

## Chapter 2 Building Success with a Holistic Model



### Chapter Introduction by Michael Golden, Ed.D.

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“We want to capture students’ imagination and interest, help them take ownership of their learning, and enable them to learn in meaningful ways.”

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There’s widespread agreement among forward-looking educators about what we want for our students. We want to set high expectations and support all students to meet those expectations. We want to capture students’ imagination and interest, help them take ownership of their learning, and enable them to learn in meaningful ways. We want them to develop all the skills they need for success, including 21st century skills such as critical thinking and problem solving, and non-cognitive skills like tenacity, grit, and persistence. Technology is a powerful enabler, but many of the results to date have been lackluster. I believe part of the explanation lies in focusing on technology for its own sake, and failing to grasp how much system change is required to be successful.

Schools are complex systems. To make sustainable progress, we have to incorporate digital technologies and curriculum in ways that change what happens in the classroom every day. This means approaching technology deployment not as a device initiative, but an education initiative. It means focusing on student learning and making changes across the educational system. We start by asking: What learning outcomes are we after? And then: Where and how can technology help us make that happen, especially in ways that it never could before, by facilitating new interactions and new supports?

We've seen enough successful initiatives to know that this requires a comprehensive approach and effective change management across the education system. It takes modern policies and strong leadership at every level to bring stakeholders together and develop a strategic plan that is both visionary and practical. It calls for effective technologies and support systems, and sustainable funding to make sure programs can continue to advance. Above all, it requires empowering teachers through ongoing professional learning to work with new resources, approaches, and content and change what happens in the classroom.

It's hard work. There is no silver bullet. But this is a perfect time to be making these changes. Budget constraints are pushing us all to think about sustainability and scale in different ways. We're seeing an explosion of digital resources, and the best ones are built on the science of how and why people learn.

We're identifying what works. Now we need to share and scale our successes. By taking a systems approach with student learning as the goal, we can move closer to success for every student.

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**Michael Golden**

As CEO at Educurious, Michael Golden is working to transform the global K-12 learning experience in ways that create curious, motivated young people who are ready for college and careers. Michael served as deputy secretary with the Pennsylvania Department of Education, and previously held executive positions at Microsoft and Pearson Education. He earned a Doctorate in Education Leadership from the University of Pennsylvania and an MBA from Harvard University.

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## Driving Deep Change

While ICT can be useful in targeted, small-scale scenarios, the greatest educational impact occurs when schools embed ICT within a comprehensive initiative focused on student success. In addition to equipping students and teachers with mobile devices, those involved in an educational technology initiative must also:

- Envision new ways of learning and teaching that prepare students for 21st century success
- Align policies, curriculum standards, assessment, teaching strategies, and professional learning to support the full and effective use of digital platforms and resources
- Lead and manage complex changes throughout the system
- Develop sustainable resources to ensure long-term viability
- Evaluate the initiative's success, build understanding of the changes, and push for further improvements

These tasks are challenging and interconnected, requiring strong collaboration among multiple stakeholders. Yet all are necessary, and a failure in any area can weaken the educational impact of the initiative. Success requires ongoing, long-term effort aimed at new goals, new approaches, and new ways of thinking about problems and opportunities. It embodies what scholars characterize as second-order change (Table 2-1). But the rewards can be significant. Project RED's groundbreaking research found that well-implemented K-12 educational technology initiatives can improve student performance by double or more.<sup>10</sup>

### Planning for Deep Impact: First-Order versus Second-Order Change <sup>11</sup>

First-Order Change	Second-Order Change
Extends what has been done in the past	Represents a break with the past, doing things in a dramatically different ways
Keeps the same basic goals and organizational structure	Shifts from teacher-centric, one-size-fits-all pedagogy to student-centric learning environments
Focuses on doing the same things better	Establishes new goals, such as developing 21st century skills and activating a personalized learning path for each student
Maintains a teacher-centric, one-size-fits-all model	Empowers teachers to work as guides and facilitators in a student-centered learning environment
Uses ICT to implement traditional pedagogy, such as drilling on math problems or vocabulary words, replacing physical textbooks with PDFs, or doing computer-based scoring of multiple-choice tests	Incorporates ICT into student-centered learning strategies and advanced assessments, such as students using educational gaming or interactive simulations to analyze and respond to a virtual chemical reaction, earthquake, epidemic, or other event; or using ICT for project-based learning, problem solving, and collaborative research

Table 2-1

## A Proven, Holistic Model to Build Success

Intel's Education Transformation Model facilitates second-order change for K-12 educational technology initiatives. Grounded in research, this model provides a holistic framework that encompasses the seven essential elements shown in Figure 2-1 and summarized in Tables 2-2 and 2-3.

