Microsoft

Quality Assurance: Monitoring and Evaluation to Inform Practice and Leadership

Transformation Framework

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Introduction

This paper examines one of ten critical components of effective transformation in schools and education systems. Each paper is produced by an expert author, who presents a global perspective on their topic through current thinking and evidence from research and practice, as well as showcase examples. Together, the papers document the contributions of 'anytime, anywhere' approaches to K-12 learning and explore the potential of new technology for transforming learning outcomes for students and their communities.

Quality Assurance: Monitoring and Evaluation to Inform Practice and Leadership

This paper provides monitoring and evaluation guides and examples for leaders. Monitoring and evaluation is used by governments worldwide to improve school systems and educational results – and they can play an integral role in holistic education transformation.

Education leaders at all levels can benefit from applying the planning, monitoring and evaluation cycle and outcomes-based planning and evaluation to education transformation initiatives. Monitoring and evaluation can help educational transformation programs define and measure quality indicators and measures of the education transformation process, gauge progress toward desired educational outcomes, increase stakeholder participation, and empower school leaders and teachers to build and sustain transformation in schools.

As each educational system is unique, evaluators should be prepared to vary their evaluation approach based on program purpose and context. Technology is playing an increasingly important role in increasing data access, as well as a tool for school leaders and teachers to inform instruction and improve student outcomes in education transformation initiatives.

What is the Education Transformation Framework?

The Microsoft Education Transformation Framework helps fast track system-wide transformation by summarizing decades of quality research. It includes a library of supporting materials for ten components of transformation, each underpinned by an executive summary and an academic whitepaper detailing global evidence. This provides a short-cut to best practice, speeding up transformation and avoiding the mistakes of the past. Microsoft also offers technology architectures and collaborative workshops to suit your needs.

About the author

Dr. Tom Clark
President
TA Consulting

Dr. Tom Clark, President of TA Consulting, provides evaluation, research, and strategic services for education clients. He has led evaluations of a wide range of online, blended and distance learning programs, from district-wide and state-wide programs to complex multi-state and postgraduate programs. He also provides strategic consultation, developing policy analysis and whitepapers for clients. Dr. Clark is an accomplished author, having co-written one of the first American textbooks on postsecondary distance learning, and authored one of the seminal works in K-12 online learning.

The first steps to success

How can I help ensure our transformation is a success?

When you're looking to ensure a successful and sustainable education transformation initiative, monitoring and evaluation for quality assurance (M&E) plays an important role. According to James & Miller, "the M&E process should be an integral component of any planned ICT in education program and should be factored into planning before a project starts."[1] Furthermore, planning for M&E is considered one of the ten critical components needed to bring about educational transformation.[2]

