

Innovative Teachers: Understanding, Developing and Managing Innovation A Report on the Innovative Teachers Forum

March, 2007

“...the advent of knowledge-based economies demands that we not only understand innovation, but that we also increase our capacity to develop and manage it.” (Cumming & Owen, 2001, p.1).

Participants in the 2005 Innovative Teachers Forum insisted that our knowledge society demanded that education change. “Today,” the 2005 Forum report, concluded “students need to learn *how* to access, manage, and make sense of information; communicate and collaborate with others; and build knowledge and understanding. In short, they need to learn how to learn so they can go on to lead fulfilling and productive lives.”

In November 2006, 175 educators from 32 countries gathered to celebrate their successes as innovators and to help other educators understand more about the key themes of the Innovative Teachers Forum: building community, collaboration with colleagues and access to quality content. Microsoft convened the Forum as part of its Partners in Learning initiative.

More than 100 countries participate in this initiative, which brings together education and government leaders to offer schools and administrators a spectrum of education resources—tools, programs, and practices—that empower students and teachers to realize their full potential.

Sixty-seven teams of educators attending the 2006 Forum presented their classroom best practices, offering other participants the opportunity to learn from these innovative teachers. The intense discussion about these classroom learning activities helped lay the foundation for ongoing collaboration among this new community of learners. Participants also engaged in a hands-on demonstration; learning how other educators used tablet PCs to support innovative classroom activities.

Participants in the Forum had the opportunity to visit the School of the Future, a partnership between Philadelphia’s Public Schools and Microsoft, to learn about moving from individual innovative practices toward school-wide innovation. Following this visit, participants engaged in a series of activities that helped them to begin to define the characteristics of innovative educators, classroom innovation, and the school environment essential to develop and sustain innovation. The results of this work, their “Keys to Innovation” are part of this report. These “Keys” are designed to assist other educators moving along the path of innovation.



Innovative Learning

What type of classroom activities will prepare today's learners for the future? If you listen to the sixty-seven teams of educators who presented learning activities at the 2006 Innovative Teachers Forum, you would hear very similar themes repeated time after time. The examples below illustrate the type of projects that were shared at the Forum and highlight many of the characteristics of learning these innovative educators believe will prepare their students.

Revitalization of Cipoaba Stream

Two of the educators who presented at the Forum asked junior and senior high school students from an economically poor neighborhood to convince their community and the local government to clean up a badly polluted urban stream that flowed behind the school. The school principal, who conceived this project after she attended ICT leadership training, hoped that the learning process would change the local environment, and convince her students of the value of civic engagement. Students captured digital images of the stream, researched the source of the pollution, outlined a clean up strategy and planned a tree nursery for the banks of the stream. They used Movie Maker to present images of the stream, added music, and the script they wrote to make their case to the local community. The students' use of voice, images, and music was a success. Using ICT to present the problem and their solutions, they engaged the community and captured the attention of the local government. The students' success at using ICT to create and share their ideas about the fate of the stream helped them to develop a sense of social inclusion and responsibility.

Natural Disaster Youth Summit

Educators from another high school asked students to create the history of a great earthquake that had devastated their community ten years earlier. They used Internet Explorer to gather information about the event and used Word to create a personal history of their community's experience during this natural disaster. To share their stories and their community's history with students living in other countries, the students utilized PowerPoint to publish their work on the Web. Once published, they used an electronic discussion forum to discuss their findings with students in other countries. Two of the students who participated in creating this history project were chosen to represent their school at an international program, "The Natural Disaster Youth Summit." They presented their history project and plans for natural disaster preparedness to students in countries all around the world. Information and communication technologies were key to this project's success. Without ICT, the students would not have been able to gather important resources, present their stories and findings to peers in other countries, and gain feedback from that real world audience.

Characteristics of Innovative Teaching and Learning

What characteristics of innovative teaching and learning do these projects share? The educators who attended the 2006 Forum outlined the key characteristics of innovative teaching and learning. The “Keys to Innovation” they defined are highlighted in the discussion of classroom learning activities below. The characteristics of innovative learning activities described in the “Keys to Innovation” closely align with the traits of 21st century student skills being developed by many countries around the world. One example of these types of student skills can be found at www.21stcenturyskills.org/.

Students in the environmental and historical projects described above were involved in **engaging** learning activities. Their learning tasks:

- Were authentic for the learners and had value to them outside of school.
- Actively involved students in learning.
- Provided them with real world feedback on their work.