Intel's Education Transformation Model reflects evidence-based best practices that have emerged from Intel's collaborations with school systems and governments in more than 100 countries to advance their visions of education transformation. Using this model, stakeholders can address the practicalities of deep, large-scale, long-term change with ICT, to create sustainable improvements in student learning. Table 2-2 summarizes some of the essential tasks for each area of the model, and this guidebook discusses them in greater detail.

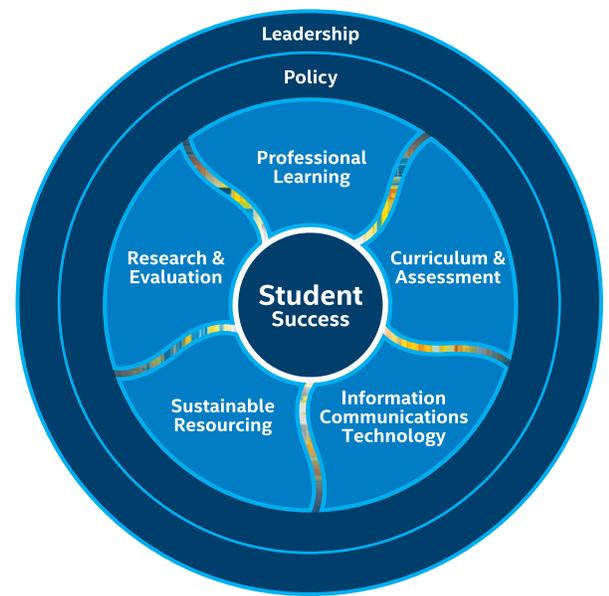


Figure 2-1. Intel® Education Transformation Model

### Holistic Approach to Transformation: Summary of Essential Tasks for School Leaders

Aspects of Transformation	Essential Tasks
Leadership	<ul style="list-style-type: none"> <li>• Lead stakeholders in defining a vision of success</li> <li>• Work from that vision toward a common understanding of why you're acquiring technology and how you will use it as a platform for learning</li> <li>• Develop and execute a flexible yet detailed plan to manage change across all parts of the system and all areas of the transformation model</li> <li>• Build leadership skills throughout the school system</li> <li>• Promote innovation and accountability</li> </ul>
Policy	<ul style="list-style-type: none"> <li>• Establish or modify the policy framework to support the fullest use of educational technology while maintaining security and privacy</li> </ul>
Professional learning	<ul style="list-style-type: none"> <li>• Empower teachers through ongoing professional learning to modify their teaching practice and use ICT in ways that significantly improve learning outcomes</li> </ul>
Curriculum and assessment	<ul style="list-style-type: none"> <li>• Modify curriculum, pedagogy, and content resources to reflect next-generation learning objectives and incorporate ICT as a tool for learning</li> <li>• Align curriculum and assessment to support next-generation learning and improve instruction through real-time, technology-enabled assessments</li> </ul>
ICT	<ul style="list-style-type: none"> <li>• Identify where and how you will use ICT to improve student learning, increase equity, and achieve other goals</li> <li>• Select devices that will support curriculum and assessment requirements</li> <li>• Upgrade infrastructure and staffing so you can manage and secure the environment and maintain data privacy</li> </ul>
Sustainable resourcing	<ul style="list-style-type: none"> <li>• Ensure that ongoing resources are available to support all aspects of transformation, including curriculum modernization, content resources, professional learning, ICT deployment, etc.</li> </ul>
Research and evaluation	<ul style="list-style-type: none"> <li>• Develop a framework to evaluate the program's effectiveness, identify evidence-based best practices, and create a cycle of continuous improvement</li> </ul>

Table 2-2

While each education transformation initiative has a unique starting point and vision of success, transformed environments share many common characteristics (Table 2-3). In the case study, *Comprehensive Planning for a Teaching and Learning Initiative*, the technology director of a large United States school district discusses the importance of a holistic approach to implementing educational technology.