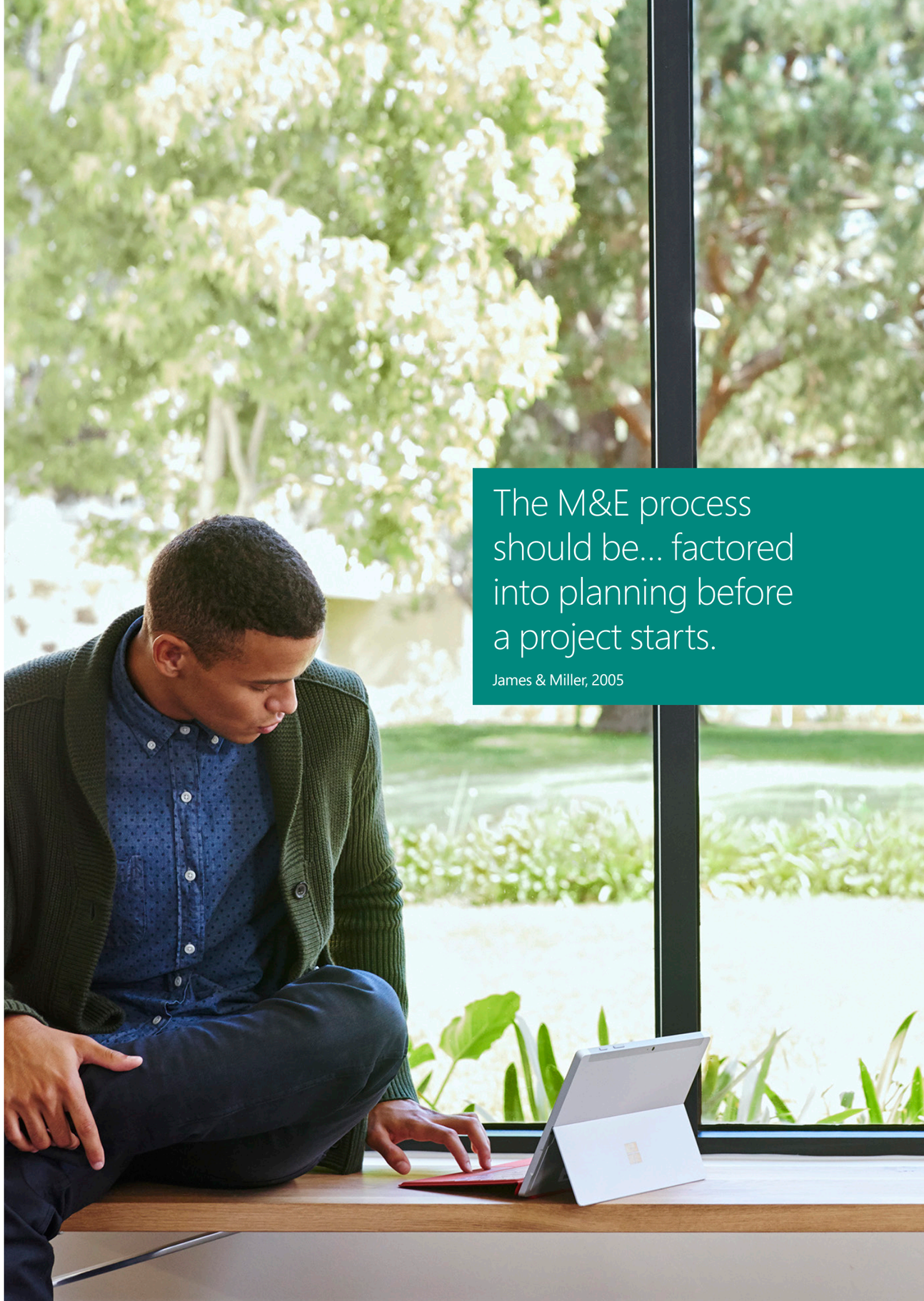
What does monitoring and evaluation achieve?

M&E can help kickstart education programs, by:

- Developing clear, attainable outcomes and goals for education transformation, and flexible strategies for achieving them
- Promoting high levels of engagement by local school stakeholders
- Promoting ongoing communication about roles, expectations, progress, and performance
- Documenting program success for educational stakeholders and funders.

M&E can keep education programs on track, by:

- Monitoring program implementation and progress toward desired outcomes
- Helping programs identify and remedy implementation problems early on
- Helping sustain effective program implementation over time
- Helping staff, teachers and partners learn from their experiences, allowing them to make more informed decisions, be accountable, and reposition their efforts.[3]



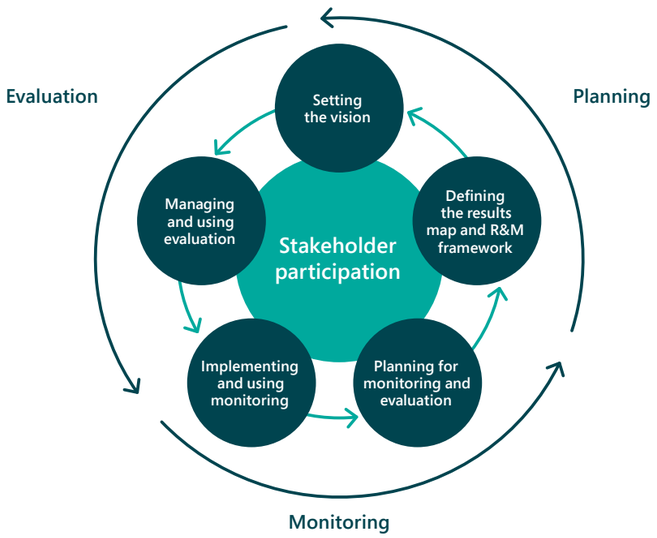
> The M&E process should be… factored into planning before a project starts.
>
> James & Miller, 2005