These learning activities were also **problem-based**. The tasks they completed led the learners to:

- Form a reasoned judgment.
- Solve a problem.
- Plan a course of action.
- Persuade or convince someone else.

Global Dreamers

At another school, students in the fifth through eighth grades were encouraged to develop their language, communications and geography skills by participating in a variety of online learning activities with students from other countries. Students engaged in projects about pets, favorite foods and recipes, the weather, winter holidays or shared stories about their family and people in their community. The students from these various countries not only developed the content for the Web site where they share their learning, they also worked with learners from other countries to create the Web pages where other students could post their work. Students from each country took responsibility for a different aspect of creating the pages. To date, learners from 90 schools in 37 countries have participated in one or more of the learning activities that comprise this project. Without ICT, this project would have only been a dream in the mind of educators. The tools ICT made collaborative learning possible for students scattered around the world.

What is innovative about this project? Like the two projects described earlier, this learning activity is **engaging** and **problem-based**, but it is more. These additional attributes are important innovations in classroom learning activities.

- Clearly, it is **authentic**. The tasks were designed to have meaning in the learners’ lives.
- The learners took **pleasure** in learning. As one noted, *“I learned a lot about computers and an important thing I learned is how hard it is to manage a successful site ...When you work with human beings, your work must be on time or else someone gets hurt. This teaches us to keep a schedule and be considerate of all the kids in the project. Sometimes it is hard, but most of the time it is pure fun.”*

- As the quote above points out, the learners also developed some unique **collaboration** skills as they worked as a team on this project. Another learner pointed this out when they said, *“The site is very impressive and I am very proud of our work. I think we were great as a team and it brought us all together.”*
- These projects also put the **learner in a new role**. They were not dependent on their teacher; they were teaching each other. The students understood they were creating and growing together as they helped each other learn. As one of the participants observed, *“Everybody helps to build the site. ‘One teaches the other, and the other teaches somebody else.’ Whether it was a software program... everyone wanted to learn and everyone helped each other. That is the best way for a class to learn by coming together and sharing.”*

Each of these three projects shared two other traits that are critical for innovative learning: they are **standards-based** and they **use information and communications technology (ICT) to enhance academic achievement**.

As standards become a more powerful force driving classroom instruction, it is critical that learning activities are shaped by these standards. The projects above clearly were.

- The educators who created these projects identified two or three key curricular standards or learning objectives they wanted the learners to master and defined how the students would demonstrate knowledge of these standards.
- The educators clearly identified how student mastery of the standards would be assessed. Before the learners began working, their teachers explained to them the various methods they would use to assess the students’ work.

While these projects were standards-based, they were not designed to focus on narrowly defined content standards. Instead of relying on serendipitous learning, the classroom activities were created to intentionally cross artificial boundaries that schools often use to separate content areas. They were interdisciplinary. As one learner involved in a project that was designed to promote English language communications skills noted, *“We are not learning just English. We are learning about the world, and about different cultures.”*

The projects used ICT to **enhance academic achievement**.

- Learners used ICT to access quality information or points of view that otherwise were not available in the classroom.
- Through the use of ICT, the learners could share ideas, present their conclusions and communicate with remote groups.
- ICT helped students receive feedback on their work from communities outside their classroom.
- Students involved in these projects might tell you that ICT helped them participate in democratic processes.

Each of the learning activities used ICT to fuel innovation, but none of the innovative educators assumed that they would achieve innovation by simply using ICT. Technology became an innovative tool because educators paired it with innovative instructional strategies.

Reviewing the classroom learning activities this group of innovative educators presented at the 2006 Forum paints a very different view of the role of teachers. These best practices demonstrate that if they are to prepare students for the knowledge society, innovative educators need to be “knowledge-building teachers” (Hartnell-Young, 2006).

Islands of Excellence with No Ferry Service

What conditions need to exist in the classroom, the school and the minds of educators to move from individual innovation and boutique projects to successful school-wide innovation? Many of the educators at the 2006 Forum are like other innovative educators world-wide in one important respect: they work in isolation. Without any formal mechanism to collaborate, they are in effect “islands of excellence with no ferry service” (Hartnell-Young, 2006). While attending the Forum, these innovative educators demonstrated their understanding of innovative classroom activities. They also engaged in activities that asked them to share their knowledge about the environment and culture needed to develop and sustain an innovative school.

What conditions need to exist for a school to have the capacity to develop and manage innovation? The following example of one innovative classroom learning project presented at the Forum helps explore the answer to these questions.

