreading those innovative ideas among network

teachers. A fourth shared goal has been for QRTA staff to meet with the principal during school visits to encourage and mobilize administrative support.

QRTA staff members believe that all of these goals are essential to the site visits process. Each goal has been incorporated into the site visit templates used by each network. The shadowing of QRTA staff during site visits by the documentation team in April 2010 confirms their pursuit of these goals. Since its inception, staff members have made minor adjustments to the site visit process, which focused on simplifying the form to facilitate note taking.

The results of the teacher survey provide additional insight into the QRTA site visit activities. As shown in Table 5, within the first six months of the start of the network, a high percentage of teachers reported meeting with QRTA staff: 84% of science teachers; 70% of English teachers; and, 87% of mathematics teachers. The somewhat lower percentage reported by English teachers may reflect a group of teachers new to the network who completed the survey. In other cases, teachers may have been absent or the schedule may not have permitted all of the teachers to meet with QRTA staff during a given visit. Across the networks, sizable percentages of teachers reported more than one visit: 37% in science; 28% in English; and 55% in mathematics. Higher reports within the mathematics network may reflect special visits made to assess students and collect student work for workshop planning or the fact that the QRTA staff working with the mathematics network began making visits earlier than those in the science and writing networks.

Table 5.
Cohort 1 Teacher Reports of the Frequency of QRTA Staff Visits During the First 6 Months of the Network

Number of meetings with QRTA staff at your school as an individual or group	Science Network n=73	English Writing Network n=68	Mathematics Network n=90
None	11%	29%	13%
1 meeting	48%	41%	31%
2-3 meetings	27%	22%	53%
4-5 meetings	7%	3%	2%
6-7 meetings	0%	0%	0%
8+ meetings	3%	3%	0%
(blank/missing)	(5%)	(1%)	(0%)

Source: Cohort 1 School Networks, Year 1 Teacher Survey

The activities which teachers reported participating during QRTA visits parallel those described by the QRTA staff. On the survey, teachers were asked to review a list of 15-16 possible activities and to mark all that they had participated in when meeting with QRTA staff individually or with a group. Table 6 presents the percentages of teachers reporting each activity. When activities are ranked within each network based on the frequency of teacher participation, 4-5 activities emerged as common across all networks. These included: observations of their classrooms, facilitation of a teacher meeting by QRTA staff, receiving feedback on their teaching, observing demonstration lessons, and helping teachers think about student motivation and engagement. There was some variation in emphasis across the networks. Teachers also reported QRTA visits beyond the formal

site visits that included planning for future QRTA visits, which were more common during the start-up period of each network, particularly in the mathematics network. English teachers reported more emphasis on demonstration lessons during school visits; this was likely due to the emphasis on lesson demonstrations in the workshop. Other reported activities during the site visits included: helping teachers group students, planning lessons and reviewing student work products, reviewing curriculum standards, or making better use of the ERfKE curriculum. Teachers reported that QRTA staff visits have also focused on resources, either providing new materials to teachers or making use of those available in the classroom. Some reported QRTA staff co-teaching a lesson or videotaping their teaching.

Table 6.
Cohort 1 Teacher Reported Activities and Topics During QRTA School Visits, Six Months after the Start of the Network

"Mark the specific focus of your work with QRTA staff either individually or with a group during the visit"	**Science Network** n=73		**English Writing Network** n=68		**Mathematics Network** n=90	
	Percent	Rank	Percent	Rank	Percent	Rank
"Observing my classroom teaching"	47%	1	43%	1	52%	2
"Planning to host a future QRTA visit"	37%	3	35%	2	54%	1
"Facilitating a meeting of teachers"	32%	5	28%	3	42%	3
"Providing me with feedback on a lesson"	38%	2	22%	5	32%	5
"Helping me think about student motivation and engagement "	33%	4	12%	9	34%	4
"Providing a demonstration lesson"	5%	13	24%	4	7%	13
"Helping me think about how to group my students for instruction"	18%	8	15%	8	14%	9
"Assisting me with lesson planning"	23%	6	18%	7	12%	10
"Reviewing curriculum standards with teachers"	15%	9	18%	7	16%	8
"Helping me analyze student work products"	12%	11	15%	8	26%	6
"Videotaping my teaching "	21%	7	10%	10	11%	11
"Providing me instructional materials"	8%	12	15%	8	4%	14
"Co-teaching a lesson with me"	3%	14	7%	12	10%	12
"Helping me make use of available classroom resources"	16%	9	19%	6	21%	7
"Helping me make better use of my ERfKE curriculum"	15%	10	9%	11	14%	9
"Other"	8%	12	3%	13	2%	15
(blank/missing)	(19%)	-	(25%)	-	(12%)	-

Source: Cohort 1 School Networks, Year 1 Teacher Survey

Growth in QRTA Capacity

The QRTA is increasing its capacity to lead and support the school network model as a strategy for improving instruction in Jordan schools.

Building Knowledgeable Experienced Staff. The QRTA has made progress in developing the capacity of staff to assume more responsibility for delivering professional development. The core QRTA staff supporting cohort 1 school networks has experience in education program management and in leading and/or teaching in elementary and secondary schools. They also have expertise in the core subject areas of mathematics, science or English language instruction. They had less experience in the design and conduct of professional development and no experience in the management and support of school networks. Some staff members have been hired on a short-term basis from universities and public schools to bolster staff content knowledge, knowledge of the ERfKE textbook curriculum in use in Jordan schools, and local school norms and practices. One challenge has been the stability of QRTA staff and timing of hiring in the science and English writing networks; these issues are discussed later.

The Partnership contributed to the further development of QRTA staff knowledge throughout the first year. In the cohort 1 science and mathematics networks, QRTA staff participated in the planning of each workshop with TC/CU Partners who were experienced professional developers. Following 1-2 hour conference calls via the internet and reviews of materials, each QRTA-TC/CU team discussed the goals, materials, instructional strategies and activities for the upcoming workshop. Some QRTA staff are serving as translators, which has deepened their knowledge and use of the workshop content. Each workshop has been followed by a day of debriefings in which the combined staff discusses teacher responses to core ideas and strategies, areas of strengths and weaknesses, and next steps for the upcoming workshop or network meeting. In some instances, part of this time has been spent visiting schools to provide the team with common understanding of classroom conditions and to gauge teacher understanding and use of specific strategies. The QRTA-TC/CU teams in mathematics and science conducted periodic joint reviews of the ERfKE curriculum to identify topics and units to focus their planning.

A different strategy was pursued by the team supporting the English writing network. The concepts and instructional strategies of the English writing network were tied to an existing writing program in the United States that is well developed and structured. While some co-planning and debriefing took place in Jordan, QRTA staff members and exemplary teachers have attended intensive weeklong trainings in the United States on three separate occasions in 2010 and 2011. The goal was to take advantage of scheduled training institutes regularly conducted at Teachers College so that QRTA staff members could learn the core concepts, structures, and materials of the writing workshop model and the core strategies for supporting teachers.

Finally, for all networks an in-house library of education research, instructional materials, and other guides was established at the QRTA as a staff resource. QRTA staff members are also building a video library for use as instructional tools for professional development in all networks.

Changes in the QRTA staff have posed some challenges. The Partnership has responded to these shifts in QRTA staffing in two ways. In science, the TC/CU leaders have provided an intensive 2-day orientation for the new cohort 2 QRTA science staff members and assigned them with facilitation responsibilities during the professional development. This experience, along with extended debriefings and individualized feedback to members about performance, has integrated them into the team and allowed them to play increasingly significant roles in the workshops. In the English writing network, turnover and the expansion of staff are being addressed through participation in intensive U.S.-based professional development and through extended interactions with the TC Reading & Writing Project staff developers whose roles they share. The TC/CU leaders also are building the capacity of a group of "lead teachers" to establish model classrooms as demonstration proofs in Jordan and cultivating their potential to serve as future literacy coaches who might support teachers in other schools. QRTA staffing and stability has not been an issue with the mathematics network.

As early as the first year of cohort 1 networks, QRTA staff members were taking ownership of some major components of the network strategy. Specifically, they were planning and running the network meetings and conducting the periodic school site visits. The TC/CU staff served as advisors during the planning stages of the network meetings and provided feedback on the site visit summary forms.

As planned, QRTA staff initially played a support role in the delivery of the network workshops. QRTA staff members have been serving as translators and have been active during the workshops explaining ideas and strategies to teachers and responding to questions. These roles have been expanding and by the end of the first year the QRTA staff were participating in planning and delivery of the workshops. By the second year of cohort 1, QRTA staff members were participating in the design of the workshops and leading some elements of every workshop.

For cohort 2, the Partnership has used a variety of strategies to identify educators who have the potential to deliver workshops, recruit them, and build their knowledge, skill, and confidence to lead professional development. The science team uses new QRTA staff members and university professors as table facilitators during workshops. The mathematics team uses new QRTA staff as co-trainers and has identified strong teachers from cohort 1 to serve as table facilitators with the cohort 2 network; the effectiveness of this strategy is mixed. It seemed to work well in science but less so in math, as the strong teachers do not necessarily speak English, and because female teacher participation is inhibited by travel requirements. The English team has increased the role played by QRTA staff as trainers and used its highly structured and intensive training in the United States to prepare Jordanians to lead professional development. The confidence and responsibilities the QRTA staff held by the end of the second year of cohort 2 will shed light on the effectiveness of these strategies.

Developing Organizational Routines for Knowledge Management. The QRTA has made considerable progress in collecting, managing, and reviewing information that can enhance the efficiency and performance of the professional development and the school network strategy. At the start of the network strategy, QRTA staff established routines for collecting information critical to the planning of professional development. Four types of information systems were established and have been refined over the course of two years. The first is background information about network schools and participants. The second is logs of all site visits to track the level and nature of assistance provided to each

school. Logs also capture the level of implementation observed at the time of the visit, issues that need resolution in the school, and suggested next steps. The third data set is the participation rates for each workshop, which enables staff to track the levels of assistance being provided for individual teachers and groups of schools. The QRTA uses this information to identify issues for resolution. The fourth data set captures teacher feedback at the conclusion of each network workshop and meeting regarding the organization of the workshop, relevance of topics, and their understanding of the topics and strategies presented and confidence to use in their classroom. These short surveys include multiple choice responses for tabulation as well as open-ended responses.

The QRTA staff has established strong routines for recording and reviewing these data. Partnership staff members throughout the year are reviewing the information sources on a periodic basis. Workshop feedback results, for example, are being circulated to each network instructional team following a professional development activity. Participation trends are being reviewed before and after each event by QRTA staff. Site visit logs are being reviewed to inform planning for individual school visits.

IV. Progress in Helping Teachers Improve Their Instruction

This section presents early evidence of the impact of the Partnership's school network strategy for teachers who are participating in the first cohort of school networks. The ultimate goal is to improve student learning, but this requires that teachers participate in network professional development provided by the Partnership and make an effort to use the network instructional strategies and tools they are learning. It also requires that teachers come to see their peers as a source of support for improving their instruction and overcoming obstacles.

Teacher Participation in Network Professional Development

A critical factor in the success of the Partnership is the consistent participation of teachers in network events. The professional development program aims to scaffold teacher learning over time and deepen teacher understanding and use of the ideas and practices introduced by the Partnership. Fluctuations in teacher participation can undermine the coherence of the Partnership's professional development and threaten its effectiveness.

Trends in Teacher Participation. Table 7 presents data on teacher participation in the professional development conducted during the first year of cohort 1 networks. Overall, participation rates are relatively high given the time demands made on teachers and the intensity of the professional development. The workshops attracted 74 to 94% of invited teachers. Across all three networks, teacher attendance was higher in the network workshops than in the network meetings. Participation in the mathematics and science workshops has been consistent, ranging from 83 to 94%. Participation by English teachers was slightly lower and less consistent, ranging from 74 to 87%. This was likely due to the more radical changes in practices sought in the teaching of writing and teacher uncertainty about departing from the official ERfKE curriculum. Another likely contributing factor to the moderate to high levels of teacher participation was positive support from their principal.

It is not surprising that there would be some teacher attrition during the life of a network as teachers face the challenges of implementation and assess the attitudes of their peers and principals toward the reforms. Cohort 1 networks experienced different levels of attrition. A higher percentage of teachers dropped out of the English network, 30%, compared to the science network, 11%, and the mathematics network, 4%. The QRTA surveyed these teachers to understand the causes of attrition; major causes seem to have been lack of time, transfer to a school outside the network, and family responsibilities.

Table 7.
Cohort 1 Year 1 Teacher [a] Participation in Network Professional Development and Attrition from the Network, April 2009-May 2010

	Science Network		English Writing Network		Mathematics Network	
	Number	Percent	Number	Percent	Number	Percent
Participating Teachers	89	--	87	--	107	--
Teacher Attrition	10	11%	26	30%	4	4%
Teacher Participation in Network Workshops						
Workshop I	78	88%	64	74%	97	91%
Workshop II	74	83%	64	74%	93	87%
Workshop III	75	84%	75	87%	101	94%
Workshop IV	76	85%	--	--	--	--
Teacher Participation in Network Meetings						
Meeting I	60	67%	54	62%	83	78%
Meeting II	68	76%	55	63%	92	86%
Meeting III	53	60%	70	81%	--	--
Meeting IV	--	--	64	74%	--	--

[a]Teacher counts include both classroom and Queen Rania Award Teachers
Source: QRTA Participation Logs and Summary Data, May 2011

Teacher Reported Obstacles to Participation. On the survey teachers were asked to identify obstacles that were inhibiting their attendance to Partnership professional development. The list on the survey was generated in consultation with QRTA staff members who were actively troubleshooting teacher attendance from the start of each network. The survey provided an opportunity to identify whether there were patterns within and across school networks.