1 James, T., & Miller, J. (2005). Developing a monitoring and evaluation plan for ICT. In Wagner, D. A., Day, B., Jones, T., Kozma, R. B., Miller, J., & Unwin, T. (Eds), Monitoring and evaluation of ICT in education projects (pp. 32-42). Washington, DC: World Bank.
2 Cavanaugh, C., McCarthy, A., & East, M. (2014). An innovation framework for holistic school transformation: ten critical conversations for the 21st century. Redmond, WA: Microsoft World Public Sector.
3 United Nations Development Programme. (2009). Handbook on planning, monitoring and evaluating for development results. New York.

Management Strategies

Results-Based Management

Together with planning, M&E creates the Planning, Management and Evaluation cycle. A number of management approaches incorporate this cycle. Results-Based Management (RBM) is one of the most widely known, used by many international development agencies. In management approaches like RMB, stakeholders create a vision, define desired results, plan the project, monitor implementation, then evaluate whether desired results were achieved and make improvements or changes as necessary. Here is an illustrated guide to the cycle, as used by the United Nations:



Source: United Nations Development Program (2009), p.10.

What exactly do you mean?

Planning is addresses in more depth in the first and second white papers on Vision and Enabling Transformation with Strategic Planning.

Monitoring may be defined as "an ongoing process by which stakeholders obtain regular feedback on the progress being made towards goals and objectives." Monitoring is an important source of information for program evaluation.

Evaluation is defined by Patton as "the systematic collection of information to make judgments, improve program effectiveness and/or generate knowledge to inform decisions about future programs."

Poor implementation is usually a direct result of the 'policy lever approach,' but poor alignment is often blamed.

Evaluation may be formative, providing feedback for improvement, or summative, assessing merit or worth. It may be internal, conducted by program staff such as 'M&E Officers' in development programs, or external, conducted by outside evaluators who provide third party validation or examine questions of special interest.

Results-based management (RBM) is a management strategy that uses feedback loops to achieve strategic goals.

Logical Framework Approach

A first step in building an effective education transformation program is defining desired results or outcomes (the measurable changes in people or organizations) that will help address critical needs or problems that fall within your organizational mission. Thinking about your program needs and desired results should precede planning of program, monitoring or evaluation activities.

Here is an example logic model for an education transformation initiative that is tackling low educational attainment due to limited educational access: Once you have desired outcomes that address the problem, it's time to consider how the program will achieve them. "Identifying the theory underlying the program and the contextual factors that affect its operations and success is critical".[4] This realization led to the development of the logic model, which provides a theory of action for how the program is intended to work. Some agencies refer to logic models as logical frameworks or "logframes".[5]

The example logic model for educational transformation shows a situation (what the program is intended to address), inputs (existing resources), processes (program activities and services), outputs (who and how many are served), and outcomes (short, medium, and long-range changes in people and organizations attributed at least in part to the program).

Monitoring and evaluation schemes typically follow such an approach, whether or not they have an explicit logic model or logframe. A typical M&E scheme for ICT in education includes 1) input indicators, 2) process indicators, 3) outcomes, 4) assessment instruments, and 5) a monitoring and evaluation plan.[6] The plan is the most critical part, as it includes a schedule for monitoring the indicators, administering the assessments and undertaking evaluation activities.

A Logical Framework (Logframe) lays out the different types of events that take place as a project is implemented: Inputs, Processes, Outputs and Outcomes.

