

Education Transformation Framework Overview

Transformation Framework

About this series

The Microsoft in Education Transformation Framework is a guide for educators and leaders engaged in holistic education transformation. The critical conversations needed for effective transformation of education systems are the focus of this paper series. Each expert author presents a global perspective on the topic through the current thinking and evidence from research and practice, as well as showcase examples. Specifically, 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.



Microsoft in Education Transformation Framework Papers

- Vision for Anytime Anywhere Learning for All
- Enabling Transformation with Strategic Planning, Organizational Capacity, and Sustainability
- Quality Assurance: Monitoring and Evaluation to Inform Practice and Leadership
- Inclusion: Equitable Access and Accessibility
- Public, Private, and Community Partnerships for Employability
- Curriculum, Content, and Assessment for the Real World
- Personalized Learning for Global Citizens
- Learning Communities and Support
- Building Leader and Educator Capacity for Transformation
- Transforming Learning Environments for Anytime, Anywhere Learning for All
- Designing Technology for Efficient and Effective School

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Introduction

Education providers around the world are implored to modernize, reform, and rethink the nature of primary and secondary schooling so the education experience is more relevant for learners and better aligned to community needs. Sparking the natural curiosity of young people and enabling them to be successful in college, career, and community often involves changing an entire education system, rather piecemeal initiatives. Transforming education is challenging, and there is often a discrepancy between policy-making and true change in the student learning experience. School is increasingly unable to capture the attention of students and the trust of the public. Students in much of the world are digitally connected and are as much creators as consumers of media. Young people have an expectation that experiences, services and products can be configured to their individual needs and preferences. (boyd, 2014).

The challenge for education in the 21st Century is to create an approach that is agile, adaptable and in tune with the lives of young people outside of the classroom and their future employability. A holistic solution in education is complex, and using technology as the only solution will not solve these challenges. Even when introduced in schools with the necessary physical infrastructure, simply giving each child a computer will typically not impact learning or conditions that support learning without broader changes in the nature of the school's teaching, learning and assessment practices (Dynarski et al., 2007; Ritzhaupt, Dawson & Cavanaugh, 2012). Effective change requires a more holistic approach to completely transform the learning experience of the learners. Such change is in the hands of education leaders, policy makers, educators and communities. However, these change agents may not have the experience and broad knowledge of workforce needs, social trends, learning science, and educational technology to make effective progress at scale. To address the need among education change agents, we proposed the holistic education Transformation Framework for leaders in education. The following sections outline the research basis for the critical conversations in the Framework (Figure 1) and a summary of the framework's application by education leaders at national, regional and school levels.

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Figure 1: Transformation Framework for education: critical conversations

Conversation 1: Vision for Anytime Anywhere Learning for All

Innovative and effective schools are associated with a clear and specific vision for education and the role of the school (Jensen & Sonnemann, 2014). These schools recognize the importance of getting buy-in for change from across the system, including tri-level national, local authority/district, and school leadership. The vision empowers a diverse leadership team within the school, including administrators, teachers and even students, as well as incorporating the community into a sustainable school reform process. Technology can be a catalyst for these changes. These schools view technology as one of the tools needed to accomplish their goals, employed to enhance teaching and student learning (Cavanaugh, Dawson & Ritzhaupt, 2011).

Conversation 2: Enabling Transformation with Strategic Planning, Organizational Capacity and Sustainability

Sustaining, reflecting, and revising a vision requires schools and education organizations with a culture that values innovation and is designed for agility (Cameron & Quinn, 2011). Agility for learning includes digital learning environments that enable flexible, anytime access to digital resources, and collaborative tools for personalized learning. Agility for teaching includes access to rich content resources that enable educators to tailor learning to the needs of individual students, track student progress, and rapidly take appropriate action when necessary. Agility for professional learning includes communication channels and self-directed opportunities for continuous improvement of skills. Agility for leaders includes an integrated environment where student information is seamlessly integrated between systems within the school, across partner schools, and with Government and private agencies, and work processes are streamlined and automated. Agility for all stakeholders includes systems that streamline communication among stakeholders, tools manage costs, and systems to improve overall performance.