Table 8 reports the proportion of teachers identifying an obstacle as inhibiting their attendance. Teacher responses were then ranked by frequency. A common obstacle across all networks has been the time it takes to travel to and participate in professional development. Problems associated with time were somewhat different across the three networks, but were strong in all cases. Science teachers travel by bus from a city outside of Amman. Mathematics teachers were located in a directorate outside Amman and relied on Ministry transportation, which proved to be unreliable at times, requiring teachers to wait for long times for pick up. English teachers were responsible for their own travel; many came by public transportation, and for some this required a lengthy commute. The cost of local travel also was an obstacle for 51% of English teachers.

About 21-38% of teachers across all three networks reported that the length of the network workshops, which was three to four days at the time of the survey, was an obstacle. Teachers indicated that they either did not feel comfortable leaving school for that amount of time or could not find substitutes. During site visits, teachers also shared that their long absence from the school had created burdens for other teachers who were asked to cover their classes. This sometimes strained relationships. rTavel time and extended work days at the QRTA training also took time away from family duties, which

38% of English teachers, 24% of mathematics teachers, and 18% of science teachers report as an obstacle.

Table 8.
Teacher Reported Factors Inhibiting their Attendance to Professional Development by Cohort 1 Networks

"Factors most likely to cause you to be late or miss QRTA network events…."	Science Network n=73		English Writing Network n=68		Mathematics Network n=90	
	Percent	Rank	Percent	Rank	Percent	Rank
Travel time to the QRTA events	36%	1	44%	2	22%	4
Ministry Transportation	--	--	--	--	46%	1
Travel Cost	3%	8	51%	1	13%	7
Length of QRTA Events	21%	3	35%	4	38%	2
Other	23%	2	12%	7	9%	7
Family Duties	18%	4	38%	3	24%	3
Lack of relevance to the curriculum I teach	5%	7	24%	5	19%	5
Other Job	12%	5	10%	8	10%	6
Lack of Principal Support	10%	6	7%	9	6%	9
Lack of Supervisor Support	3%	8	18%	6	6%	9
Miscommunication	3%	8	6%	10	2%	10
The workshops are not helpful to my job	3%	8	4%	11	7%	8
(blank/missing)	(21%)	-	(9%)	-	(16%)	-

Source: Cohort 1 School Networks, Year 1 Teacher Survey

Small numbers of teachers felt that the workshops lacked relevance for the curriculum they were teaching; this was reported by 24% of English teachers and 19% of mathematics teachers but only 5% of science teachers. For mathematics network teachers this may reflect an initial disconnect between some of the topics of workshops and the different curriculum followed by the lower and upper grades teachers. For English teachers it likely reflects the larger difference between the ERfKE writing curriculum and the network's writing workshop model. In fact, a related early obstacle for English teachers was a lack of supervisor support. Approximately one-fifth (18%) of teachers reported lack of supervisor support was an obstacle, compared to only 3-6% of teachers in the Math and Science networks. This problem was likely due to an initial failure to invite the English supervisors to the workshops, and to the absence of MOE official approval for teachers to use writing workshop at the time of the survey. After English supervisors began participating in the workshops, they became advocates and supporters of the program.

The survey also captures the complexity of the obstacles some teachers faced. Table 9 displays the number of obstacles reported by teachers, ranging from only one, to two or

more. For the science network, almost half of teachers noted at least one obstacle. In contrast, 45% of English teachers noted three or more obstacles that made it hard for them to attend network events. In this situation, the best strategy is for the QRTA to identify obstacles early in the process that may affect the greatest number of teachers and attempt to resolve them before teachers become discouraged and drop out. The data reported earlier on the high attendance in the mathematics and science networks, and in the English writing network after MOE approval was obtained, are evidence of the QRTA's responsiveness to the obstacles the teachers encountered and the Partnership's willingness to adapt the workshops. They also are evidence of the teachers' strong commitment to improving their practice as many overcome serious obstacles in order to participate.

Table 9.
The Number of Obstacles Teachers Report as Inhibiting their Attendance to Partnership Professional Development[1]

Number of Obstacles	Science Network n=73	English Writing Network n=68	Mathematics Network n=90
1 Obstacle	47%	28%	31%
2 Obstacles	15%	18%	20%
3 to 7 Obstacles	17%	45%	31%
8 or more	0%	0%	2%
(blank/missing)	(21%)	(9%)	(16%)

[1]Number of response options: 11 in the English and science surveys; 12 in the mathematics survey.
Source: Cohort 1 School Networks, Year 1 Teacher Survey

From the initial implementation of the network strategy, QRTA staff members have been mindful of the importance of sustained teacher attendance for the success of the professional development. Staff members employ a highly personalized and labor intensive strategy to maintain high participation levels. Staff members conduct phone calls to all network principals and teacher representatives in each school as reminders of upcoming workshops and to emphasize the importance of their presence. When teachers are absent, they receive personal phone calls from QRTA staff members to identify problems they are encountering and remind teachers of the importance of their attendance. Participating teachers are encouraged to update absent teachers. When principals are reluctant to allow teacher teams to attend due to the hardship created for the school, the QRTA negotiates agreements for one or two teachers to attend as representatives and later share with their peers. QRTA staff members seek to resolve problems faced by the teachers, serving as negotiators and alerting MOE officials of particular issues, such as transportation.

Teacher Views of the Quality of Professional Development

An important indicator of teacher willingness to embrace new concepts and try new strategies in their classrooms is their opinions and views of the quality of professional development they receive. The Partnership's focus on high quality design can be undermined if participants do not share this opinion at the end of a workshop or, over time, decide that a series of professional development activities is not relevant to their work. Positive teacher views that align well with the intentions of the professional development make it more likely that teachers will be open to understanding and ultimately using the ideas and practices promoted by the Partnership.

Teacher Views of Workshop Organization and Leaders. At the conclusion of each professional development event, the Partnership collects teacher opinions about how well the workshop was organized, their views of the quality of the workshop leaders, and opportunities to raise questions as they are learning. This is important because new ideas and practices are introduced and demonstrated during workshops and therefore provide a foundation for all of the other network components, such as the periodic network meetings focus on implementation and periodic school visits.

Table 10 displays teacher opinions over time from across three to four workshops in each network. Across all three networks, participants gave the professional development during workshops high ratings. Teachers reported that the workshops they attended were well-organized and that their time was used efficiently. Reflecting on their experience at the workshops, most teachers indicated that the professional development has been a worthwhile use of their time in light of what they learned. Most also believe they had an opportunity to ask questions and, importantly, received answers during the actual workshop. Teacher feedback was solicited on the leaders responsible for delivering professional development and, again, almost all teachers agree or somewhat agree that the workshop leaders have been knowledgeable in their content area. They also reported that the workshop leaders were respectful of their professional knowledge and experience.

Table 10.
Cohort 1 Teacher Views on the Quality of QRTA Network Workshops, April 2009-May 2010

	Percent of Teachers Who "Agree" or "Somewhat Agree"		
	Science Network	**English Writing Network**	**Mathematics Network**
Workshop Feedback Sources			
Number of Workshops	4	3	3
Range in Number of Teacher Responses Across all Workshops	51-78	33-65	72-78
Workshop Feedback Prompts			
"The workshop was well-organized."	97-100%	100%	96-100%
"Time was used efficiently in the workshop."	83-94%	94-100%	89-95%
"What I gained from this workshop made it worth my time. "	92-100%	97-100%	82-92%
"I had adequate opportunity to ask questions and get them answered."	83-94%	91-96%	94-99%
"The workshop leaders showed respect for my professional knowledge and experience."	97-100%	99-100%	96-97%
"The leaders of this workshop were knowledgeable about [network subject area]."	98-100%	97-100%	95-98%

Source: QRTA Workshop Feedback Records, April 2009-May 2010

Teacher Views of Workshop Content. Further insights into teacher opinions about the quality of the professional development are available through a survey administered six months after the start of each network. A high percentage of participating teachers, 83 to 90%, agree or somewhat agree that the network workshops and meetings have been coherently related to each other. Many also reported that the topics covered during the professional development to date have been new to them, with 72 to 87% reporting that the QRTA workshops have not duplicated what they had previously learned from other trainings.

During the initial professional development, reliance on English-speaking trainers meant that the quality of translation provided during the workshops or lack thereof would be critical to the engagement and understanding of the teachers. Reflecting on three to five professional development activities, the vast majority of teachers in the mathematics and science networks, 96% and 92% respectively, reported that translation during the workshop has been clear. In the English writing network, teachers reported that instruction in English has not been a barrier, with a high percentage of the teachers, 83%, disagreeing or somewhat disagreeing that the use of English during the workshop made it difficult for them to understand the content. Overall, teachers gave the instructional teams' high marks for the design and delivery of the network professional development.

The Partnership's professional development aims to provide teachers with practical ideas and resources and to facilitate their use in the classroom. It was also designed to cultivate

within individual teachers and teams of teachers a disposition towards the continuous improvement of their teaching. Table 11 reports teacher responses to survey prompts that speak to these two purposes. A strong majority of teachers across all networks reported the professional development has helped them use the new content and strategies in their classrooms. They agree or somewhat agree that the ideas and practices emphasized in the professional development have been useful in their classrooms and with material handouts have been well-organized and clearly written. The vast majority of teachers, 85-95%, report receiving lesson designs that they were able to use. And at least three quarters of all teachers believe the training has helped them make better use of the ERfKE curriculum in their respective content areas.

Table 11.
Reported Value of Professional Development to Cohort 1 Teachers by Network

"The Workshops and Network meetings during 2009/2010…"	Percentage "Agree" or "Somewhat Agree"		
	Science Network n=73	**English Writing Network** n=68	**Mathematics Network** n=90
Offered Practical Support and Resources			
"Provided me with knowledge or information that is useful to me in the classroom."	85%	97%	91%
"Provided me with material handouts that were well organized and clearly written"	95%	94%	94%
"Provided me with lesson designs I have been able to use."	85%	95%	86%
"Helped me make better use of my ERfKE curriculum."	97%	76%	87%
Cultivated a Disposition Towards Instructional Improvement			
"Gave me opportunities to work on aspects of my teaching that I know I need to improve."	92%	97%	91%
"Made me pay closer attention to particular things I was doing in the classroom."	87%	91%	92%
"Led me to think about my teaching in a new way."	88%	85%	92%
"Led me to try new things in the classroom."	91%	92%	96%

Source: Cohort 1 School Networks, Year 1 Teacher Survey

Furthermore, the vast majority of teachers reported that participation in the Partnership professional development programs has helped them develop or strengthen a disposition towards reflecting on their teaching and trying new ideas. Specifically, teachers reported that the professional development has changed their point of view by encouraging them to think about their teaching in a new way, 85 to 92%, and to experiment by trying new

things in the classroom, 91 to 96%. 91 to 97% of teachers said the network has provided them with opportunities to work on aspects of their teaching that they know need to improve, and 87 to 92% that it has led them pay closer attention to particular things they are doing in their classroom.. A disposition towards improvement encourages teachers' use of the new network instructional strategies in their classrooms. It also can stimulate groups of teachers to continue learning and improving their instructional practice as a professional learning community in their schools.

Early Use of Network Practices by Teachers

Both in design and execution, each component of the Partnership strategy is organized around the expectation that participating teachers will make use of the concepts and strategies they learn. The Partnership recognizes that changing teaching practice is a process and that teachers need time and effective support to do it. The workshops have encouraged implementation by addressing adaptations to local conditions, modeling and demonstrating strategies, and providing opportunities for teachers to develop lesson plans and receive feedback on them before returning to their schools. Network meetings and site visits also are organized around direct assistance to teachers, as individuals and in teams, to help them use new practices and to troubleshoot implementation problems, such as space/desk constraints, lack of resources, and negative student responses. An important first step is encouraging teachers to attempt to use a concept or strategy with their students. If teachers are not willing to take this first step, then the goals of improving instruction and, in turn, increasing student learning, will not be reached.

This section reviews emerging evidence regarding teachers' early engagement with and use of new instructional approaches in their classrooms. The teacher survey captures their reported use of specific practices in the first six months of the network, which followed 2 to 3 workshops. To this end, we examine two indicators of teacher reported use within each network.

The first is *the proportion of teachers who reported some use of individual network practices, frequent, occasional, or rare, during the first six months of their network.* This percentage helps identify groups of network practices that teachers may find more or less attractive. It also provides a broader view of teacher willingness to experiment with their instructional practice by at least attempting to use new ideas in their own classroom.

The second is *the proportion of teachers in the network who reported "frequent use" of individual network practices during the first six months of their network.* This percentage helps identify those practices that teachers are more quickly able to integrate into their instructional repertoire. It also captures variation in the level of high engagement among teachers in a given network. For example, in one network, 60% of teachers may report frequent use of one strategy, compared to 10% of teachers reporting frequent use of another strategy. To facilitate grouping of strategies, the percent of network teachers reporting frequent use is categorized as follows:

Very High Use: 100-76% of the network teachers report frequent use

High Use: 75-51% of the network teachers report frequent use

Moderate Use: 50-26% of the network teachers report frequent use

Low Use: 25% or below of the network teachers report frequent use

These indicators do not provide insight into the quality of instruction resulting from the use of the practice, but they do provide a measure of the degree in which teachers are trying new network practices and then integrating them into their instructional routine.

The second data source comes from interviews with 54 teachers in 12 schools from the three networks. Interview data provides teacher opinions about network concepts and practices and reported use with their students.

Science Teachers' Use of Network Concepts and Practices. Twelve science network practices were listed on the teacher survey. The list included brief descriptions of each stage of the 5E Model: Engagement, Exploration, Explanation, Elaboration, and Evaluation. Each stage had been listed separately because science network workshops tended to focus on one or two stages at a time. Other practices included five general teaching strategies that aim to facilitate classroom management, assessment, student thinking or sharing, etc. Gots and Needs, Round Table, Think-Pair-Share, Gallery Walk, and Exit Ticket strategies were among those listed. The other network practices listed focus on assessment including: the examination of student work to inform teaching and giving students' feedback on their work to improve their understanding. These practices are general tools to help teachers improve the effectiveness of their instruction; they are not specific to a particular scientific concept or phenomenon, but can aide in the teaching of most. Table 12 presents the percentage of network teachers reporting some use of the twelve strategies, either rare, occasional, or frequent use. It also presents the level of frequent use of each strategy reported by teachers in the network from very high to low.