Situation

Inputs	Activities	Outputs
What fuels the program:	What the program does:	Who the program serves:
• Funding • Staff Partners • Facilities	• School leader training • Tech infrastructure building • Teacher PD & Peer Mentoring • Web & Content Development	• Students • Teachers • Leaders • School and Districts

Outcomes

Short-term	Medium-term	Long-term
Improvements in:	Improvements in:	Improvements in:
• Teacher knowledge & skills • Student attitudes • School technology access	• School leader and teacher practices • Student learning • School Policies • School innovation level	• Teacher retention • Educational attainment • School effectiveness

4 Wholey, J. S., Hatry, H. P., & Newcomer, K. E. (Eds.). (2010). Handbook of practical program evaluation. 3rd Ed. San Francisco: Jossey-Bass.
5 World Bank. (2004). Monitoring & evaluation: some tools, methods & approaches. Washington, DC.
6 Rodríguez, P., Nussbaum, M., López, X., & Sepúlveda, M. (2010). A Monitoring and evaluation scheme for an ICT-supported education program in schools. Educational Technology & Society, 13 (2), 166–179.

What to watch out for

Challenges to effective monitoring and evaluation

While outcomes-based models and results-based management can be valuable tools, how they are implemented impacts their effectiveness as methods for managing education transformation. MANGO, a UK charity that works in international development, identifies a number of ways in which logic models/logframes and results-based management may fail to be used effectively:[7]

- Planners may assume that complex social issues can be reduced to a simple overarching problem, but often they cannot. Also, some important goals cannot be easily measured.
- Results and impact may be beyond the agency's control, take years to achieve, and be influenced by many factors besides the program.
- There may be multiple viewpoints about problems and competing interests, not a single view or interest easily expressed as an outcome.
- Logframes may focus the project on the agency's actions rather than the local program and the people served, and tend to exclude local people from planning, especially marginalized people.
- Initial plans are never completely accurate, and circumstances and priorities may change, but logframes may reduce flexibility to make changes later to fit project realities.
- Logframes are often not used by field staff after initial planning, because they do not fit how the project actually works on the ground.

Lessons learned and effective practices

To make monitoring and evaluation effective in education transformation:

- Desired program outcomes should be developed with local school leader and teacher input, be realistic, and, where possible, within the control of the program.
- Strategies and activities selected to attain desired outcomes should be flexible and open to revision as needed by empowered local program managers and school leaders to reflect the evolving program in practice.
- Monitoring and evaluation in local schools should be participatory, to build local buy-in and capacity to sustain an effective program.
- Planning for monitoring and evaluation should start early on. For example, identifying key data indicators and how data will be gathered.

According to Kozma & Wagner's analysis of prior international national monitoring and evaluation studies of ICT use, some of the most effective practices for evaluators are as follows:[8]

- Program evaluations should concentrate on [outcome] measures of student and teacher learning. The … most sensitive are those custom-designed for the program … Include measures of learning that are likely to result from the systematic use of ICT.
- Evaluators need to document and measure baseline inputs to the program.
- Evaluators need to acknowledge and describe the educational, technological, social, and economic factors that enable and constrain… the program.
- Direct measures of M&E indicators are the most reliable sources of information. They also tend to be the most costly. The reliability of [indirect] measures can be increased by obtaining information from multiple sources.
- Finally, the program can benefit from distributing information on these measures throughout the program's implementation, rather than just at the end.[8]

Governmental performance in Australia, Canada, Ireland, and the U.S., shows a shared emphasis on monitoring outcomes and outputs, rather than activities.

Role monitoring and evaluation in government

According to Wholey, "evaluation is used in government to increase transparency, strengthen accountability, and improve performance," where performance management systems "establish outcome-oriented goals and performance targets, monitor progress, stimulate performance improvements, and communicate results to higher policy levels and the public."[9]

In the U.S., the Government Performance and Results Act of 1993 (GPRA) extended performance evaluation to all federal agencies, while No Child Left Behind (2000) extended it to public schools across the nation. Since 2008, the Obama administration has focused on effective use of performance information in evaluation, appointing the first Chief Performance Officer and developing a federal performance portal (www.performance.gov) that outlines cross-agency goals, such as improving STEM education through the collaborative efforts of 16 federal offices.