### What Transformation Looks Like: Common Elements of a Transformed Environment

Aspects of Transformation	Characteristics of a Next-Generation Learning Environment
Student success	<ul style="list-style-type: none"> <li>• Students gain the skills, attitudes, and characteristics to fulfill their human potential and create a culture of 21st century prosperity, innovation, and citizenship</li> <li>• Students have equitable access to educational resources</li> </ul>
Leadership	<ul style="list-style-type: none"> <li>• A broad range of stakeholders engage in planning and supporting long-term systemic change</li> <li>• Goals are clearly defined before technology rollout begins</li> <li>• Distributed leadership builds capacity throughout the system</li> <li>• Leaders inspire a school culture of innovation, accountability, collaboration, and support</li> <li>• Leaders model skillful and enthusiastic use of technology</li> </ul>
Policy	<ul style="list-style-type: none"> <li>• School, district, and state/national policies align to facilitate innovation, accountability, and the development of 21st century skills</li> <li>• Practical policies support effective use of technology for learning and teaching</li> <li>• Policies maintain the confidentiality of student and family data</li> </ul>
Professional learning	<ul style="list-style-type: none"> <li>• Teachers have time for meaningful professional learning, curriculum development, and lesson planning</li> <li>• Teachers and principals use a range of self-directed, ongoing professional learning resources to adopt new learning and teaching strategies, build their capacity to design and deliver personalized learning experiences, integrate technology into all aspects of curriculum, and use data to improve student outcomes</li> <li>• Technology instruction is integrated within professional learning for curriculum and pedagogy</li> <li>• Collaborative, supportive environment includes mentors, coaches, communities of practices, and growth opportunities for teachers</li> </ul>
Curriculum and assessment	<ul style="list-style-type: none"> <li>• Modern curriculum standards ensure students gain the skills and knowledge to succeed</li> <li>• Teachers use digital content, tools, resources, and platforms throughout the curriculum to deliver personalized, student-centered, inquiry-based learning and develop students' 21st century (transversal) skills</li> <li>• Curriculum standards are aligned with assessments, and both align with modern educational objectives</li> <li>• Assessments are conducted online and include formative and summative methods</li> </ul>
Information and communication technology (ICT)	<ul style="list-style-type: none"> <li>• Ubiquitous technology supports educational objectives. Students and teachers use a range of mobile devices, ideally one device or more per person</li> <li>• Devices are matched to the student's age, and the curricular and assessment requirements. Devices also meet requirements for security and remote management</li> <li>• Networks provide ubiquitous wireless coverage without bottlenecks</li> <li>• Schools, parents, and communities collaborate to extend wireless access beyond the school</li> </ul>
Sustainable resourcing	<ul style="list-style-type: none"> <li>• The state's, province's, or school system's budget recognizes ICT as essential to learning and teaching and ensures sustainable, long-term funding</li> <li>• The technology budget addresses all device costs, including the impact of device choices on issues such as software licenses, access points, and total cost of ownership.</li> </ul>
Research and evaluation	<ul style="list-style-type: none"> <li>• The initiative starts from evidence-based practices for educational technology, and conducts valid research and evaluation to assess results</li> <li>• Program goals and research questions are clearly defined, with metrics identified during program planning</li> <li>• Results are reported to stakeholders and used to address any identified issues and create a cycle of continuous improvement</li> </ul>