Science teacher reports suggest strong early engagement of almost all network practices. The vast majority of teachers, 95 to 96%, reported attempting to use eight practices, which together represent the fundamental focus of the network. These include all five stages of the 5E model, reviewing student work and providing feedback to students, and one teaching strategy, the Think-Pair-Share. This high level of reported use is supported by teacher confidence in their understanding of the stages of inquiry. Specifically, 79% of science teachers reported a high or reasonable confidence in their ability to use the 5E instructional model to design science lesson.

The level of reported frequent use of network strategies by science teachers varied. A very high proportion of network teachers, 77%, reported frequently eliciting student prior knowledge to guide their teaching. Widespread use of this strategy suggests science teachers are valuing evidence of student learning and engaging in more strategic planning. A high proportion of network teachers, 50-62%, reported frequent use of the Think-Pair-Share strategy, of allowing students to construct explanations, and providing students feedback on their work. Moderate proportions of science teachers reported frequent use of the other four stages of inquiry, a range of 33 to 47%, which includes: encouraging students to elaborate, evaluating student learning, exploring scientific phenomenon, and engaging students in exploration. While science teachers report some use of the other four teaching strategies, specifically the Roundtable Strategy, Gots and Needs, Gallery Walk, and Exit Ticket, only small numbers report frequent use, ranging from 5 to 19% of teachers. These network strategies require some student movement within the classroom and working in groups, which are difficult in crowded classrooms in

most schools. The Exit Ticket requires paper for students to turn in at the end of class, which is scarce for students and teachers. In contrast, the Think-Pair-Share teaching strategy can be used without much disruption in a typical classroom; students could share their thinking with a partner seated nearby.

Table 12.
Cohort 1 Teacher Use of Science Network Practices by Percent Attempted and Level of Frequency

"How often have you used the following Science Network strategies in your teaching?"	Percent of Teachers Reporting Some Use [1] n=73	Percent of Teachers Reporting Frequent Use [2]	
		Level	Percent
"Elicited students prior knowledge and used this information to guide my teaching"	96%	Very High	77%
"Allowed students to construct their own explanations first, before summarizing the scientific explanations"	96%	High	52%
"Used the Think-Pair-Share strategy"	95%	High	60%
"Gave students feedback on their work to improve their understanding"	95%	High	62%
"Provided opportunities for my students to elaborate on what they learned to deepen and expand student understanding"	96%	Moderate	44%
"Provided my students opportunities to evaluate and reflect on their learning"	96%	Moderate	33%
"Examined student work to inform my teaching"	95%	Moderate	47%
"Engaged students in exploration of scientific phenomena to create a common experience for all my students"	95%	Moderate	41%
"Used the Round Table strategy"	82%	Low	19%
"Used the Gots & Needs strategy"	69%	Low	5%
"Used Gallery Walk strategy"	67%	Low	16%
"Used the Exit Ticket strategy"	34%	Low	4%

[1] All network teachers reporting some use of the strategy: rare, occasional or frequent use.
[2] Percent of network teachers reporting frequent use: Very High (100-76%); High (75-51%); Moderate (50-26%); and, Low (25%-0%).
Source: Cohort 1 School Networks, Year 1 Teacher Survey

Visits to four of the schools participating in the science network at the end of year 1 provided further insight into the teacher survey responses and other findings regarding teacher use of network concepts and practices. All 17 of the science teachers interviewed reported a familiarity with the five stages of inquiry, characterized as the 5Es, and felt they had been using them in some form prior to joining the network. They credited network professional development with clarifying and deepening their understanding of the 5Es and, importantly, providing teachers a name to call each stage. A teacher in a boys school

explained, “All science teachers have been using the 5Es without knowing the name of it. But now we are knowledgeable about them and we are using it in our science teaching.” Teachers in girls schools also felt the professional development specifically improved their design and delivery of inquiry lessons in two important ways. First, teachers reported more attention to crafting and using questions to guide student thinking in each stage of inquiry. Explained one science teacher:

> *The way you ask questions during the lesson—that is evaluation and engagement. How to ask questions and how to bring questions into the lesson. I like that. And how to ask students about previous knowledge and to build on it. Asking questions does not take time in the lesson and it really gives me an idea about what students know.*

In their planning the science teachers reported giving attention to the phrasing and timing of questions to stimulate student thinking. They also reported giving greater attention to the role of evidence in their inquiry lessons. They were helping students use evidence to guide their scientific reasoning. A science teacher explained:

> *We did not really use evidence [of making] before and now we focus on the evidence more and how to defend and justify and convince students with their answers. The fact that the 5Es are stages helps. Now teachers understand how to differentiate when we adapt inquiry lessons.*

The teachers felt focusing on evidence promoted student ownership of their learning because students were engaged in answering scientific questions during class. A science teacher said, “Students are coming to an answer on their own. It is beneficial for students.” Attention to questioning strategies and a focus on evidence seemed to be providing the teachers with new information about student thinking which they valued.

During interviews, science teachers reviewed an expanded list of teaching strategies, many more than those presented on the survey. As described previously, these strategies aim to help teachers facilitate classroom management, assessment and student engagement (thinking and sharing). By the end of the school year, teacher use of the strategies appeared to be more frequent than had been reported on the survey conducted five months prior. Teachers in both boys and girls schools associated the strategies they were using with a particular educational goal, suggesting they were making strategic use of them. Some comments from teachers about the value of different network practices:

> Think-Pair-Share. “Students interact [with this strategy]…and have initiative. Sometimes a student is shy to ask me. So within his group, he can ask his friends.”
>
> Hands-up. “This is good for classroom management, to grab their attention, check understanding, or identify those who need attention.”
>
> Numbered Heads. “It encourages student participation and it is helpful with students who are shy or afraid because they have a number, not a name.”
>
> Round Robin. “Students discuss and apply. It helps me incorporate weak students.”

I-Used-To-Think-But-Now-I-Know. "We use when students are grading a previous exam."

Teachers report these teaching strategies are valuable because they help them manage the classroom while also enhancing student engagement in science.

Overall, the science teachers in the study schools were happy with how students were responding to the network concepts and practices they were using. A shift towards student-centered instruction was clearly underway in all four schools. Two teachers described how using the network strategies were helping them shift their teaching from lecturing to facilitating student participation in their own learning:

> *Students started to become more engaged. It used to be that students who raised their hands answer and hold the interest of teachers. Now with these strategies, even weak students participate. It is excellent. We used to just be lecturing.*
>
> ~Science Teacher, Boys School

> *Once I went to the classroom without a lesson and students were disappointed and said, 'What is this!' They feel their classes are more interesting now and better than lecture. And students are more confident in themselves. The weak students are confident; they share their ideas now.*
>
> ~Science Teacher, Girls School

In one school, teachers credited their students with the initial spread of science network practices to other subject areas. The students reportedly liked the teaching strategies so much they were asking other teachers in the school to use them, specifically the Think-Pair-Share and Traffic Light strategies. As a result, science teachers were approached by other teachers interested in learning about these practices. There was much excitement around this development among the science teachers and the principal.

Given the large class sizes, science network teachers were particularly sensitive to maintaining control of classroom behavior. For all teachers, the potential "noise" and "disruption" of the network teaching strategies has been a constant concern. However, teachers have been learning to become comfortable with more student conversation and movement in the classroom. For example, one teacher characterized student group work as "a good disruption" and another teacher expressed support for two strategies even though they "create disturbances and noise" and sometimes student conversation was off topic. Even with this uncertainty, the teachers were willing to experiment. The opportunity to experience these practices first hand during network professional development likely eased the transition.

Not all strategies have been tried or were considered doable for all of the science teachers interviewed. Interviews surfaced four persistent challenges that are shaping teacher use or adaptation of a network strategy. Class size is a constant concern for teachers and sometimes inhibits teacher use of group work strategies. Science teachers often move their class to the school lab where tables facilitate conversation. Conversation among students is a basis for many strategies and the threat of noise or disturbance inhibits their use by some. A few strategies are resource intensive—that is, they require posters, markers, pens, or paper to implement—which teachers or students have to purchase on their own. Some teachers using these strategies are purchasing materials out of pocket. Finally, teachers feel the time available for instruction is not sufficient to

support the use of some strategies given the pressure to cover the curriculum and the short class periods.

Mathematics Teachers' Use of Network Concepts and Practices. Thirteen mathematics practices were listed on the teacher survey. The list includes three types of questioning strategies to probe, monitor, or assess student thinking. Teachers also were asked about their use of student work to tailor instruction and their use of six other teaching strategies for stimulating and surfacing student thinking. These include: using mathematical models; starting with a textbook problem about a new concept to engage students; and various teaching strategies, such as Chalk Board, Group Work, Think-Pair-Share, and Quick Check. A final set of practices focus on planning including: soliciting students' prior understanding of mathematics concepts, using a pre-assessment, and using Conceptual Development Frameworks for key mathematical concepts like proportional reasoning. As with science, most of these practices are general tools for teaching mathematical understanding and reasoning to help teachers improve the effectiveness of their instruction; however, during professional development, these tools and strategies are presented in support of the particular mathematics topics that are a focus of each workshop. Table 13 presents the percentage of network teachers reporting some use of thirteen mathematics strategies: rare, occasional, or frequent use. It also presents the level of frequent use of each strategy by teachers in the mathematics network from very high to low.

Reports from 90 participating Mathematics teachers suggest a very high level of early engagement of all network practices listed. Almost all mathematics teachers, a range of 95 to 100% across all items, reported making some effort to use all of the 13 mathematical practices promoted through the network. However, the proportion of teachers in the mathematics network reporting "frequent use" of individual practices varied, from 40 to 90% of teachers.

Practices with a very high percentage of network teachers reporting frequent use, 80 to 90% of teachers, including the Chalk Board teaching strategy, and two questioning strategies focused on understanding and monitoring student thinking. The Chalk Board strategy was very popular among teachers when introduced and demonstrated during the first network workshop. Teachers were innovative in creating objects they and their students could use to communicate their thinking, including posters, hand-made chalkboards from discarded objects, and other low cost materials. Also, the questioning strategies introduced are not as resource intensive as other strategies, which may explain their widespread adoption. In using these three strategies, a high proportion of network teachers were beginning to establish instructional routines for gathering information during each lesson about student understanding to inform their immediate teaching.

Nine network practices are being used frequently according to survey data. Specifically, 51 to 70% of mathematics teachers reported using the Group Work strategy, examining student work, using mathematical models to develop student thinking, using questions of varying difficulty to stimulate and assess student thinking, and other assessment strategies. A high proportion of the mathematics teachers also reported frequently eliciting students' prior understanding, using a pre-assessment of student understanding to inform their planning, and engaging students in a new concept by using a problem drawn from their textbook. Strategies being used frequently by moderate proportions of the network teachers, 40 to 48%, include the Quick Check and use of conceptual development frameworks to inform their lesson planning.

As a group, mathematics teachers report high confidence in their own knowledge of math, with 79% of teachers reporting that their knowledge of mathematics was not a limitation.

Table 13.
Cohort 1 Teacher Use of Mathematics Network Practices by Percent Attempted and Level of Frequency

"How often have you used the following Mathematics Network strategies in your teaching?"	Percent of Teachers Reporting Some Use [1] n=90	Percent of Teachers Reporting Frequent Use [2]	
		Level	Percent
"Used the Chalk Board strategy"	98%	Very High	90%
"Used questioning strategies to monitor students' understanding and learning during a lesson"	99%	Very High	81%
"Used questioning strategies to understand how students are thinking about different mathematical concepts"	100%	Very High	80%
"Used questions with varying structure /difficulties"	99%	High	70%
"Examined student work to address students' learning difficulties"	100%	High	68%
"Examined student work to enhance my teaching"	100%	High	66%
"Used mathematical models to develop students mathematical understanding and reasoning skills"	100%	High	64%
"Elicited students' prior understanding of mathematical concepts"	98%	High	63%
"Used the Group Work strategy"'	98%	High	61%
"Used a problem or activity in my textbook first to engage students in the mathematics they will soon learn"	99%	High	59%
"Used a pre-assessment of my students to help me in planning lessons that meet my students learning needs"	98%	High	53%
"Used the Think-Pair-Share strategy"	100%	High	51%
"Used a Quick Check (e.g., exit card)"	98%	Moderate	48%
"Used the Conceptual Development framework presented at the workshop to help me plan my lessons"	98%	Moderate	40%

[1] All network teachers reporting some use of the strategy: rare, occasional or frequent use.
[2] Percent of network teachers reporting frequent use: Very High (100-76%); High (75-51%); Moderate (50-26%); and, Low (25%-0%).
Source: Cohort 1 School Networks, Year 1 Teacher Survey

Also a high percentage of teachers are highly confident or reasonably confident in their ability to use new practices, ranging from 73 to 92% across all thirteen strategies. Moreover, 75% of teachers agree or somewhat agree that the topics and strategies they learn during workshops align with the topics they must teach at their specific grade levels. The restructuring of the mathematics workshops to support separate sessions for generalist teachers (grades 1-3) or mathematics teachers (grades 4-7) is likely facilitating this sense of alignment.

Visits were made to four schools participating in the mathematics network around the same time as the survey was administered during year 1 to provide further insight into teacher survey responses. Of the 22 teachers interviewed, 64% were generalists serving grades 1-3, and 36% were mathematics teachers serving grades 3-8. In contrast to the general practices included on the survey, during the site visits teachers were shown a larger list of all concepts and practices that were categorized as general teaching strategies and tools, e.g., frameworks, as well as specific mathematical concepts (like proportionality or fractions), taught during the workshops.