Boyle examined governmental performance evaluation in Australia, Canada, Ireland, and the U. S, finding marked differences in practice, but a shared emphasis on monitoring outcomes and outputs, rather than activities. He found that performance indicators developed by U. S. agencies were more likely to meet SMART criteria (Specific, Measurable, Achievable, Relevant, Time-Bound) for effective indicator design (Doran, 1981), but also that many of these indicators were "aspirational" in nature—that is, beyond the direct control of the agency to achieve.[10]

Chelimsky notes the ongoing cultural clash between the evaluation and political worlds, and limits on evaluator independence within governmental systems, while citing the ongoing role of evaluation as a trustworthy, dependable tool for preserving public accountability.[11]

Implementation impacts the effectiveness of methods for managing education transformation.

7 MANGO. (2014). What is wrong with results-based management? Oxford, UK.
8 Kozma, R. B., & Wagner, D. A. (2005). Core indicators for monitoring and evaluation studies in ICTs for education. In Wagner, D. A., Day, B., Jones, T., Kozma, R. B., Miller, J., & Unwin, T. (Eds), Monitoring and evaluation of ICT in education projects (pp. 21-31). Washington, DC: World Bank.
9 Wholey, J. S., (2010). Use of evaluation in government: the politics of evaluation. In J. S. Wholey, H. P. Hatry, & K. E. Newcomer (Eds.), Handbook of practical program evaluation (pp. 651-667). 3rd Ed. San Francisco: Jossey-Bass. (pp. 652-654).
10 Boyle, R. (2009). Performance reporting: insights from international practice. Washington, DC: IBM Center for the Business of Government.
11 Chelimsky, E. (2008). Clash of cultures: improving the "fit" between evaluative independence and the political requirements of a democratic society. American Journal of Evaluation, 29(4), 400-415.

Evaluation Strategies

The differences between evaluation models fall into three camps, defined by emphasis on methods, value, or use.

Evaluation theory models

In the evaluation literature, the term "theory" primarily refers to models or approaches which specify how an evaluation should be carried out. To date, a limited amount of evaluation theory is based on empirical study of what works in evaluation. Until such empirical theory is developed, according to Alkin, "we must rely on the prescriptive models generated by knowledgeable members of the evaluation community to guide practice."[12]

Alkin sees differences between the models as mainly falling into three camps: A relative emphasis on either methods, value, or use (see table). Evaluators tend to follow a model that makes sense to them intellectually, but should be prepared to vary their approach based on the purpose of the evaluation and program context.

What's the difference between methods-, use- and value-focused approaches?

Smith, Mitton, Cornelissen, Gibson & Peacock have developed the following key differentiations:[13]

- A methods-focused evaluation might examine program effectiveness in terms of whether test scores improved as a result of program participation, by conducting a controlled research experiment or quasi-experiment, and rendering an expert judgment on whether the program caused the desired outcomes.
- A use-focused evaluation might look at what the program manager needs to know to improve the program or demonstrate progress, gathering multiple sources of evidence and recommending improvements that the program manager may decide to implement.
- A value-focused evaluation might explore a program's impact on equity or social justice issues. Here the public is the ultimate judge. It might also actively empower local staff and stakeholders to ensure education transformation fits local needs and interests.

How do we use the best of each approach?

An evaluation of holistic school reform requires elements of all three approaches:

- Use-focused approaches may be the best primary emphasis for a program evaluation of education transformation at the system level.[14]
- Methods-focused research studies may be embedded to determine the causal impact of key program features. In this case, staff training is needed on fidelity of implementation of key features, and the importance of adhering to research protocols.
- Values-focused evaluation components should be included that actively involve local school staff and stakeholders-to connect program theory and practice, ensure equitable participation for marginalized people, and build local capacity for sustainability.