Table 2-3

## CASE STUDY

### Personal Technology Leads to Higher Test Scores in Sweden

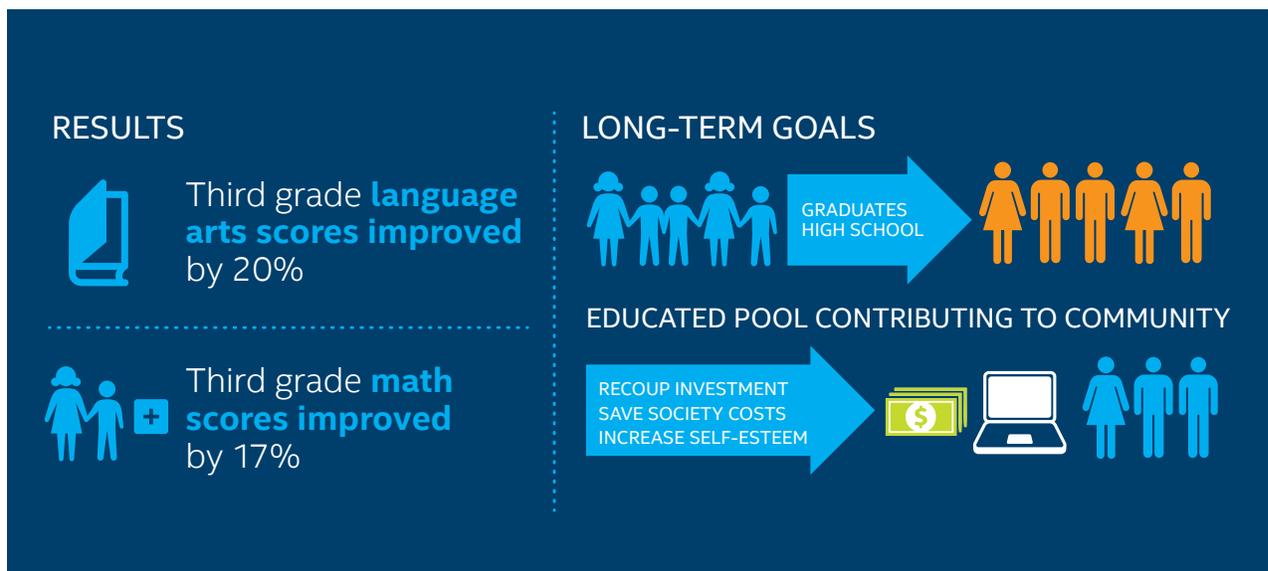
Ale, Sweden, a municipality in western Sweden, implemented mobile education technology in its schools to achieve several short- and long-range objectives.

In the short term, the municipality's goal is to improve the reading and writing skills of younger students, which research shows improves performance in all other subjects and creates an attitude of success that affects students' entire school careers. In the long term, Ale's program aims to increase the number of students who graduate from high school. Research shows that dropouts lead far less progressive and affluent lives and are a financial drain on society.

The municipality first focused on helping second-grade students crack the reading code. Schools used mobile technology to implement the "writing yourself to reading" technique, with tremendous results. In 2010-2011, the students' third-grade language arts test scores improved by 20 percent and third-grade math scores increased 17 percent.

The elementary schools have also found that using technology helps focus active students (boys especially), calm classrooms, and give children with disabilities a more equal playing field. These results clearly support Project RED's findings that "technology is integrated into every intervention class" (Key Finding 1) and "technology integrated into core academic classes weekly or more frequently" (Key Finding 4) leads to improved student achievement.

Still in the early stages of this long-range program, the project leaders in Ale believe that the municipality's strategy of grounding students solidly in reading and writing skills at a young age will have positive repercussions throughout the students' school careers and lives—and positive impacts on society.



## Citations

- 10 T. Greaves, J. Hayes, L Wilson, M. Gielniak, and R. Peterson. *The Technology Factor: Nine Keys to Student Achievement and Cost-Effectiveness*, MDR 2010. <http://www.pearsonfoundation.org/great-learning/research-reports-and-surveys/project-red-the-technology-factor.html>.
- 11 Summarized and extended from Robert J. Marzano, Timothy Waters, Brian A. McNulty; *School Leadership that Works: From Research to Results*, ASCD and McREL, 2005 and *The Technology Factor: Nine Keys to Student Achievement and Cost-Effectiveness*, MDR 2010.

## Resources

- Learn more about the Intel Education Transformation Model: <http://www.intel.com/content/www/us/en/education/education-transformation.html>
- Review research reports from education transformation programs around the world: <http://www.intel.com/content/www/us/en/education/evaluations.html>