Reading and writing? With Computers!

As one group of innovative teachers looked at classroom evidence of learning, they realized a number of their third grade students were “unmotivated” and not working up to standards. They were not reading, writing or communicating at their grade level. The teachers hoped to address the issue by motivating their students with a series of challenges, which learners found as they opened a number of “boxes.” One of these boxes was physically present in the classroom; the remainder were “virtual” boxes that students went online to open. All of the boxes contained challenges that encouraged the learners to develop reading and writing skills, and to create a PowerPoint-based story that demonstrated their mastery of these skills. Each of these stories was “published” and collectively, they formed a learner-created book.

As the teachers noted, the learning activity they created was both “fun, and challenging” for the learners. It was also effective. In reflecting on the activity, the teachers observed that the learners were more motivated to learn, their self- esteem grew, and their communication skills improved. As you can tell from the title of the project, the educators who shaped this learning activity believe ICT plays a critical role in learning. Clearly, it plays a role in motivating students. These educators understood that each of their students had different needs and they used ICT to differentiate learning to meet these unique needs. As important as ICT was for student learning, it was even more important for the educators involved.

For educators interested in innovation, there is much more to this story. Initially, the project involved two teachers and their peer coach. Other teachers who faced similar challenges in their classrooms expressed an interest in participating and they, along with the school’s librarian and computer lab instructor, joined the team that had initiated this project. Together, this team collaborated to create and implement new learning activities. The school’s peer coach facilitated a series of eight meetings where the team reflected the problems they faced, discussed solutions and constructed the learning activities found in each of the “boxes” the third grade students would open. The process of creating these learning activities was truly collaborative. One teacher offered content knowledge. Another sparked their creativity by asking challenging questions that helped the team rethink their ideas. A third teacher provided tech

skills. Working together, the project came to life, and the educators' confidence grew. With the work they had done together, and the support of the team, each of the educators involved were willing to try something new and innovative in their classrooms.

At the conclusion of the learning activities, the team came together again to reflect on the implementation and impact of the classroom activities. In addition to the gains in student achievement, this project led to half of the teachers in the school using ICT in innovative practices.

A common classroom issue created the impetus for sustained collaboration among peers. In fact, the need to address this classroom challenge was so pervasive that the collaboration grew beyond one school. Innovative educators in the original project shared it with 18 schools across the country that were in this school's collaborative network. Today, more than 300 teachers and 6,000 students are engaged in the project. The majority of their collaboration is virtual. Participants in the network access classroom resources created by others using the Web, and utilize an electronic forum to learn from other teachers about how to use these resources.

In reflecting on the project, the original participants concluded that they had developed a "collaboration culture among teachers." Their group had created a new culture. "We are part of a huge network, a school community that has developed the culture of thinking, the culture of creativity and the culture of meaningful knowledge." In creating this community, they have also created and enhanced the school's capacity for innovation. They have created the "ferry service" to join together and expand the "islands of innovation."

Conditions Essential for Innovative Learning

What can other schools that want to offer their students innovative learning opportunities learn from this school's experience? Through their visit to the School of the Future and in other activities at the Forum, innovative educators went beyond thinking about innovation in their own classrooms. They focused on the personal characteristics of innovative educators, innovative classrooms and innovative school environments. In short, they identified conditions necessary to foster school-wide innovation. The characteristics they felt were critical for innovation are consistent with research on innovation from Australia, Belgium, Great Britain, the Netherlands, and the United States.

If you asked the educators who were involved in the third grade reading and writing project to describe the conditions at their school that supported the creation of their innovative project, they would likely argue that educators at their school:

- Held a **shared vision** for innovation.
- Maintained **high expectations** for all students' achievement.
- **Used classroom data** to shape instruction.
- Understood that they would have to **adapt new methods if they wanted to insure success** for all learners.



A deeper look into the project, and other classroom projects presented at the 2006 Forum, reveals some critical aspects of the school culture and school environment. These teachers were **risk takers**. The fact that the **school provided time and resources** for the teachers to work together to develop these learning activities indicates that **innovation is encouraged** at this school. By encouraging innovation, the school helped teachers understand there **would not be repercussions for trying new things and perhaps even failing**. In this school, educators had the **supportive leadership** needed for innovation to flourish.