In reviewing the list, generalist and mathematics teachers were quick to identify those practices and strategies appropriate for their grade level. A common view held by all teachers was that most of the concepts and practices promoted through the network were familiar to them and that they already had been implementing them in some form in their respective classrooms. All credited participation in the network with providing them new terms to name these practices. Explained one teacher, “We used it from before, but we just did not know the name of it. So we always used it, but without knowing the terminology used.” The strategies teachers reported using frequently paralleled the teacher survey responses. Teachers value questioning strategies, pre-assessments, and formative assessments, and they reported some use of network practices in these categories. One teacher explained:

> *We benefit many things from the workshop, mainly strategies of how to teach students and how to provide follow-up. We used the Quick Check strategy, for example, if we give students some questions we would request that they would check their responses quickly to confirm the solution. Also we have used the pretest for a very long time [at the school]. We cannot proceed to a new topic without knowing the level of the students.*

A few teachers described how the conceptual development frameworks and transitional strategies introduced during network workshops have expanded their current teaching of mathematics. These views were shared by many generalist teachers and a few mathematics teachers.

> *I have been doing a pre-assessment before every unit to learn the weakness of students. At the start of the lesson, I now use the OGAP framework that shows gradual transfer from one level to another. I use the framework to know at what point or stage students are now. And I can group students depending on that. I deal with them depending on their level. Some have a quick understanding, some slower.*
>
> ~Generalist Teacher

> *We use these teaching strategies in our period. The workshops gave us more light. We feel we set them as important now and we really understand its objective more. We did it before, but we didn’t have these names and now we know why we do it.*

~Mathematics Teacher

Another first grade teacher reported that the frameworks brought an increased understanding of how mathematics instruction in the lower grades provides a foundation for student learning in upper grades. She explains: “I liked learning about fractions. We were not aware of the mistakes that students make at lower grades until we saw how it affects their learning in higher grades.”

Almost all teachers reported some misalignment between mathematics topics covered during network workshops and those required by the ERfKE curriculum at their respective grade levels. However, all also could identify at least one mathematics topic or concept from the network they had used with their students. However, mathematics teachers working in the upper grades and in boys schools report strong misalignment between network topics and their teaching responsibilities and that the value of the network professional development is limited for them. This led at least one mathematics teacher interviewed to seek and receive principal approval to withdraw from the network.

Some teachers were able to adapt strategies to their grade level, although there was some frustration in having to do this. A mathematics teacher explains, “We took it and applied the ‘modeling strategy’ to eighth grade, but the concepts covered were fractions, which are not covered in eighth grade.” However, both generalist and mathematics teachers report not using some of the mathematics content and related tools learned at network workshops because they did not align with their grade level curriculum, which they saw as defining their teaching responsibilities. Two teacher responses illustrate this view held by many teachers:

> *Any strategy related to fractions, comparisons of numbers, the order of numbers were the least interest to us. We are not saying that we did not benefit from the workshop, the issue is that these topics are not covered by our level, therefore we don’t use it. The possibility of teaching it in the future is minimal.*
>
> ~Mathematics Teacher

> *Multiplication, we don’t use it because we don’t have it in the curriculum. I do not use transitional strategies because we don’t teach multiplication at this level.*
>
> ~Generalist Teacher

This logic was consistent across all interviews and guided teacher decisions regarding which network topics fit and which did not. Some of the responses reflect lack of understanding on the part of the teachers in how a strategy fits into the curriculum.

Mathematics teachers in the boys schools identified two persistent barriers to their ability to use network practices, which speak to the students’ prior knowledge and their motivation to learn mathematics. First, teachers in the upper grades believe their students lack the fundamental mathematical knowledge needed to learn the concepts and procedures taught at their respective grade levels. Teachers also reported considerable pressure to cover grade level curriculum during class which does not allow flexibility for class time to be spent on reviewing foundational concepts to prepare students for the more advanced mathematics. Teachers need help, and perhaps authorization, to design and integrate quick reviews of core concepts and procedures at the start of the unit or throughout so students are able to engage in the more advanced, grade level mathematics required.

Second, teachers believe that their students dislike mathematics because they do not understand its practical value to their immediate lives and future. Teachers believe a high proportion of their students are disengaged during mathematics class, a problem compounded further by high absenteeism and tardiness. One mathematics teacher in a boys school explained some of the factors contributing to student disengagement:

> *Students consider mathematics an illusion or a fantasy. Many times we are asked, 'What will I benefit from this math you are teaching?' If you give them some tangible ideas they would enjoy and understand it, but when you get back to the theory they're totally lost. Every time I give them an equation with two variables, they have the same question again, 'What will I benefit?' If they work with computers, they feel that this is something they can apply. But with math is like talking about strange things from outer space. Arabic language or religion, all these materials have some kind of an application, but not math.*

These mathematics teachers are struggling to present students with practical applications. The fact that students do not have calculators or paper and so cannot do calculations, particularly in algebra or geometry, contributes to their low engagement. Teachers reported that when they use the Quick Check strategy from the network, only a handful of students are working in their classes at any time and that many students do not want to be in their classroom. These responses suggest that teachers need strategies for making mathematics relevant to students' daily lives and to their future.

English Teachers Use of Network Concepts and Practices. The English writing network has introduced participating teachers to a structured writing workshop model. Eighteen writing workshop practices were included on the teacher survey. Some practices focus on the student role in the writing process, with students writing in dedicated notebooks, choosing their own writing topics, working in pairs, and reflecting and evaluating their own writing. Other practices focus on specific instructional strategies such as teachers demonstrating a teaching point using their own writing, using a Read Aloud to model writing or build vocabulary, providing personal feedback on writing to students, or using general strategies such as Role Play, Word Walls for vocabulary development, Turn and Talk, small group discussions, and Stop and Jot. Other practices focus on teacher planning, such as examining student work or eliciting students own experiences as writers, and using a prepared mini-lesson or developing their own. Table 14 presents the percentage of network teachers reporting some use of the eighteen writing workshop practices, as either rare, occasional or frequent use. It also presents the level of frequent use by English teachers from very high to low.

English teachers reported high early engagement with almost all eighteen network practices. The majority of teachers, 61 to 91%, reported making an effort to use all eighteen practices. The proportion of teachers reporting frequent use of particular practices, however, varies. A high proportion of English teachers, 50 to 74%, reported frequent use of strategies associated with students' role, such a working in pairs, using a notebook and making personal choices about topics, or using Read Aloud and examples of their own writing as demonstration. These practices are associated with the structure of the workshop model. A moderate proportion of English teachers, 28 to 44%, reported frequent use of some general strategies, such as Role Play and Stop and Jot, using or developing mini-lessons, providing feedback, or providing students time to evaluate their own writing.

In contrast, much lower percentages of English teachers, 7 to 25%, reported frequent celebrations of student writing accomplishments and eliciting student prior writing experiences. One potential explanation is that students have had little or no past writing experience to draw upon and that few students had reached the celebration stage by the time of the survey.

Table 14.
Cohort 1 Teacher Use of English Writing Network Practices by Percent Attempted and Level of Frequency

"How often have you used the following English Writing Network strategies in your teaching?"	Percent of Teachers Reporting Some Use [1] n=68	Percent of Teachers Reporting Frequent Use [2]	
		Level	Percent
"Examined student work to enhance my teaching"	91%	High	54%
"Asked students to work in pairs"	91%	High	66%
"Asked my students to write in a dedicated writers notebook"	90%	High	74%
"Allowed students to identify their own writing topics"	90%	High	56%
"Used examples from my own writing to demonstrate a teaching point"	90%	High	50%
"Used a Read Aloud to provide a model for writing"	90%	High	54%
"Gave my students personal feedback on their writing"	89%	Moderate	40%
"Used Role Play"	87%	Moderate	40%
"Provided my students opportunities to evaluate and reflect on their learning in English writing"	87%	Moderate	29%
"Used Word Walls to teach vocabulary"	85%	Moderate	41%
"Used the Turn and Talk strategy"'	84%	Moderate	32%
"Use small group discussions to examine writing"	84%	Moderate	35%
"Used the Stop and Jot strategy"'	83%	Moderate	32%
"Used a Read Aloud to build students' language or vocabulary in English"	82%	High	68%
"Taught writing workshop using a Mini-lesson I received during a QRTA workshop"	81%	Moderate	44%
"Elicited students prior experience as writers to inform my teaching"'	81%	Low	25%
"Taught writing workshop using a Mini-lesson I developed myself"	78%	Moderate	28%
"Held celebrations to honor student achievements in writing"	61%	Low	7%

[1] All network teachers reporting some use of the strategy: rare, occasional or frequent use.
[2] Percent of network teachers reporting frequent use: Very High (100-76%); High (75-51%); Moderate (50-26%); and, Low (25%-0%).
Source: Cohort 1 School Networks, Year 1 Teacher Survey

Visits to four schools participating in the English writing network at the end of year 1 provided further insight into the teacher survey responses, and other findings regarding teacher use of network concepts and practices. Overall, the 15 English teachers interviewed were implementing writing workshop in some form once a week. They reported feeling more freedom to do so after receiving Ministry approval. Teachers saw value in the two forms of writing introduced during year 1: narrative and informational writing. Here two English teachers in upper grades talk about the relative benefits of each genre for their students:

> *Narrative writing is more related to students life. They can now speak or write about their own life and experiences and speaking with friends and parents and dialogue in general. This is actually a good way to express himself rather than informational writing for me.*
>
> ~English Teacher, Grade 10

> *In my point of view, informational writing for the students are better. First of all, when the student writes an essay, he first begins by asking, 'Why?' This means he is thinking. Secondly, while the student is thinking about any topic he wants to talk about, I feel a self-confidence inside him sometimes. A BIG confidence. I studied essay writing in college and I think essays are more appropriate [than narrative]. Essay writing has a thinking process and this creates confidence. The student depends on himself. In the future, at college, they don't ask for stories. They ask for essays.*
>
> ~English Teacher, Grade 7

Most teachers interviewed had not had a chance to implement the information writing by the time of our school visits. However, they did offer positive comments on changes in the professional development and materials that introduced this writing genre in March 2010. For example, one teacher expressed support for changes made by network leadership.

> *The narrative and informational writing materials are different. The second workshop on informational writing is better, but I have not tried it really…The second workshop, it has more practical ideas and is better. I have tried informational writing on my own, as a teacher. But maybe next year I will try it with my students.*

All English teachers reported using all or most of the key components of the workshop model, even those that require different interactions with students and the use of instructional practices that differ greatly from lecturing. These practices have been implemented by English teachers, typically with some adaptations shaped by teacher efforts to increase student participation or build student confidence. For example, English teachers reported allowing student choice of writing topic, an important workshop element that aims to enhance student ownership of the writing process. However, teachers circumscribed student choice in different ways, typically aligning writing topics with ERfKE chapter content, such as travel destinations, or with current issues. Two teachers described how they connect the two:

> *Every ERfKE English unit has writing. So every unit has it and I use the Workshop with it. Students told us, 'This year we did the most writing.' If it relates to the ERfKE unit, I do it.*
>
> *I use the writing workshop, but it is very related to the lesson in the ERfKE unit itself. It*

is not like a free and creative writing. Students are using the vocabulary in the ERfKE lesson.

For teachers these close connections provide students vocabulary and ideas to draw upon and facilitate student-student conversations. In some cases, teachers also were introducing a specific essay topic of their choice, e.g., “My father is a great man,” which was modeled by the teacher.

English teachers reported implementing other workshop components with adaptations. The mini-lesson structure was clearly present in observed classrooms. Teachers have been drawing upon the model mini-lessons provided by the workshop leaders and were adapting them to meet specific learning goals. Teachers have been using the mini-lessons to scaffold student writing development, with an early focus on individual sentence construction and vocabulary that later enable students to develop full paragraphs.

[When you first started teaching narrative, what did students do?] Our problems were a lot at first. I asked students to put words in a sentence. They found it a big problem. Students said, ‘We don’t know the meaning of the words.’ Then we worked step-by-step. First on a single sentence and then linking. It became easier. It became easier for them to write a whole topic.

One result of this scaffolding, and perhaps alignment with ERfKE textbook chapters, was that student writing products looked very similar within each classroom, more so in boys schools. Also, many teachers were encouraging students to work in pairs or small groups. This configuration seemed influenced by possible desk configurations in a given classroom. Students in girls schools were engaged in pair work that appeared a highly productive routine for facilitating peer feedback on student writing.

Within the workshop model teachers are expected to shift from evaluating student writing to coaching students as writers. Most English teachers interviewed for the study have clearly embraced this change in role. Teachers like the network emphasis on calling students “writers” during writing workshop. They believe it is supporting a cultural shift in their relationships with students as they are implementing the workshop model. One teacher explains this view.

I like this methodology of dealing with the students. We called him not just students but writers. It will give them self-confidence and when you respect students in this way, they will feel they can write. Just give them support. And also students—even the weak students—when we call them writers he says, ‘I am weak, but he calls me a writer.’ He has a motivation then just to try and study.

To this end, teachers also talked of first learning to be writers themselves, developing their own narrative essays to hone their skills and then using their personal writing to model the process to their students.

English teachers have been surprised by the new connections they are forging with their students as they share their own thoughts and experiences through writing. Teachers report that their modeling of the writing process during the mini-lesson is helping them forge new relationships with their students and is reducing student anxiety in during classes. One teacher explains.

The most important is modeling because it kept us talking with the students. It is more exciting in personal narrative and we use our own stories. And they ask me about my situation. So I'm more socialized with my students.

English teachers also report that the use of compliments in the writing workshop structure is further supporting their shift into a coaching role with their students. Within the workshop model, teachers are making strategic use of positive comments to reinforce student ideas and specific practices as their writing is evolving through the drafting process. Teachers reported initial difficulty in making the shift to complimenting student work as it requires controlling a strong impulse to immediately correct grammar or to adjust students' initial ideas. This change also is evident in teacher decisions to grade students on participation and effort, not accuracy, at the start of the writing workshop. The most visible symbol of teacher efforts to adopt a coaching role has been the deliberate decisions to put away their red pens during the drafting stage, which teachers have been using to grade and correct student work in English. A teacher explains the newness of this practice.