Conversation 3: Quality Assurance: Monitoring and Evaluation to Inform Practice and Leadership

Education transformation grows from a school culture that is dynamic, forward-looking, and focused on learning as the work of the school (Fullan, 2011). An innovative school is an ongoing whole-school effort to design new processes and procedures. This level of change requires cultivation of relationships at all levels across the school and beyond to include parents, community, and other stakeholders. Leadership development is essential: preparing administrators to be instructional leaders, supporting a distributed group of leaders rather than a select few, and devising plans for developing leaders and leadership skills at all levels. These leaders are responsible for promoting a school-wide learning community that keeps all stakeholders working together on the common goal of improving student learning. In addition to the development of individuals, a culture of innovation depends on organizational

development and management; deliberate design of school structures such as facilities, programs and use of time; and prioritizing time for staff collaboration and school networking to enable effective change.

Continuous evaluation is necessary for developing and sustaining a culture of innovation. Successful innovation requires that schools use technology-based analytical tools that help them measure student outcomes and identify those who are struggling academically and their areas of underperformance (Winthrop & Smith, 2012). By using such systems, educators can more effectively deploy resources and intervene at appropriate points. At school level, measures of progress can range from student attitudes and achievement to overall school metrics to attendance and dropout rates.

Conversation 4: Inclusion: Equitable Access and Accessibility

Serving each citizen and society requires access to quality education opportunity for all (UNESCO & UNICEF, 2007). Accessibility enables people of all abilities to realize their full potential. Personalized learning requires attention to the unique needs of all students—particularly students with learning or physical impairments and disabilities. As students are encouraged to take greater responsibility for their learning and for using technology to acquire new skills, schools have a responsibility to provide accessible technology that can be personalized for each student's needs (Gargiulo & Metcalf, 2013). Providing accessible technology in the classroom to students with a wide range of disabilities and impairments—from mild to severe, and from temporary to permanent—enables all students to have equal educational opportunities. Accessible schools need to be healthy places for learning and they should contribute to the health of the community through green facilities and IT. Improving IT resource efficiency not only reduces the environmental impact of IT but can reduce both capital and operational expenses.

Conversation 5: Curriculum, Content and Assessment for the Real World

Schools implement curriculum and teaching in accordance with national standards and other learning requirements within which they can implement effective teaching and learning strategies that encourage student-centered learning and assessment processes (Collaborative Assessment Alliance, 2014). The nature of learning and the roles of teachers and students must evolve to reflect the evolution from the knowledge-centered schools of the past to the application and creation centered schools of today. Many innovative schools actively engage students in their learning and in the co-design of the learning process. Some of the most effective schools put students firmly in the driver's seat of their learning journey, empowering them with data about their learning, and partnering with them to create and manage their own learning roadmaps. Technology skills are crucial in the 21st Century skill set, and technology should be acknowledged as central to the transformation of learning practices. High-level ICT integration increases the possibility of personalizing learning processes, making learning accessible to students anytime and anywhere, and providing opportunities to embed formative assessment continually in the mastery learning process (Assessment and Teaching of 21st Century Skills, 2014).

Conversation 6: Personalized Learning for Global Citizens

Personalized learning is a promising path to differentiate learning for all students and prepare them for college, career and community in the 21st century (Weber, 2014). In today's personalized learning environments, the technology is adaptive so students get individually flexible and responsive path, pace, and pedagogy according to their needs, interests, and choices. The technology provides data used by teachers in crafting learning plans for each student. Effective personalized learning environments provide tools and learning resources that students use in self-directed and self-paced learning (Patrick, Kennedy, & Powell, 2013). Learner engagement and independence are core goals. Integrated and engaging technology

tools can amplify knowledge acquisition, skill development, and application of learning in comprehensive tasks. Adapting the pace and pedagogy require access to content and tools for learning anytime, anywhere, and on any device. Because learning is deepest with guidance and interaction, the content and tools should be collaborative (Jonassen, 2012).

Conversation 7: Learning Communities and Support

School learning communities support 21st century teaching and learning through engagement of students, teachers, families, and mentors to form an environment characterized by the essential features (5Cs) of effective schools: caring communities, where students have control, quality curriculum, connection to the future and the world beyond the classroom, and a supportive climate (Cavanaugh, Repetto & Wayer, 2013). Learning communities emphasize interactions among students and teachers, application of learning to life, and reflection on learning. Learning communities include student personal learning networks and educator communities of practice (Sessums, 2009). These communities afford teaching and learning by proactively removing barriers, such as those sometimes associated with technology that is not planfully chosen and managed (Drexler, 2010). All elements of the community must enable continuity of learning.