Differences in the approaches of methods-focused, use-focused and value-focused evaluation theories

Key features	Methods-focused evaluation	Use-focused evaluation	Value-focused evaluation
Key questions	What is the program's casual impact on desired outcomes?	What do decision makers need to know to improve program usefulness?	How do program processes affect the relative standing of different groups?
Evaluation focus	• Intended objective or outcomes • Program theory • Summative evaluation	• Process • Intended use • Organizational learning and capacity building • Formative evaluation	• Process • Unintended outcomes • Power relationships • Equity and social justice
Who primarily judges programs benefits?	Evaluator	Decision Maker	Public/Society
Common methodologies and methods	**Post-positivist** • Controlled experiments where possible • Outcome measurement • Quantitative data	**Pragmatic** • Multiple sources of evidence • Interviews/focus groups • Quantitative and qualitative data	**Constructivist** • Critical or participatory methods • Action research • Qualitative data

12 Alkin, M. C. (2012). Comparing evaluation points of view. In M. C. Alkin (Ed.), Evaluation roots: A wider perspective of theorists' views and influences (pp. 3-10). New York: Sage Publications.
13 Hall, W. (2013). Development and implementation of a priority setting and resource allocation evaluation tool for achieving high performance (Master's Thesis, University of British Columbia).
14 Patton, M. Q. (2008). Utilization-focused evaluation. 4th ed. Thousand Oaks, CA: Sage Publications.

Seeing Success

Conditions that promote educational transformation

Several recent studies have identified key indicators of success in educational transformation. Together, these research studies provide evidence that over time, well-planned technology-enhanced initiatives can help schools and education systems achieve education transformation.

SRI International and in-country evaluators in seven nations (Australia, England, Finland, Indonesia, Mexico, Russia, and Senegal) jointly conducted a study of innovative teaching and learning or ITL.[15] In each nation, they surveyed teachers and school leaders in 24 schools, half identified through prior research as innovative and half as comparison schools. They also conducted case studies of a sample of the innovative schools in each nation. They found that across nations, certain practices or conditions were more likely to be in place in schools where innovative teaching practices occurred, including:

- A school culture that offers a common vision of innovation as well as consistent support that encourages new types of teaching
- Teacher collaboration that focuses on peer support and the sharing of teaching practices
- Professional development that involves the active and direct engagement of teachers, particularly in practicing and researching new teaching methods.[15]

Based on his experiences working with the Canadian province of Ontario and review of ITL research, Fullan believes that whole system reform can be accomplished in reasonably short periods of time.[16] He suggests that education systems establish a small number of ambitious goals and a set of coherent, integrated actions to pursue them, thereby fostering:

- Collaborative, focused school culture or "collective capacity" as the foundation
- A new role for the principal as lead learner and supporter
- Lead teachers as supportive, collaborative peer mentors
- Adoption of concrete, innovative teaching practices.

Project Red researchers surveyed a purposive sample of 997 schools across the United States that had 1:1 computing or large-scale technology integration initiatives in place. They identified nine key implementation factors most positively linked to student success. Schools with these factors in place were more likely to report improvements in student outcomes, such as decreased disciplinary rates and increased test scores.[17]

Cavanaugh, Hargis, Soto & Kamali propose a holistic framework for large-scale mobile/cloud learning programs that groups elements with the potential to transform education under three pillars: learning environment, curriculum/content, and pedagogy/leadership.[18]

The Project Red table below shows the nine key factors identified by Project RED as most predictive of education success aligned with this holistic framework. Together they illustrate the importance of each pillar for successful educational transformation. These nine factors also correspond well to the findings of ITL researchers and Fullan about conditions promoting education transformation.

Key indicators of conditions that foster education transformation – supportive school culture, participatory principal leadership, collaborative peer mentoring, engaged professional learning, and adoption of new innovative teaching methods – need to be agreed upon and tracked as part of the monitoring and evaluation of related national and international initiatives.