We use to have to correct in red pen. [A network leader] advised us not to write in red pen because it hurts student feelings. They are afraid and maybe the student will not show the notebook as a model. That was a new idea—not using a red pen.

English teachers reported making a concerted effort to sustain this coaching role. Many also report that the use of compliments in particular has been contributing to improvements in student effort and enthusiasm for writing in English.

Teachers were also aware that they were using the Read Aloud and celebration components of the workshop model in ways that differ from the guidance provided by network leaders. These components appear to hold strong cultural significance for Jordanian teachers. One English teacher describes the cultural appeal of encouraging students to read their writing to the entire class on a frequent basis.

I will speak about writing in general. If we look at the Arab mind, we are an oral culture not a written culture. We have no experience of documents. We do not like to write. SO the students have difficulties in writing - not just in English. But they like to speak rather than to write, in my opinion.

The adaptations teachers were making to the Read Aloud and celebration components of the workshop model reflect teacher efforts to draw upon this oratory tradition to improve student engagement.

All observed classrooms included a celebration component in which students volunteered to read draft writing and, in a few situations, both teachers and students offered positive comments, or made suggestions such as, "I want to know your opinion about what *should be done* about the disaster in the Gulf." To support this component, teachers spoke of providing students additional guidance about how to listen respectfully to each other and how to provide positive feedback during the oral component of the lesson. Reported benefits include improved student-teacher relations and increased student engagement and confidence in their writing. A teacher explained this widely held belief and practice.

The Read Aloud. I think it gives the students confidence to speak and to show off their writing when they read. It gives students, in general, the will of writing. They thought

next day, 'I will read this in front of my colleagues. I have to work hard on my writing.'

Across all schools, finding resources to support student writing has been an ongoing issue. Teachers lack poster paper to support their mini-lessons. In only two classrooms did students have notebooks for drafting and editing their work. Paper seemed scarce in a number of schools, particularly boys schools, where most students were writing on paper scraps or single sheets. It was not clear if students were saving their writing over time, which can support student revision and ongoing reflection.

Stimulating Professional Learning Communities

Deepening and sustaining changes in instruction over time is more likely if teachers develop collegial relationships focused on improving their classroom practice and the school schedule provides teachers time to meet. To this end, the Partnership encourages teachers in the same school to work together to develop a professional learning community focused on improving their instructional practice throughout the school year. In the formation of each school network, the Partnership seeks to recruit groups of teachers who share responsibilities in the same subject area. Through shared professional development activities, these teachers can develop strong collegial relations focused on improving their classroom practice. Groups of teachers are encouraged to meet in their schools to discuss instruction, review draft lesson plans, assess student work, and reflect on the use of network concepts and practices in their particular settings. During periodic visits to schools, QRTA staff model the idea of a professional learning community by bringing together teachers to discuss their use of network practices, troubleshoot problems, and celebrate progress.

It is a hope that teachers will be able to establish a learning community focused on improving instructional practice, first with teachers participating in the Partnership professional development, but also with other teachers in their subject area, and eventually in the larger school community. It is also a hope that these teacher teams will be able to establish routines for meeting together, observing each other and providing feedback, reflecting on the effectiveness of their practice as individuals and as a group, and sharing materials and new knowledge that further strengthens and sustains their collective efforts.

Network Meetings Strengthen Teacher Team Relations. The Partnership aims to build nested professional communities at the network and individual school levels. The QRTA and TC/CU instructional leaders promote collaboration and co-learning during professional development by encouraging teachers to work in pairs or groups. The agendas of network workshops and meetings consistently include time for teachers to work together, to ask questions, and to share strategies for overcoming challenges in implementing practices. The goal is to help teachers experience how together as a group of teachers, a network, they can serve as sources of support for one another as they try new practices in their respective classrooms.

Survey responses and site visits to network schools suggest that teachers are finding opportunities to engage in such conversation with their peers. Reports of teacher interactions and conversations indicate they are focused on understanding key concepts

and identifying strategies to fit new practices into their classroom contexts. Almost all teachers from the English and mathematics networks, 93% and 91% respectively, indicated that they agree or somewhat agree that they are benefiting from sharing ideas with teachers from others schools in their network.[1] In the school visits, teachers reported valuing opportunities to meet and learn from teachers outside their school who are using network practices. Some reported that these exchanges are broadening their sense of what was possible in the classroom and are generating excitement among teachers. The following teacher comments reflect this shared sentiment.

> *[Network meetings] have given us the chance to meet new teachers and have a good exchange with teachers especially when we sit with teachers who teach the same grade. We share with other teachers when we come back to our school here. I share what I learned from teachers from other grades so teachers here can benefit.*
>
> ~Mathematics Teacher

> *It was useful [to meet other teachers]. When we hear some teachers speaking about their experiences, when they made some mini-lesson and charts and tell their challenges in the classroom, we feel this happens to us. It was real. And when they talk you feel success stories. Sometimes I felt jealous of other teachers—those doing this and that [from the writing workshop]. I came back eager and willing to see them and we pick up some new ideas. One teacher had special room for English language. And she shared teaching strategies and I hope I can make a method like that. We pick up ideas. We have never had this before. In the Directorate we speak only Arabic, not English.*
>
> ~English Teacher

> *[What about the opportunity to meet with other teachers?] Yes, outside school exchanges. We ask other teachers what they applied. How would they deal with their class? So we try to apply some things. Sometimes we get a new idea. We listen to it or they did a poster and PowerPoint.*
>
> ~Science Teacher

Teachers also value the opportunity to meet for an extended time with fellow subject-area teachers from their schools. Workshops and network meetings offer them substantial time to work together to reflect on and plan for changes in their instruction as a group of teachers.

> *We teachers from here [this school] sit together at the network meetings. It is an opportunity to work together that day. It is professional exchange. Maybe we have different ideas and so we exchange. And maybe we have different grades so maybe the approaches to teaching are different so we exchange. [Is this exchange different from what you had before?] Yes, it does help them. Yes, we are all talking about what is new in writing.*
>
> ~ English Teacher

Through their participation in network meetings, teacher teams are beginning to experience membership in professional learning communities. Their exchanges while attending network events, as a school team and through interactions with teachers from other schools, are helping them to build relationships around instruction and to establish a

[1] This prompt was not included on the cohort 1 science teacher survey.

set of routines and norms that they might carry back to their respective schools. For almost all of the teachers this has been a new experience and, in many ways, a reason for participating in the network that has outweighed the burdens of travel time and cost to attend the network events.

Time to Meet in School as a Learning Community. Professional learning communities take root and grow through teacher interactions in their schools. To this end, teachers need dedicated time to meet as a subject team. Regular and protected time for teacher conversations contributes to strengthening these relationships and routines and encourages teachers to reflect on their instruction and work as a group to improve classroom practice.

Table 15 displays network teacher reports of the frequency of their meetings with other teachers in their subject area six months after the start of their network. Reports are also disaggregated by gender. Across all networks, teachers have highly varied opportunities to meet with other teachers on a regular basis to discuss instruction. A moderate proportion of science teachers, 45%, reported meeting frequently to talk about instruction, compared to lesser opportunities for English teachers, 37% of teachers, and even fewer opportunities for mathematics teachers, 23%. Although less than a quarter of mathematics teachers meet frequently, this is occurring more in boys schools than girls schools, 39% versus 16%. The lower rate is because most female participants in mathematics are grade 1-3 teachers who are preoccupied with class duties almost all day and thus do not have time to meet. About a third of teachers in each network reported meeting occasionally, perhaps on a monthly basis. And a sizeable number of network teachers, about 30% of science and English teachers and 44% of mathematics teachers, reported rarely or never meeting with other teachers in the same subject. This situation has been more common for male teachers.

Table 15.
Percentage of Cohort 1 Teacher Reported Meetings with Other Content Teachers by Gender and Network Affiliation

"How often are you able to meet with other [content] teachers at your school to talk about instruction?"	Science Network n=73		English Writing Network n=68		Mathematics Network n=90	
	All	**Female/Male**	**All**	**Female/Male**	**All**	**Female/Male**
Frequently: Weekly/Daily	**45%**	55% / 33%	**37%**	33% / 35%	**23%**	16% / 39%
Occasionally: Monthly	**30%**	33% / 27%	**31%**	41% / 25%	**31%**	39% / 16%
Rarely: 1-2 Times a Year	**19%**	13% / 27%	**19%**	13% / 35%	**32%**	38% / 26%
None	**9%**	0% / 12%	**9%**	10% / 0%	**12%**	5% / 19%
(blank/missing)	**(4%)**	(0% / 0%)	**(4%)**	(1% / 0%)	**(1%)**	(2% / 0%)

Source: Cohort 1 School Networks, Year 1 Teacher Survey

These differences are somewhat surprising because across networks a majority of teachers, 56 to 58%, agree or somewhat agree that their principal provides time for teachers to meet and share ideas. Variation between girls and boys schools in the English and science network was small. However, in the mathematics network female teachers

report more support compared to male teachers, 61% versus 48%. In the mathematics network, principal support may prove to be a critical factor.

During school visits, teachers report facing considerable obstacles, which are preventing ongoing, substantive exchanges with peers. Teachers have little free time and typically use this time for three activities: to “relax” from the rigors of teaching; to plan for the next lesson; or to record student grades into the MOE record keeping system. Furthermore, teachers reported being responsible for roughly 240 to 320 students, which puts considerable pressure on grading and record keeping. Another obstacle is that there is no scheduled time for all content teachers to meet during the school day, and meeting after school is considered difficult. This information sheds light on how teachers define “frequent” or “occasional” meetings with other teachers. Most teachers report meeting at lunch or in the hall between classes for brief exchanges with colleagues that last only 5 to 10 minutes. Supporting a new teacher was a frequent reason cited by teachers to request to schedule a formal meeting with all content-area teachers. One study school was an exception to this pattern, which suggests that regular teacher meetings might be possible. Specifically, in a girls school, the principal was proactively using a new MOE mandate to hold 45 minute afterschool meetings on Thursdays to bring together the subject teacher teams and other committees focused on school initiatives. Finally, the annual course calendar is constructed each August, yet we heard no requests to build in dedicated time for teacher meetings by subject area. Most teachers thought this was simply impossible; however, it remains an untested possibility.

The lack of space to meet was cited as another serious obstacle. Teachers have access to a dedicated teacher room or two, but these are crowded; in some places where teachers have desks in a larger room, these are not organized to facilitate sharing among teachers in the same content area. There is also no dedicated space for teacher groups to store their work nor do they have access to a photocopier to help them distribute lessons or student work for feedback. When this happened, which was rare, teachers were using private services at their own expense.

Teacher Views of the Beliefs and Dispositions of Content Area Teachers. To function as a professional learning community, a group of teachers must cultivate a set of shared beliefs about the possibility of improving learning through changes in teaching and the need for improvement in their subject area and in their own teaching. They must develop a sense of self-efficacy, believing that through their own actions they can make a positive difference in the learning of their own students.

Table 16 presents teacher reports about the beliefs and dispositions of their peers in the same content area in their schools. Overall, network teachers express a strong set of beliefs in themselves and in the need for change in the content area they teach. Across networks, a high majority of teachers, 69 to 82%, agree or somewhat agree that they can increase the proportion of students meeting the Ministry objectives. Within the mathematics and English writing network, this belief is held by a higher proportion of female teachers compared to male teachers, a 15% gap. Also, a majority of network teachers report a disposition towards improving practice; across all networks, 74 to 86% of teachers agree or somewhat agree that the teaching in their specific subject area needs radical improvement. Participation in the network likely has contributed to that sense as teachers have been exposed to set of new ideas and practices for comparison.

Within two networks, however, there was considerable variation in the views of male and female teachers. In the science and English writing networks, a higher proportion of male teachers compared to their female peers, 26% more in science and 13% more in English, believe a dramatic changes in teaching is needed. Teachers also report their inclination to learn and seek out new ideas for improving instruction. Again, across all networks, 75 to 88% of teachers feel their peers were actively improving their instruction. In the English writing and mathematics network, male and female views were similar. In the science network, a higher proportion of female to male teachers, 90% versus 73%, felt their peers were continually trying new ideas in the classroom.

Table 16.
Cohort 1 Teacher Reports of the Beliefs and Dispositions of Fellow Content Area Teachers in their Schools

"Content Teachers at my school…"	Percentage "Agree" or "Somewhat Agree"					
	Science Network n=73		English Writing Network n=68		Mathematics Network n=90	
	ALL	**Female/ Male**	**ALL**	**Female/ Male**	**ALL**	**Female/ Male**
"Believe we can increase, to a large extent, the proportion of students meeting the Ministry learning objectives"	**82%**	85% / 79%	**69%**	72% / 55%	**77%**	84% / 68%
"Believe the [Science/ English/Math] teaching at their school needs radical improvement"	**77%**	65% / 91%	**86%**	82% / 95%	**74%**	77% / 65%
"Are continually learning and seeking new ideas for improving [our content area] instruction"	**83%**	90% / 73%	**88%**	90% / 90%	**75%**	77% / 74%
"Have adequate amounts of instructional material for their classes"	**46%**	53% / 39%	**37%**	38% / 30%	**30%**	34% / 23%

Source: Cohort 1 School Networks, Year 1 Teacher Survey

Even as a high proportion of teachers report a personal disposition towards improvement and a strong sense of self-efficacy, they are also aware of the inadequacy of the resources available for their teaching. A much lower proportion of teachers across all networks agree or somewhat agree with the statement that they have adequate instructional materials for their classes, 30 to 46%. Differences between male and female teachers were present across networks with a higher proportion of female teachers reporting that current resources were more adequate than not. One explanation comes from our school visits. Female teachers were actively supplementing their classroom materials through photocopying, purchasing construction paper, and adapting everyday resources for science. In some male classrooms and most female classrooms visited, routines for sharing materials seemed in place, perhaps supporting a higher sense of adequacy for implementing network practices.