Conversation 8: Building Leader and Educator for Transformation

Organizations, including schools, recognize the need to innovate as part of continuous improvement and to stay ahead of the rapid changes impacting schools. Innovative schools are open to change and are led by principals who have specific change facilitator styles, including concern for people shown in social and meaningful ways, organizational efficiency shown through trust in others, and strategic sense shown through vision and planning (Liu, Cavanaugh & Ritzhaupt, 2013). Innovative teaching tends to be strongest in schools that adopt specific approaches (Shear, Gallagher & Patel,

2011), including teacher collaboration focused on peer support and sharing teaching practices, professional development centered on active and direct engagement of teachers in practicing and examining new teaching methods, and a school culture with a common vision of innovation and support for new types of teaching. Primary and secondary teachers choose their profession because they want to change lives, knowing that the work is demanding. The expectation of teacher professional development programs is that they contribute to student learning while reducing the demands on teachers. Such a balance requires professional development approaches that are job-embedded, continual, sustainable, and focused on student learning. In countries with high daily teaching hours, this balance is especially important. For example, out of 32 OECD countries, teachers in 9 countries spend at least 80% of each school day teaching (OECD, 2012).

Time spent in professional development, especially collaborative professional development, is one of the most effective differentiators of high performing schools (Jensen, Hunter, Sonnemann & Cooper, 2014). Internationally and in the US, student academic achievement is linked directly to the time they spend in professional learning, especially collaborative learning. Countries with high PISA results tend to be countries with more time in the teaching day for professional learning (OECD, 2011; Darling-Hammond, Wei & Andree, 2010).

A school change roadmap begins with the education vision of the knowledge skills and dispositions needed by students as school leavers, lifelong learners, professionals, and participants in the community. The vision illuminates the holistic ecosystem of curriculum and content, pedagogical and leadership approaches, and technology-empowered learning environments that bring the vision to life, and points to quality criteria for the 1:1 program. The following holistic framework (Table 1) has been found to be effective in large-scale mobile learning programs (Cavanaugh, Hargis, Soto & Kamali, 2013).

Vision for holistic education transformation (Why)		
Pillar 1. Where	Pillar 2. What	Pillar 3. How
What are the elements of the learning environment that will transform education	What curriculum and content will transform education	What pedagogical and leadership approaches transform education?
Levels of technology adoption: <ul style="list-style-type: none"> • Substitution • Augmentation • Modification • Redefinition 	Provide options for language, mathematical expressions, and symbols	2.1: Clarify vocabulary and symbols 2.2: Clarify syntax and structure 2.3: Support decoding of text,
Provide options for perception	Provide options for comp Table	3.1: Activate or supply background knowledge 3.2: Highlight patters, critical features, big
Quality indicators and measures for education transformation		

Table 1. Framework for holistic professional development

Pillar 3 includes four effective forms of professional development programs: champions, create, communicate, and celebrate, shown in Figure 2.

1. Champions

The foundation of sustainable professional development for school transformation is local champions who are already innovating and leading on technology adoption and integration. These are not necessarily technology experts, but effective teachers who can work with technology, demonstrate to others how technology works, and understand the educational philosophy behind using technology. This group should be selected by each school leader and then engage in training on adopted changes. Training should begin as soon as possible and include interactive discussions, small group work, and creation of samples of effective teaching, repeated at each session as a model aligned with best practices.

2. Create

Educators and support professionals should identify exemplary student work, media assets, lessons, and assessments. These should be shared and refined as "creative commons" property in the learning community. Campus teams work together to redesign lessons for first month of the semester in at least weekly sessions with champion coordination. Champions facilitate campus-based sharing in level and content teams, cross-campus sharing among level and content teams. Creation and sharing should be continual so new teachers are included and so pedagogy is refreshed.

3. Communicate

Using synchronous environments like webinars and asynchronous communities, along with online, onground, local and broad avenues of communication, champions and leaders facilitate sharing of pedagogical success so it builds quickly and efficiently. Professional learning communities (PLCs) are a solution to the barriers of time and place for professional learning, and they provide the collaborative experience teachers need to be most effective in their craft. Cloud PLCs connect every teacher to high-impact, personalized and collaborative, job-embedded learning in iterative cycles of lesson study, looking at student work, creating content, and inquiry into practice (Dawson, Cavanaugh, & Ritzhaupt, 2012). PLCs are collaborative groups with a shared goal of continuous improvement of their practice. They often engage in inquiry, action research, data analysis, planning, implementation, reflection, and evaluation to improve student learning. Professional learning communities for K-12 educators must meet teachers' and leaders' immediate needs and provide them career ladders.