Project Red (2013) key factors

Quality indicators and measures for educational transformation

Nine factors most strongly linked to educational success in transformation initiatives (rank ordered by predicatively)

Pillar 1 Learning environment	Pillar 2 Curriculum and content	Pillar 3 Pedagogy and leadership
3. Students collaborate online daily	1. Technology integrated into every intervention class	2. Leaders provide time for teacher professional development and collaboration at least monthly
6. 1:1 computer ratios or close to 1:1	4. Technology is integrated into core curricula at least weekly	9. Principals are trained in teacher buy-in, best practices, and technology-transformed learning
7. Virtual field trips at least monthly	5. Online formative assessments performed at least weekly	
8. Students use search engines daily		

Source: Cavanaugh, Hargis, Soto & Kamali, 2013; Greaves, Hays, Wilson, Gielniak, & Peterson, 2013

Using Monitoring and Evaluation to improve school outcomes

Most emerging nations have established national education management information systems, but data gathering is often unsystematic and data use in school improvement is limited. Nayyar-Stone describes the efforts of Pakistan's education ministry to use national data to identify low-performing schools and train district officials in development of action plans for school improvement.[19] In the future, school-level data systems linked to central systems might give local school leaders the ability to directly access secure data on student achievement.

It is already commonplace in developed nations for school leaders to engage in data-driven decision making for school improvement. However, large-scale data use by teachers is more limited. Initiatives in two U. S. states used embedded professional development time, professional learning communities, and data coaches to train teachers in using annual summative testing data to inform instruction, with some success.[20]

Project Red surveyed 997 U.S. schools to identify the nine key implementation factors most positively linked to student success.

During the monitoring and evaluation process, evaluators and decision-makers can use available data at the national and local levels to analyze key education outcomes such as student proficiency, dropout and graduation rates, achievement gaps between student subgroups, and readiness for postsecondary education and careers. Use of measures of individual student learning growth over time, already in place in some nations, can improve the accuracy of outcomes data.

High-stakes student testing is moving online in nations including Denmark, a trend that is likely to spread. In the U. S., two assessment consortia, PARCC and SBAC, have developed online student assessment systems for state-level use. Their testing regimes are aligned with the new Common Core State Standards, which define the knowledge and skills students need to be prepared upon graduation for college and career in the 21st century. Like the international PISA test, both require higher order thinking and student performance tasks. Online testing is pushing U. S. schools to upgrade technology infrastructures just as they are moving to more rigorous standards and assessments.

Using formative data to increase student success

A focus is emerging on using ongoing formative assessment data to inform classroom instruction. This is more useful for classroom teachers than access to summative assessment data, as it allows them to address student learning gaps early on.[20] However, Swan and Mazur found that pre-service teachers often lacked the skills and time needed to design, implement and analyze formative assessments and use them to personalize instruction.[21]

Schools succeed when they foster a culture of visionary innovation, teacher collaboration and professional development.

Online assessments and analytical tools have the potential to remove some of these barriers to effective use of formative evaluation to inform instruction. Revenaugh (in press) described data-driven personalized learning in a blended school, where student mastery data from online formative assessments within course content is used by teachers identify learning deficits and dynamically group students with similar learning needs for on-site learning activities. Dawson describes collaborative use of an action research tool by teachers in a statewide 1:1 computing project to improve practice. Teachers can also find a growing number of formative assessment tools online.[22] For example, the PARCC and SBAC consortia both offer optional formative assessments aligned to new standards.

Student activity in online coursework can provide a wealth of data for use in monitoring and evaluation. For example, patterns of student logins and 'clicks" in the online system can predict whether students will successfully complete an online learning activity.[23] Data mining within online simulations can be used to formatively assess student scientific inquiry skills.[24] Those engaged in monitoring and evaluation can use these new kinds of online educational data to recommend formative improvements to learning systems and policies that support student success.