Teacher Reports of Relationships and Instructional Support from Teachers within their Schools. In addition to seeking teacher beliefs and dispositions towards improvement, we also sought teacher views on the use of specific practices associated with functional professional learning communities focused on improving instruction. Table 17 presents teacher reports of the support they receive from their content area colleagues, in general, and for three practices supportive of instructional improvement. Overall, network teachers characterize their relationship with other content area teachers in their school as positive. Across all networks, a high percentage of teachers, 88 to 96%, agree or somewhat agree that their colleagues are supportive and respectful of each other. At this general level, differences between girls and boys schools appear small.

When asked about specific practices that can support instruction, such as sharing lessons and observing teachers and providing feedback, teacher responses vary across networks, and between boys and girls schools. Although agreement is still high regarding the three central practices, 60 to 94% across networks, female teachers consistently report higher levels of agreement than male teachers, particularly among mathematics teachers. The difference between boys and girls schools is broadest in terms of regular observation of teaching by other teachers, a 15 to 44% gap across the three networks, and in terms of receiving useful feedback about teaching from colleagues, a 10 to19% gap across the three networks. The difference between practices in boys and girls schools seems to be the most prominent in the mathematics networks where the gap is broad, from 18 to 44% in terms of useful feedback, lesson sharing, and regular observation by peers.

Table 17.
Cohort 1 Network Teachers Reported Professional Support from Other Teachers in their School by Gender

	Percentage "Agree" or "Somewhat Agree"					
	Science Network n=73		English Writing Network n=68		Mathematics Network n=90	
	ALL	**Female/ Male**	**ALL**	**Female/ Male**	**ALL**	**Female/ Male**
"My colleagues are supportive and respectful of one another."	**96%**	98% / 94%	**93%**	92% / 90%	**88%**	89% / 87%
"My colleagues share some lessons with me."	**94%**	100% / 88%	**87%**	87% / 80%	**79%**	86% / 65%
"I receive useful feedback on my teaching from colleagues."	**75%**	80% / 70%	**72%**	69% / 50%	**58%**	66% / 48%
"Teachers at my school regularly observe each other."	**62%**	83% / 61%	**78%**	85% / 70%	**60%**	77% / 33%

Source: Cohort 1 School Networks, Year 1 Teacher Survey

Site visits to 12 schools in May 2010 suggest some explanations for the high level of teachers reporting some conversations. Teachers and principals appear to be mindful of the need to maintain supportive relationships among teachers. The scarcity of resources

in schools encourages many forms of sharing and an emphasis is placed on evenly distributing course loads across all teachers, a process typically conducted by subject teachers as a group. Teachers also rely on their content colleagues for coverage of their classes when absent; and this is viewed as a collective duty. In terms of sharing lessons, since all teachers are required to submit lesson plans, some sharing is motivated by a desire to minimize this paperwork and, therefore, may serve a more bureaucratic rather than professional purpose. In the schools visited, teachers reported this form of sharing, but also the sharing of new lesson plans focused on network strategies. It is highly likely that some proportion of the shared lessons included those designed during network events and used with students. During school visits, science and English teachers report occasionally sharing some lessons, general ideas, and materials and "checking in" with each other to learn the effectiveness of a given lesson, "how it went," and to share some student work products. In science, teachers spoke of practices they want to try or they worry are difficult and believe conversations with other teachers would be helpful. One teacher explained, "There are some strategies that are still difficult because I need to talk with my colleges. I cannot until I'm done with the *Tawjihi* and so I may try then." Mathematics teachers were sharing resources, such as dice and chalk boards, and other teaching aides, which they view as collective property. Most teachers appear aware of the network practices that other teachers are using and not using in their respective classrooms.

Finally, peer observation is a formal routine supported by the Ministry, which may explain the high proportion of teachers who report this activity on the survey. In general, it is clear that teachers believe they *could* observe one another whenever they wanted to. This was clear during site visits. However, most teachers are not choosing to exercise this option. The process of scheduling peer observations was similar across the study schools: at the request of a teacher, the teacher subject coordinator or assistant principal will schedule a peer observation in the school, which is allowed once a semester. Our data suggest that this mechanism is primarily used to support new teachers so they can learn from veteran teachers in the building.

The Partnership has made a solid beginning during the first year of cohort 1 networks in stimulating professional learning communities at the network and school levels. While many of the collaboration routines the Partnership encourages are taking place in some form in network schools for a third or more of teachers, this is clearly an area that needs strengthening. Finding time for teachers to meet regularly in their schools to reflect on their practice remains a challenge and may prove to be a strong barrier to sustaining new practices once teachers leave the network. The widespread view among teachers that their colleagues are supportive and respectful offers a strong foundation for teacher engagement around instructional improvement as a group. Teachers need additional encouragement to make use of school-based mechanisms for peer observation and feedback, which represent an untapped opportunity at this point. Teacher relations will require continued nurturing as they engage in more focused and critical dialogue about the strengths and weakness of instruction in their respective classrooms and across the school.

V. Progress in Promoting Leadership for Instructional Improvement in Schools

This section presents early evidence of the impact of the Partnership's school network strategy on the leadership practice of principals affiliated with cohort 1 network schools during the first year. To reach the goal of improved student learning, principals become instructional leaders in their schools. They must learn to encourage and support teacher efforts to improve their practice, beginning with those implementing the network practices. To ensure their implementation principals need to support teacher use of high impact strategies promoted by the Partnership and believe that their widespread use by all teachers would improve student learning across their schools. More broadly, principals must practice instructional leadership in their school, first by engaging teachers in conversations about their instruction and encouraging them to learn to use effective instructional practices. The professional development through the Partnership offers this opportunity to network principals. To be effective requires that principals regularly participate in Leadership Institutes over time.

The Partnership has included education supervisors in network Leadership Institutes since 2009. At this writing, however, data are not available to assess the impact of expanding participation to include supervisors.

Principal Participation in Network Leadership Institutes

A first step in developing principals' capacity to become instructional leaders is participation in Leadership Institutes and related school visits. Table 18 presents principal participation in professional development during the first year of cohort 1 networks. Participation rates among principals appear relatively high. Records of attendance reflect a range of 71 to 95% participation across Leadership Institutes in cohort 1 schools. Attendance was highest in the science network. A serious threat to the effectiveness of the Partnership's professional development, however, is turnover or attrition among the participating principals. All networks experienced some turnover of principals, which ranged from 25% to 42% of participants. Turnover was highest in the science and English writing networks, likely due to their earlier start dates which stretched across a summer when principal replacement is most likely. Reasons given for principal turnover include: forthcoming retirement, overburden of recently hired principals or reassignment of principals to schools outside the network. About a third of the study schools selected for research visits had new or temporary principals in place, changes that had taken place during the 2009-10 school year.

Table 18.
Cohort 1 Year 1 Principal Participation in Professional Development and Attrition from the Network

	Science Network	English Writing Network	Mathematics Network
# of Participating Principals	19	21	24
Percentage Principal Turnover	42%	43%	25%
Percentage Principal Participation in Leadership Institutes			
Institute I	89%	71%	88%
Institute II	95%	71%	75%
Institute III	89%	81%	--
Institute IV	63%	57%	--

Source: QRTA Participation Logs and Summary Data May 2011

Site visits to a sample of 12 cohort 1 schools revealed that principals are not the only roles in the school with the potential for instructional leadership. During interviews, principals identified themselves and education supervisors as sharing responsibility for teacher observations, as well as the assistant principals and teacher coordinators in math, science, Arabic and English. Two principals describe this shared responsibility for instructional quality at the school level:

> *[Who is responsible for observing teachers?] The directorate supervisor, teacher subject coordinator, and principal as a resident supervisor. Sometimes the directorate supervisor will not visit all teachers so the principal will do the visits. All roles complement each other. Sometimes the supervisor is under pressure and the principal will observe all classes. Sometimes the teacher coordinator will do this.*
>
> ~Principal, Girls School

> *The subject coordinator is the first to provide feedback for teachers as he is knowledgeable about the lesson. Then the principal provides his comments to the teacher, and at last the teachers' supervisor provides further comments and feedback for teachers to develop their teaching skills.*
>
> ~Principal, Boys School

When describing the feedback they gave to teachers, some principals spoke of delegating responsibilities to their assistant principals due to time constraints or workload. Some principals reported also delegating their observation responsibilities to assistant principals.

In response, the Partnership has involved assistant principals and subject coordinators in the learning walks.

These overlapping roles suggest that the participation of assistant principals and teacher coordinators in Leadership Institutes, or some form of professional development, could potentially improve leadership practice in the school and, ultimately, improve instruction. The level of coordination across these four roles is not clear, nor is the focus of the observations made or the quality of feedback that teachers currently receive. What is clear is that individuals in these four roles communicate with each other about the quality of instruction in the school building and share responsibility for improving instruction.

Broader participation of all roles with observation responsibilities in network leadership training may improve the consistency and effectiveness of feedback received by all teachers.

Principal Views on Professional Development Quality

Principal opinions of the quality of professional development can be an important indicator of their willingness to embrace new ideas and try new strategies when they return to their schools. As described in Section III, all network principals were invited to attend two to three Leadership Institutes during the school year, which lasted from 1-2 days each. The high impact teaching practices and teacher feedback strategies were introduced during these events. Some principals also participated in network school visits to conduct Learning Walks to examine the presence of the high impact strategies.

Through short opinion surveys at the close of each Leadership Institute, principals shared their opinions regarding the organization and content of the professional development. The feedback surveys used across all events and networks varied in their focus and length and, therefore, comparative analysis of principal opinions within and across networks over time is limited during the first year of implementation. However, some insight is available from four feedback surveys associated with the Leadership Institute II and III in the science and English writing networks. Principal attendance to the four network events ranged from 71 to 95% of participants.

Principal Views of the Organization of the Professional Development and Trainers. Table 19 displays principal responses across the four Leadership Institutes in the science and English writing networks, which were the first two networks established by the Partnership. Principal views on the overall organization and delivery of the workshops were almost uniformly positive. All or almost all of the principals who completed the feedback form agreed or somewhat agreed that the professional development they attended had been well-organized and that their time had been used efficiently. All felt they were given adequate opportunities to ask questions and receive answers during the event. Importantly, principals in attendance agreed or somewhat agreed that the leaders of the professional development—who explained the new ideas and practices, and managed the conversation—are knowledgeable themselves about school leadership and, in turn, had shown respect for the knowledge and experiences that principals bring to the discussion. Overall, the principals who attended and completed opinion surveys following the four Leadership Institutes were pleased with the quality of the institute structure and the professional developers.

Table 19.
Cohort 1 Principal Views of the Organization of the Professional Development, August and October, 2009

	Science Network	English Writing Network
Principal Feedback Sources		
Number of Leadership Institutes	2	2
Number of Principal Responses	16-17	10-14
Response Rates based on Attendance	94-100%	59-82%
Quality of the Institute Structure and Leaders	**Percent of Principals who "Agree" or "Somewhat Agree"**	
"The workshop was well-organized."	94-100%	100-93%
"Time was used efficiently in the workshop."	100%	100%
"I had adequate opportunity to ask questions and get them answered."	100%	100%
"The workshop leaders showed respect for my professional knowledge and experience."	100%	100%
"The leaders of this workshop were knowledgeable about school leadership."	100%	100%

Source: QRTA Leadership Institute Feedback Records, August-October, 2009

Principal Views on the Content of the Professional Development. In addition to views on the organization and delivery of the Leadership Institutes, the Partnership also solicited principal self-reports of their understanding of the ideas and concepts presented as well as principal views of their utility for improving teaching and learning in their respective schools. Table 20 presents principal opinions from feedback surveys administered during the four Leadership Institutes serving the science and English writing networks in year 1.

Overall, principals were highly positive about the content of the professional development they attended. The survey asked principals to report their level of understanding of some of the presented concepts and practices. All principals felt they held a good or strong understanding of the high impact teaching strategies introduced and how to identify these strategies during a lesson. All or almost all principals felt they had good or strong understanding of how to support teachers in designing lessons that use the high impact strategies, in general, and those associated with their particular network. Specifically, principals in the science network reported an understanding of how to support teacher use of inquiry in their science lessons and to use questions to monitor student understanding during scientific investigation. All principals in the English writing network who attended the two institutes reported gaining a good or strong understanding of how to support teacher efforts to increase the amount of writing by their students during English class.

The feedback survey following each of the four Leadership institutes also solicited principal opinions about their ability to use what they learned and their perceived utility of some of the ideas and practices in their school settings. Again, principals who shared their opinions were highly positive about the content of the professional development. All principals in the science network, 100%, and almost all principals in the English writing

network, 89 to100% agreed or somewhat agreed that they would be able to apply the leadership strategies they learned and that such strategies would help teachers improve their instruction. All principals also reported a belief that the practices they learned could positively improve instruction. Specifically, all principals agreed or somewhat agreed that student centered teaching, which is a foundation for all high impact strategies, will increase student interest and effort in science and writing in English. All principals also agreed or somewhat agree that the lesson design template promoted by the Partnership was worth discussing with teachers to focus attention on their choice of teaching method.