4. Celebrate

A teacher peer-sharing event that might be called weCelebrate is an occasion for faculty to share their experiences about using the innovations in teaching and learning. Possibilities include an Idea Zone where participants can reflect, brainstorm, and continue conversations started during the sessions. Quick '15 minute chats' and 45-minute interactive conversations enable depth and collection of many ideas. These events can be arranged

for several hundred participants in the spirit of Ed Camps and Teach Meets. They can collect revenue for the district by charging fees for non-district attendees while enriching the diversity of ideas. Celebrations should be regular events designed to move the culture of innovation and transformation forward (Cavanaugh, Hargis, Munns, & Kamali, 2013).

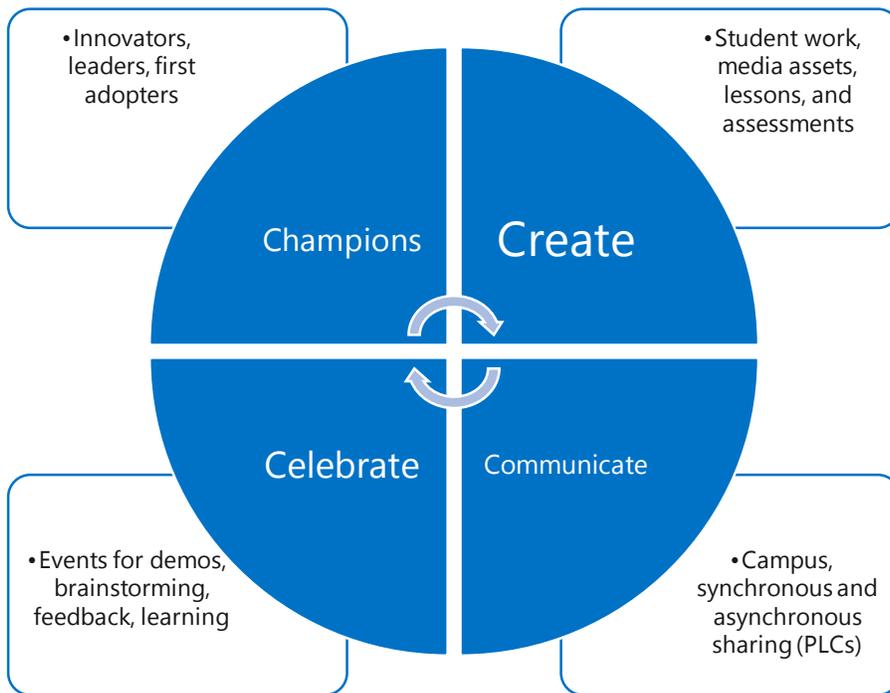


Figure 2: 4Cs of professional development

Conversation 9: Designing Technology for Efficient and Effective Schools

As with all areas of large-scale reform, technologies are key to transforming the learning environment. Too often technology is "bolted on" and not integral to enhancing and assessing learning within schools (Ritzhaupt, Dawson & Cavanaugh, 2012). Schools need access to technology for all students and teachers in order to support anytime anywhere learning, personalization and 21st Century skills. School age children experience a wide range of physical and cognitive development stages from entry to school leaving. Thus, these stages have implications for learning environments, tools and resources, the roles of teachers, and educator professional development. The table (Table 2) briefly outlines the differences and implications as they pertain to technology-powered learning, founded in learning theory and educational research.

Category of difference	Early years (age 5-10)	,
Cognitive development (Piaget)	Concrete thinking is strengthened as the foundation for abstract reasoning	Abstract reasoning develops and is refined
Optimizing learning (Papert)	Cognitive development depends on manipulation of physical and virtual objects. Logo, Turtle, Scratch are examples that bridge physical and virtual.	Conceptual development depends on exploration and manipulations of ideas and principles. Coding and cognitive mapping are examples.
Learning environments (Vygotsky)	Schooling emphasizes limited social development, real world experiences, and exploration of things and situations. Learning is guided by teacher feedback.	Schooling emphasizes broad social development, pre-professional experiences, and exploration of roles and identity. Learning is guided by peer and expert feedback.
Technology affordances (Jonassen)	Technology must be media-rich for with power for knowledge acquisition and demonstration of learning, embedded in story; technology must be an interface with the physical world.	Technology must be data- and collaboration-rich, with powerful tools that connect to the world of ideas, embedded in relationships; technology must be an interface with communities.
Roles of teachers (Mishra & Koehler)	Teachers guide psychomotor and cognitive skills, and development of close social ties.	Teachers guide conceptual and reasoning skills, and development of close and weak social ties.
Educator professional development	Professional development focuses on media to present content, tools to create media in application of content, concrete skill development, personalization.	Professional development focuses on data and abstract representations, tools to visualize and explore concepts, systems for collaboration and integration into communities and professions.