15 Shear, L., Gallagher, L., & Patel, D. (2011). Innovative Teaching and Learning Research. Menlo Park: SRI International.
16 Fullan, M. (2011). Whole system reform for innovative teaching and learning. In Microsoft-ITL Research (Ed.), Innovative Teaching and Learning Research (pp. 30-39).
17 Greaves, T. W., Hayes, J., Wilson, L., Gielniak, M., & Peterson, E. L. (2013). Revolutionizing education through technology: the Project RED roadmap for transformation. Eugene, OR: International Society of Technology in Education.
18 Cavanaugh, C., Hargis, J., Munns, S., & Kamali, T. (December 2012). iCelebrate teaching and learning: Sharing the iPad experience, Journal of Teaching and Learning with Technology, 1(2), 1-12.
19 Nayyar-Stone, R. (2014). Using national education management information systems to make local service improvements: the case of Pakistan. PREM Notes, Number 30. Washington, DC: The World Bank.
20 McCann, C., & Kabaker, J. C. (2013). Promoting data in the classroom: innovative state models and missed opportunities. Washington, DC: New America Foundation.
21 Swan, G., & Mazur, J. (2011). Examining data driven decision making via formative assessment. Contemporary Issues in Technology and Teacher Education, 11(2), 205-222.
22 Dawson, K. (June 06, 2012). Using Action Research Projects to Examine Teacher Technology Integration Practices. Journal of Digital Learning in Teacher Education, 28, 3, 117-124.
23 Liu, F. & Cavanaugh, C. (2011). High enrollment course success factors in virtual school: factors influencing student academic achievement. International Journal on E-Learning, 10(4), 393-418.
24 Gobert, J. D., Sao Pedro, M., Razuiddin, J., & Baker, R. S. (2013). From log file to assessment metrics: measuring students' science inquiry skills using educational data mining. The Journal of the Learning Sciences, 22, 521-563.

Conclusion

Monitoring and evaluation are key tools for education leaders as they seek to bring about educational transformation at the national, regional and local levels. Together with planning, they are part of well-established program management cycles and theories of program action that center on desired outcomes—meaningful changes in the lives of people and in organizations.

While monitoring and evaluation can be misused, when used effectively they can be inclusive and empowering, engaging stakeholders, informing school leadership and teaching practice, and documenting progress toward educational transformation and student success.

Evaluators of education transformation initiatives may want to consider combining different types of evaluation, such as use-focused evaluation that informs program managers, methods-focused evaluation that helps demonstrate casual impact, and value-focused evaluation that helps ensure equitable access and empowers local school staff to carry out transformation.

Technology is trending toward building local capacity for school leaders to use summative assessment data to inform school improvement.

There has been considerable research on conditions promoting educational transformation. Key indicators of educational transformation need to be agreed upon and used in program planning, monitoring and evaluation.

Nations differ widely in their use of technology-enabled educational data to inform leadership and practice in schools, but the trend is toward building local capacity for school leaders to use summative assessment data to inform school improvement, and for teachers to use formative assessment data to inform instruction.

Student assessment is moving online, and is increasingly aligned to new, more rigorous learning standards that require 21st century skills. Better access to national and local summative assessment data, and to new types of online formative assessment data, can help those engaged in monitoring and evaluation document student outcomes and study "what works" in educational transformation initiatives.

While M&E can be misused, when used effectively can be inclusive and empowering, engaging stakeholders, leadership and teaching practice.

Technologies schools can use to support change

Microsoft Surface devices equipped with Windows 10, Office 365 Education, OneNote and Moodle are being used to organize and monitor teaching and learning.

Online assessments are being managed with Windows InTune for Cloud-based Mobile Device Management, as well as cross-platform mobile devices equipped with Office.

Microsoft SharePoint is being used to manage ePortfolio services and resources.

Developing your own change strategy

Guiding questions for strategic planning, organizational capacity and quality assurance

- What are the current global trends relating to technology, education, and educational technology?
- How can a school measure its success and what system of metrics should it employ?
- How does the management of a school relate to its ability to implement innovative practices?
- Does the vision reflect overarching expectations and philosophies?
- How ready/prepared is the community for change?
- What personalized training and professional development requirements should be considered?
- What benchmarking needs to be implemented to evaluate pre and post the implementation of the vision?
- What are the Key Performance Indicators?
- What process will be delivered to ensure Quality Assurance – content, professional development, leadership, academic results?
- What percent of the education budget relates to 21st century learning?
- Are we settling for incremental improvements when we could be introducing innovation that will fundamentally transform learning?
- Are we targeting change in too few or too many areas?

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