Table 20.
Cohort 1 Principal Views of the Content and Utility of the Professional Development, August and October, 2009

	Science Network (n=16-17)	English Writing Network (n=10-14)
	Percent of Principals who report "Good" or "Strong Understanding"	
Gained Knowledge of Network Ideas and Practices		
"How I can identify each component of the seven elements of lesson design during my class observation"	100%	100%
"How to identify the use of reform teaching practices in classrooms in my school"	100%	100%
"How to support teachers to improve the design of lessons"	94-100%	90-100%
"How to support using inquiry in science in my school"	88-100%	--
"How to help teacher to use questions to monitor student understanding during a science investigation"	94-100%	--
"How to support teacher efforts to increase the amount of writing students do"	--	100%
	Percent of Principals who "Agree" or "Somewhat Agree"	
Offered Practical Support and Resources		
"I will be able to apply the leadership strategies I have learned"	100%	89-93%
"I learned strategies for supporting my teachers' efforts to improve their practice"	100%	100%
Cultivated a Disposition Towards Instructional Improvement		
"Student-centered teaching will motivate higher student interest and effort in science/writing"	100%	100%
"The teacher conference-lesson design template is worth discussing with teachers concerning their teaching methods"	100%	100%

Source: QRTA Leadership Institute Feedback Records, August-October, 2009

During these four off-campus training sessions, the principals of the science and English writing networks who completed feedback were overwhelming positive about the professional development they attended during the first six months of the network. While these feedback data do not offer insight into the nature or quality of principal thinking about the high impact strategies following each event, they do capture the positive attitude and openness of principals to some of the concepts and practices advanced by the Partnership. These data also capture, in part, principal confidence in their understanding of some of the core concepts and practices at the close of professional development.

Principal Support for Network Teachers' Development

One form of instructional leadership is principal engagement in the development of teachers in their charge. Principals can encourage teacher participation in the Partnership's professional development and support their efforts to implement the new ideas and practices they learn. Data regarding principal attitudes towards the network professional development and use of the network practices is limited for cohort 1 networks. A broad survey of all participating cohort 1 principals was not conducted; however, insights are available from interviews with principals and teachers in the 12 site visits schools. Although this sample is not representative, as it focused on schools with moderate to high participation in network professional development, it does offer some insight into the viewpoints and practices of principals regarding their role in teacher development and improving instruction in their school. It also offers some insight into the kinds of principal support and leadership from their principals that the teachers value.

Interviews with principals and teachers in the 12 study schools suggest that many principals were actively encouraging the development of participating network teachers. The vast majority of interviewed teachers report receiving positive support from their principals. The exceptions are transfer principals who were not well-informed about teacher involvement in the networks or principals with limited attendance to network training. The following descriptions offer insight into the instruction leadership practices that supportive principals were using to encourage teacher development.

Facilitating Teacher Participation. Teachers interviewed in the 12 study schools reported that their principals facilitated their attendance in ways that signaled their support and enthusiasm for professional development. One principal explained, "I saw this as an opportunity for improvement that I have not seen before for my teachers." Some teachers also report that their principals expressed positive support for their participation by sharing messages about upcoming professional development. On teacher explained: "The principal was always getting us messages from the QRTA about meetings. She would come immediately and inform us about it." Other forms of positive leadership practice were reflected in the principals' efforts to encourage teachers to bring a positive frame of mind to the professional development so they would be open to new ideas. A teacher describes this form of encouragement: "He informs us about the training. He asks us to be ready to learn. He motivates and encourages us to bring new ideas to the school."

Principals also had to manage considerable disruption in the school schedule due to teacher participation in professional development; these were in proportion to the size of the teacher team participating. A willingness to manage the schedule disruptions and cope with absenteeism are important symbols of support to teachers as well as to principals. A teacher explained, "When the principal received the training invitations, he

immediately started thinking about how to manage the school without the teachers. He sounds supportive." Principals describe the concerted effort they needed to make to rework the school schedule as "exhausting" and requiring a "juggling" of teachers for coverage. Teachers recognized this additional hardship. These are clear, concrete examples of the initial steps some principals took towards becoming instructional leaders. These include actions to facilitate teacher participation in professional development, encourage teacher openness to new ideas, and suggest that teacher learning may be important for the school.

Following-up with Teachers to Encourage the Use of New Practices. Another form of leadership practice by principals that emerged during visits to the 12 study schools centered on how principals follow-up with teachers after professional development to encourage the use of the new network practices. Interviewed teachers described two encouraging practices. First, principals are reaching out to meet with teachers to hear what about their learning at a recent training. These solicitations are typically informal, with principals inviting teacher professional assessments of the quality of the practices as well. In other cases, principals are arranging formal meetings with network teachers to discuss how the strategies worked or why the teachers choose one over the other. Two teachers describe this form of principal support:

> *The principal asks us what we do at the workshop and we tell him if it is good.*

> *He was always asking us about what we learned and how we can apply these strategies in the classroom. We all felt he was encouraging us to apply what we got from the professional development to our students.*

Principal support also was reflected in their willingness to help teachers find larger rooms in the school to better implement particular network strategies.

Second, principals are making short visits to classrooms to observe how teachers are using the network practices. During these classroom visits, principals sometimes ask questions of the teacher and make comments about student responses. In some case, principals are invited by teachers to come see a new practice; in other cases, principals simply mention that they would drop by during the day. Two teachers describe principal support through these short visits:

> *The principal attended my class once previously and offered great support and encouraged us a lot. He really wanted to support us—all teachers are going to workshops. He tried his best.*

> *My principal facilitates my participation in the network training and tries to visit me to give me feedback. I like getting feedback from the principal because it gives me a sense of importance and follow-up at the school.*

In study schools in which the principals are aware of the new practices and teachers' efforts to change their practice, many teachers report feeling connected to the larger development of the school. However, in study schools in which the teachers report that the principal had little or no understanding of the workshop practices, teachers report feeling isolated and believe their learning through the network has been for their own personal growth and not intended to benefit the larger school. The following teacher

reflection captures the sense of isolation that occurs when principals are not proactively supporting and framing teacher learning as potential change agents for the school.

> *The principal does not visit our classroom or know the materials. I feel that what we learn at the workshop is for us alone. It is not for the school as no one is asking us about it.*

Although isolated from the principal, this teacher is part of a group of teachers who are enthusiastically using the strategies; without the principal's interest or knowledge of their efforts, however, and they see no opportunities to share their learning with teachers in their school. This situation was present in schools experiencing turnover in the principalship and in buildings where teacher relations were fractured. For example, despite teacher invitations a new principal chose not to observe the network practices in order to maintain a neutral presence in the building and to not further polarize teacher relations.

Spreading Network Practices within the School. Another form of leadership practice by principals that emerged during visits to the 12 study schools was when principals encouraged the spread of network ideas and strategies across the school. In a few study schools, principals were proactively encouraging the spread of new strategies beyond network teachers to others in the building. The presence and intensity of these efforts was varied, perhaps because this was the first year of network participation. Site visits revealed three strategies. One approach was for the principal to authorize teachers to share their new learning on their own. For example, one principal shared "a wish" that the participating teachers would find ways to share network practices with other teachers as they saw fit. In another approach, the principal would be more proactive, but take action without collaboration. For example, the principal solicited new instructional materials from a recent professional development to distribute to teachers on her own. Explained one teacher, "The principal encourages me all the time. He asked for a copy of the strategies I learned at the QRTA to distribute to other teachers." Another approach was reflected in a principal who took action to promote a specific set of network strategies based on a first hand observation that students in the school had been benefiting. The principal explained this dissemination strategy, which reflects working directly with the network teachers to share new practices with other teachers:

> *I want to encourage the fractions workshop and the difference in strategies so others can compare. I told the teachers and asked [network] teachers to explain the strategies to everyone. It is something new. We now know about a lot of new things. We want to learn it and try it. In the first semester, we had 12-13 weak students [in this class] and now I see her students become more engaged. After the workshops there was a big change.*

Overall, in most of the 12 study schools, network principals were engaging in a form of new leadership practice by supporting teacher growth through participation in network professional development. Although this sample is not representative of the larger network, it does provide illustrations of the forms of leadership practice that are emerging in some network schools. Efforts to encourage teacher use of network practices through classroom visits and the spread of strategies to others offer evidence of the ways in which some principals may be taking on new and more assertive roles as leaders of instructional improvement.

Early Use of Network Leadership Practices by Principals

Another form of instructional leadership is principal commitment to and promotion of the "high impact instructional strategies" promoted by the Partnership. As described earlier, these strategies were introduced and discussed during network professional development for principals. The high impact strategies that principals were asked to promote across faculty focused on: teacher attention to lesson structure and the academic rigor of learning tasks; teacher promotion of student-centered discussion and student team learning during lessons; and teacher efforts to adapt instruction to meet student specific learning needs. Through the network, principals were also encouraged to monitor and promote teacher use of these high impact instructional strategies by conducting "Learning Walks" in the school to gauge teacher use of the strategies, providing feedback to teachers about their teaching, and using templates provided during network institutes to guide their lesson observations and feedback to teachers.

Data regarding cohort 1 principal attitudes toward and use of the high impact strategies is limited for cohort 1 networks. Insights are available from interviews with principals in the 12 site visits schools visited at the end of year 1. As already noted, the qualitative sample is not representative of cohort 1 as it focuses on schools with moderate to high teacher participation in network professional development. Even so, interviews offer insight into the kinds of viewpoints and practices that principals hold towards the high impact strategies and the nature of their efforts to observe and provide feedback to teachers regarding their use of the high impact strategies. The variation noted in this sample offers a set of local understandings and responses that might inform a broader investigation into their prevalence across the larger population of principals.

Interviews with principals in the study schools reveal a wide range of understandings of and attitudes towards the high impact strategies. Principals who tended to embrace the strategies and attempt to engage teachers in conversations about their classroom practice had clearly expanded their role in the school to include instructional leadership. They also nurtured an informal relationship with teachers about their practice through conversations about instruction choices and student responses. They also were proactive in visiting teacher classrooms outside of formal observations.

Principal Understanding and Opinions of High Impact Strategies. Site visits to the 12 schools with high teacher participation in year 1 revealed a range of principal responses to the ideas and practices promoted through Leadership Institutes. Interviews provide insight into the variation in principal understanding and views, which ranged from no understanding or interest in the high impact practices to moderate levels of use. More neutral or negative views and limited understandings may be reflect the broader issue of turnover in the principalship in participating network schools, which can take place during the summer and throughout the course of the school year. As an extreme example, in one school visited three principals had cycled through. While the distribution of these views within each network and across the three cohort 1 networks is not known, the site visit data surface some of the challenges the Partnership must respond to when working with principals and promoting this particular improvement strategy. The following are brief descriptions of the five types of principal responses to the high impact strategies, from most challenging to supportive.

Principals who appeared uninformed, with limited or no attendance to network training. These principals appeared to be uninformed about the strategies and reported no attendance or limited attendance at the Leadership Institutes. Explanations for not participating in the school network activity included the following: the principal was new to the school and was not comfortable leaving the school or did not see participation as a priority; the principal felt the focus was more appropriate for the supervisor; and, the principal felt the real value of the network was for improving teachers, not administration.

Principals who attended network training, but were dismissive of the high impact strategies. These principals attended Leadership Institutes, but did not support the practices promoted by the Partnership. Specifically, the principals reported attending one or more events, but did not believe the concepts and practices presented were new or compelling. Principals described how some strategies would be impossible to implement given classroom conditions and teacher knowledge and responsibilities in their schools. During the interviews, principals tended to read the list as an administrative check-list. These principals were not familiar with many of the practices and asked for clarification during the interviews. The following principal comments reflect this type of principal response to network practices:

> *I only attended one workshop for one day. I attended a workshop in 1993 on curriculum development and I found that what was given at the [Leadership Institute] wasn't different from what we learned a long time ago regarding the design of the class or methodologies. The only difference is the use of technology. What I really care about is what my teachers transfer from the workshop to my school.*
>
> ~Principal, Mathematics Network

> *Student centered. We have class of 54 students and it is hard to achieve. We saw that even in other schools. Adaptive instruction—you can do it if the teacher is an expert and solid management. Student team learning. Not new to us. It is an old one. Limited space and big numbers. To overcome maybe the teacher will change classrooms. All teachers have access to the lab/community room.*
>
> ~ Principal, English Writing Network

Principals who preferred subject specific teaching strategies to the general impact strategies. These principals preferred the subject specific to high impact teaching strategies promoted in the teacher networks over what they saw as the more general "high impact" strategies promoted by the Leadership Institutes. Although there is strong alignment between the high impact strategies introduced to principals and the network concepts and practices promoted in each network, these principals saw the two as being distinct. During interviews, principals set aside the list of high impact strategies and changed the conversation to the subject-based strategies teachers were using. These principals viewed the workshop strategies introduced to teachers as the priority for the school and found them more appealing. The following principal response illustrates this view.

> *Maybe at this school, particularly the writing workshop strategies are more important than the other [high impact teaching] strategies. The others are too general. The writing workshop is more specific.*
>
> ~Principal, English Writing Network

Principals who were familiar with the high impact strategies, but with limited understanding. These principals seemed aware of the high impact strategies and were somewhat supportive, but their understandings were superficial and they were drawing on common sense and personal experience to interpret and critique each strategy. These principals used the interview to present their school in a positive light, rather than discuss their efforts to improve instruction. Principals reported conducting Learning Walks and giving feedback, but these practices were associated with existing supervisory routines and considered one in the same with no alterations. It is not clear if these principals considered the high impact strategies important to all teachers or just those participating in the network professional development. The following principal comments illustrate this type of response.

> *All is present [in the school]. Lesson structure and levels. Every class has student-centered discussion and in fourth grade you feel the team work is obvious. Adaptive instruction. Of course, from the reality of what you are living, the conditions. Feedback – all recommendations are for teachers to do something.*
>
> ~ Principal Mathematics Network

> *Planning is important, you have to have it. Lesson structure is the planning and it is a must. No teacher goes into the classroom without it. The student centered discussions-- more from the writing [in English]. These students have team learning. Also a strategy for writing is adaptive instruction.*
>
> ~Principal English Writing Network

Principals who support and are active users of the high impact strategies. These principals expressed support for the high impact strategies and reported efforts to promote their use among teachers. They seemed knowledgeable about many or most of the high impact strategies and have been attempting to conduct Learning Walks throughout the school and provide quick informal feedback to teachers. These principals felt the Leadership Institute was having a positive influence on their everyday work as administrators. The documentation team briefly observed one principal during a Learning Walk, which included informal comments about the lesson to the teacher. For these principals, the high impact strategies and Learning Walks are providing a new opportunity to practice instructional leadership. The following principal comments reflect supportive use of the leadership ideas and practices advanced by the Partnership.