Table 2. Learning environments and learning stages

The support needs of teachers and students are different from those of more traditional corporate or business users, often requiring the use of bespoke systems and software (Cavanaugh, Dawson & Ritzhaupt, 2011). Trends like consumerization of services via the cloud, and the explosion of mobile devices have become a pervasive element of the education experience for all students, whether on campus or remote. Another dimension to consider is the design of physical spaces for rich and diverse educational experiences, including space for oral discussion, project work (creations in art, science, etc.) and performance (UNESCO, 2012). Learning opportunities can be extended by considering virtual spaces for simulations, role-playing and networking (Oblinger, 2005). The learning environment can be developed so that it supports learning in and out of school through such options as community service and workplace internships, and by involving community members as mentors and coaches. In this way, education is unconstrained by time and place.

Conversation 10: Public, Private and Community Partnerships for Employability

To achieve real transformation schools must work across boundaries, creating strong partnerships, with mutual accountability, shared goals and an agreement to address the 'undiscussable' with the extended community. Articulation agreements enable personalized learning to extend beyond the school walls and curriculum to encompass work experience, apprenticeships, dual enrollment in higher education, earning badges and certifications, and participation in real world communities of practice, thus speeding and smoothing the transition among levels in school and from school onward (Repetto, 1995; Lubbers, Repetto, & McGorray, 2008).

Transformation Framework Application

An experienced group of over 140 school and university leaders, presidential advisors, national and regional government education leaders, NGO staff, professors, researchers, vendors, and teaching fellows from 60 countries gathered to focus on holistic education transformation planning. Their forum led them to inspire, create, share, and act in order to begin the planning process for

transforming education worldwide. They were first inspired by students and educators who learn and teach in schools where technology and personalization are scaled up through sharing among teachers, participants went to work. The leaders also heard about new models in professional development, system change, and capacity building. The leaders formed teams to create their visions and plan outlines for education transformation, guided by the proposed Transformation Framework. Several strong themes were expressed in both their dialog and transformation plans (Table 3).

Critical Conversations	Themes in transformation plans
Vision	Education transformation should be holistic, collaborative, and systemic, guided by a shared vision.
Enabling Transformation with Strategic Planning, Organizational Capacity and Sustainability	Transformation and sustained improvement depends on long-range plans for funding and policy. Such plans must support transformation, and be flexible and responsive.
Monitoring and Evaluation to Inform Practice and Leadership	Improving education requires data on student performance that is reported in actionable forms and addresses legal and regulatory requirements.
Equitable Access: Accessibility, Environmental Impact	Access to schooling and the resources needed for quality education opportunity must be equitable.
Curriculum and Assessment for the Real World	School curriculum and assessment of learning must be student-centered, relevant, authentic, constructive, and interdisciplinary. It should develop innovation, creativity, and 21st century skills through deep learning. Content must be digital and shared widely.
Personalized Learning for Global Citizens	Citizenship and social competencies are paramount. Students need multiple learning pathways to achieve globally benchmarked standards.
Learning Communities and Technical Support	Educators and school leaders should have access to and participate in local and global mentoring, sharing, showcases, networks, and celebrations led by champions.
Building Leader and Educator Capacity for Innovation	Professional capacity must be built through aligned teacher preparation, sustainable professional development programs and frameworks, and a clear focus on pedagogy.
Smart Learning Environment (Efficient and Effective Institutions)	Physical and virtual learning environments require updated infrastructure, access to the community, and flexible accommodation of devices.
Public, Private, Community Partnerships with Local Capacity Development	Diverse partnership should build school capacity and teacher competency with a range of stakeholders, parents, businesses, and attention to the local context.

Table 3. Application of Transformation Framework in education transformation plans

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