> *Honestly speaking, my administrative skills have been developed so much after my participation in the [Partnership's] training. I have now conducted several walks and visit my teachers to learn from them and give them suitable feedback on how to manage the classroom. I honestly use to just monitor them and give them a score afterwards. However, after receiving training, I viewed my role to be a supportive, continuous learner, and a motivator. Moreover, my relationships with my teachers become closer.*
>
> ~Principal, Science Network

> *I like the 'Learning Walk' and I do it every day. After we went to the workshop and they gave me a form and I started taking some notes. The assistant principal uses it too. I do not use it every day. I write notes down, but sometimes I get up and I know what I am looking for. Usually I like the student interactions.*
>
> ~Principal, Mathematics Network

As these five response types illustrate, principal views and practices varied. The 12 school visits offer some qualitative descriptions of principal thinking about the network ideas and practices. The insights from the site visit schools do not tell us of the distribution of these cases within a given network or across all networks; however, they do offer illustrations of a potential range of opportunities and challenges for the Partnership in using the high impact strategies to promote the improvement of instruction school wide.

Principal Approaches to Feedback and Observation. To help principals promote the high impact strategies in their respective schools, the network professional development encourages principals to monitor the quality of teaching and take action to improve it through strategic conversations with teachers. To this end, principals learn two strategies: conducting informal "Learning Walks" in their schools to observe teaching across multiple classrooms and providing feedback to teachers based on both formal and informal observations. During visits to the 12 study schools, principals shared their views on these specific practices. Recognizing that observation and feedback were already part of the Jordan supervisory structure, during interviews we also solicited information from the principal about current practices in the school, including other roles with informal or formal supervisory responsibilities for instruction.

In many ways, the practices associated with Learning Walks and teacher feedback are the most difficult for principals to implement. Most interviewed principals reported being too busy to observe lessons informally or to observe lessons beyond their official observation responsibilities. Some principals seemed to resist the idea of making informal observations versus making formal supervisory ones. They also seemed to defer to "content specialists", such as education supervisors and teacher coordinators, as those best positioned to make observations and provide feedback.

Only two principals in the site visit schools were conducting Learning Walks in their building to assess instruction. These principals spoke of using the Learning Walks to observe a series of classrooms to learn about instruction in their school. The principals tended to focus on student engagement practices such as team learning or peer discussion during lesson observations. They were providing feedback to the teacher during the lesson before departing for the next classroom. These reports provide some evidence that the Learning Walk strategy can be implemented in Jordan schools and that principals might find it to be a valuable routine that keeps them in touch with teaching and learning in their building.

Principals who were able to conduct Learning Walks with some regularity in their school did so by integrating this practice with an existing daily administrative routine of "walking through" the building to check for problems. These principals, and many others, describe conducting daily "walks" of the building, in both the morning and afternoon, to monitor teacher and student attendance, check on disciplinary issues and resources needs, and other emerging issues. The two principals had simply integrated the two purposes by stopping for short observations of network teachers along the route.

Principals tend to view their immediate formal observation responsibilities as administrative routines rather than opportunities to influence the quality of teaching at the school. These views are part of the prevailing professional culture and institutional structure of the schools and present a challenge to the Partnership's goal of helping principals become instructional leaders in their buildings. This view was most clear when principals explained their opinion about the most effective way to provide feedback to

teachers. Responses reflect one of two approaches. In the first approach, principals view teacher feedback as a simple information transfer process in which a principal reads the teacher the observation notes or provides the teacher a copy of the notes. For example, when asked how best to approach giving teachers feedback, one principal responded:

> *It does not need an approach. It is a piece of information and you convey it. We just write it on the paper and if she changes [her teaching] then we amend it.*

In this approach, interaction is minimal. In the second approach, principals tended to view teacher feedback as a more complex process in which the principal was trying influence the understanding and behavior of a teacher regarding her classroom practice. The principal sought a balanced conversation with teachers; one that focused on the "pros and cons" of the lesson with an emphasis on "positive strengths." The following principal response illustrates this approach:

> *I always talk to teachers. I encourage them to support each other as a team and to have feedback from within rather than bringing in outsiders pointing to your weaknesses. We are not criticizing you. This is just a way of caring and collegiality. For teachers, when they feel a Supervisor wants to determine a certain way or make them feel what they did was wrong, they say, 'I can show you a better way.' So, the teacher might have a negative reaction. But when I come with a nice approach, they can change.*

Beyond these two approaches, a third group of principals felt the source of the feedback mattered more than the feedback strategy. These principals felt that feedback from peers, through teacher-to-teacher observations, called "peer exchanges", or from the teacher coordinator in their specialty area, was the most effective approach. Feedback from peers was considered more effective than feedback from principals or education supervisors.

As this discussion of a sample of cohort 1 year 1 principal views and practices suggest, a number of factors are contributing to the observed situation, many with cultural, organizational, and logistical roots, which together pose a challenge to the Partnership's strategy. Principal turnover undermines the Partnership's efforts to scaffold principals' knowledge and experience to put new practices into action. The frequency and intensity of the current Leadership Institutes may not be strong enough to help principals shift from valuing administrative rules and routines to embracing the complex process of instructional leadership in their schools. In addition to group sessions, principals may need one-on-one coaching at their school. New strategies may be needed to better communicate to principals the meaning and value of the high impact strategies for improving student learning and of their alignment with the content-specific strategies of each network.

There are some starting points to build from. The small number of principals who were able to integrate the Learning Walk into their daily routine is a demonstration proof that the practice is doable given the heavy administrative demands on principals. It also provides a strategy for grafting new ideas and practices into the routines of the school so that principals are gradually growing into the role of instructional leader. Opportunities for leadership practice come to principals through their interactions with the teachers participating in the network. Principals are able to take action to support teacher development, to encourage changes in instruction, to establish informal routines of short observation and feedback around the subject specific strategies, and to promote

instructional improvement through the spread of practices in the school. Although small in scale, these relationships provide important early opportunities for principals to grow as instructional leaders. The Partnership might leverage these synergies to scaffold principal learning and adoption of new practices.

VI. Conclusions

This interim report has presented evidence on the progress and impact of the Partnership's school network strategy under development since 2009. The Partnership aims to contribute to the second phase of ERfKE II by developing and demonstrating a model of high quality professional development within Jordan that improves the quality of instruction provided to the current teacher work force. This section provides a short summary of progress based on the Partnership's intended outcomes for different stakeholders.

Country Level: The Partnership is making strong progress in articulating a professional development model that is scalable within Jordan and supports the use of effective instruction in primary and secondary schools. For all networks, the Partnership has implemented its three tier professional program that represents a significant shift in the form, duration, intensity, and continuity of professional development available to Jordan educators. By May 2011, the Partnership successfully launched six school networks reaching 145 public schools and about 622 teachers in eighteen educational directorates across the nation. The design and delivery of each network is well aligned with the research-based principles of professional development and is being adapted to meet local conditions. With the launch of cohort 2 networks in late 2010, the Partnership is beginning to demonstrate the scalability of the model.

Future reports will speak to the Partnership's progress in helping other Jordan-based organizations adopt its professional development model and network strategy. Future reports will also assess the extent to which the broader policy community has embraced the concept of evidence-based practice and established routines supporting the continuous improvement of instruction across Jordan.

QRTA Level: The Partnership is making steady progress in developing the capacity of the QRTA to lead and support the school network model. The QRTA has recruited an experienced and energetic staff with content expertise and familiarity with Jordan public schools. With cohort 1 school networks, staff members gained knowledge and experience delivering professional development, providing technical assistance at the school level, and managing school networks. The QRTA staff members are assuming responsibility for the delivery of core professional development components as planned, and will assume increased responsibility for the professional development provided to schools in cohort 2 and 3. The QRTA staff members have established routines for collecting and reviewing information about the quality and impact of professional development. This includes building four information management systems that monitor network growth and provide staff guidance about educator needs.

Future reports will speak to QRTA staff levels and expertise and the strength of internal organizational routines for data management as the Academy assumes leadership responsibility for delivering network professional development.

Teacher Level: The Partnership is making steady progress towards improving the quality of instruction in participating network schools. Evidence from the first year of cohort 1 school networks suggests that teachers are in the early stages of implementing the concepts and practices promoted in their network. The vast majority of teachers in

science, mathematics, and English writing networks are attempting to use the new strategies. A sizable proportion of teachers report frequent use of a number of network strategies, which suggests teachers are beginning to integrate them into their instructional repertoire. The vast majority of teachers believe participating in the network is helping them improve their instruction and develop a disposition towards wanting to improve their instruction. The Partnership has encountered strong barriers in establishing professional learning communities at the school level. Through network meetings, teachers are beginning to experience new opportunities to engage in conversation about improving instruction. However, sustaining these conversations with any regularity and depth is challenging due to the complexity of school scheduling, space arrangements, and material constraints.

Future reports will continue to assess teacher use of effective instruction, willingness to reflect and alter their practice, and membership in functioning learning communities within and across their schools. Future reports will assess the strength of teacher content and pedagogical content knowledge.

At the Principal Level, the Partnership is making limited progress in reaching its goals of encouraging principals to assume the role of instructional leaders in their buildings. There is evidence that principals are engaging in some forms of instructional leadership. Principals in the small sample of study schools are facilitating teacher participation in network training, and some are actively supporting teacher use of network ideas and practices and encouraging the spread of new practices to the broader faculty. However, principal awareness and understanding of the specific high impact strategies is uneven in the study schools as is attention to conducting Learning Walks and providing teacher feedback to promote instructional improvement school-wide. High amounts of administrative burdens, inexperience with instructional leadership, and high principal turnover and the frequency and intensity of professional development for principals may account for the limited progress in Year 1.

Future reports will continue to assess principal attention to instruction and awareness of the high impact strategies and principal use of observation and feedback to encourage teacher use of high impact strategies. Future reports will assess the degree to which principals are more diligently monitoring learning outcomes in their schools and Partnership progress in supporting the development of education supervisors.

Appendix A: Schedule of Activities

Activity	Math Network	Science Network	English Writing Network
Teacher Workshop	2-4 November 2009	5-7 May 2009	7-11 June 2009
Teacher Workshop	8-10 March 2010	28-30 December 9 2009	4-7 October 2009
Teacher Workshop	19-20 April 2010	8-10 February 2010	28 - 30 March 2010
Teacher Workshop	25-26, 27-28 October 2010	3-5 May 2010	3 & 5 Oct 2010
Teacher Workshop	20-23-March 2011	11-13 October 2010	12 December 2010
Teacher Workshop		28-30 March 2011	20-21 February 2011
Teacher Workshop			17-18 April 2011
Teacher Meeting	18 February 2010	5-6 August 2009	3-4 August 2009
Teacher Meeting	12-13 March 2010	06 December 2009	13 December 2009
Teacher Meeting	13 February 2010	17 March 2010	14 December 2009
Teacher Meeting		17 February 2010	28 April 2010
Teacher Meeting		23 May 2011	03 November 2010
Teacher Meeting			20 February 2011
Teacher Meeting			27-29 March 2011
Leadership Workshop	09 December 2009	11-12 April 2009	11-12 April 2009
Leadership Workshop	22 March 2010	5-6 August 2009	3-4 August 2009
Leadership Workshop	19 October 2010	21 October 2009	19 October 2009
Leadership Workshop	20 February 2011	18 October 2010	20 October 2010
Leadership Workshop		21 February 2011	23 February 2011
Leadership Learning Walk	23 March 2010	21 March 2010	24-25 March 2010
Leadership Learning Walk	21 October 2010		
Supervisor's Meeting			17 February 2010
Lab site			21 February 2011
State of the Art Conference			03 October 2010
State of the Art Conference			28 July 2011

References

Corcoran, T. B. (2007). *A proposal to the Noyce Foundation*. Philadelphia, PA: CPRE.

Desimone, L. (2009). Improving impact studies of teachers' professional development: Toward better conceptualizations and measures. *Educational Researcher,* 38(3), 181-199.

Darling-Hammond, L., Wei, R. C., Andree, A., Richardson, N., and Orphanos, S. (2009). *Professional learning in the learning profession: A status report on teacher development in the United States and abroad.* Miami, OH: National Staff Development Council.

Hattie, J. (2009).*Visible learning: A synthesis of over 800 meta-analyses relating to achievement.* New York: Routledge.

OECD. (2003). Networks of innovation: Towards new models for managing schools and systems. Paris: author.

Penuel, W.R. and Riel, M. (2007). The 'new' science of networks and the challenge of school change. *Phi Delta Kappan,* 88, 611-615.

The Queen Rania Teacher Academy-Teachers College, Columbia University Partnership. (August 2009). *Proposal to strengthen and expand school networks for instructional improvement in Jordan, January 2010- December 2013*. Author.

Robinson, M.A. (2008). *Strengthening teacher quality in Jordan: A needs assessment to inform Teachers College program development for the new Columbia Center in Amman, Jordan*. New York: Teachers College, Consortium for Policy Research in Education.

Timperley, H., Fung, I., Wilson, A., and Barrar, H. (2007). *Teacher professional learning and development: Best evidence synthesis iteration [BES]*. Wellington, New Zealand: Ministry of Education.

Nondiscrimination Statement

The University of Pennsylvania values diversity and seeks talented students, faculty and staff from diverse backgrounds. The University of Pennsylvania does not discriminate on the basis of race, color, sex, sexual orientation, gender identity, religion, creed, national or ethnic origin, citizenship status, age, disability, veteran status or any other legally protected class status in the administration of its admissions, financial aid, educational or athletic programs, or other University-administered programs or in its employment practices. Questions or complaints regarding this policy should be directed to the Executive Director of the Office of Affirmative Action and Equal Opportunity Programs, Sansom Place East, 3600 Chestnut Street, Suite 228, Philadelphia, PA 19104-6106; or (215) 898-6993 (Voice) or (215) 898-7803 (TDD).