The teachers identified the problem they wanted to address and started to work collaboratively on a solution, demonstrating another practice that is critical for innovation to succeed. The school leaders **empowered these teachers** to take the lead in addressing the literacy challenge. The educators, working with their coach, had the **cognitive skills**, the knowledge and expertise needed to address the issue the school faced, and the desire and willingness to share this knowledge with other teachers facing similar challenges. The school administration recognized the benefits derived from **encouraging leadership at many levels in the organization**. By **providing time and resources** for the group to work, and a peer coach to facilitate the development of these learning activities, the school also showed that it understood that it could **promote change through sustained professional development**. This school was developing the prerequisites required for innovative schools, “increased autonomy, an innovative capacity, and transformational leadership” (Van den Berg, Vandenberghe & Slegers, 2000, p.327).

Schools that are beginning the process of innovation required to assist learners to develop the skills they need for their future, face a journey down a difficult road. The road toward innovative schools has in the past been littered with unsuccessful efforts. By working collaboratively to utilize the ideas raised by educators who participated in the 2006 Teachers Forum and current research, educators will have tools they can use on this journey.

Additional Resources

In addition to the report on this conference, three additional resources were created based on the work of innovative educators attending the conference. Each of these three will be found on the following pages.

Keys to Innovation Chart

The educators’ “Keys to Innovation” referred to in the report above have been gathered into a chart, which considers personal characteristics of innovative educators, the attributes of innovative classroom learning activities and the traits that need to be in place in the school’s environment for innovation to develop and flourish.

Innovation in Education Literature Review

Many schools want to support their efforts at innovation by accessing the scholarly research on a variety of topics of innovation, but they lack the time or other resources to locate this research. In an effort to provide some access to that valuable material, this report also contains a summary of research on several key topics in educational innovation. The research cited in this brief review comes from universities in Australia, Belgium, Great Britain, the Netherlands, and the United States.

Keys to Innovation ReflectionTool

The “Keys to Innovation” are a powerful compendium of ideas about what conditions are critical to develop and manage innovation. The reflection tool puts the “Keys” in a format that a school can use to shape discussion about the topics and issues raised, and what meaning these ideas have in their context. In addition, a school can use this tool to gauge its development of these critical characteristics of innovation. The tool encourages schools to lay out a short term action plan that lets them take two or three concrete steps toward becoming more innovative. These short term action plans could be part of a more comprehensive process. Schools might also use this resource to begin to shape a long term, comprehensive plan to develop and manage innovation. In either environment, the tool can be used to benchmark progress at various milestones in the path toward creating and sustaining innovation.

A quick word about this tool. It was based on the work done by a group of educators gathered from around the world for a two day meeting. It is based on their ideas and experiences. The tool was never meant to be an exhaustive list of every “key” to innovation, nor was it meant to be immutable. The educators who contributed to this would certainly encourage those who use the tool to modify it to reflect more recent or local research.

Resources

Cumming, J. and Owen, C. (2001). *Reforming Schools through Innovative Teaching*, Australian College of Educators, Enterprise and Career Education Foundation and Dusseldorp Skills Forum, ACE Canberra.

Hartnell-Young, E. (2006). Teachers’ roles and professional learning in communities of practice supported by technology in schools. *Journal of Technology and Teacher Education*, 14(3).

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Keys to Innovation was developed to capture ideas and themes from innovative teachers across the world and supporting literature on educational innovation. It is NOT a rubric; each cell lists an attribute or characteristic related to innovation in education in one of three categories: innovative classroom environments, innovation school environments, and innovative educators. The chart is not meant to be an exhaustive list of attributes, but rather a place for educators to begin a conversation about innovation in education.

Keys to Innovation

Innovative Classroom Environments	Innovative School Environments	Innovative Educators
Educators use methods that ensure success for all learners	There is a shared understanding and vision for innovation	Have a vision that includes the kind of learning needed to prepare today's learners for their future
Implement data-driven curriculum designed to improve instruction	Leadership promotes improvement through professional development	Are passionate about teaching and learning
There are high expectations for achievement	Leadership comes from many levels in the school	Are willing to take risks, embrace change, and face difficulties
Learners can clearly articulate instructional outcomes and assessment procedures	Learners' parents are part of the learning community	Are reflective, and use analytical skills on a continuous basis
Learners provide input on assessment standards and can clearly articulate the assessment procedures for activities	The school's learning community uses shared vocabulary	Openly continue learning and updating professional knowledge and skills
Learner feedback is encouraged	Sustained professional development is connected with learner success	Are willing to accept and give constructive criticism to learn from peers
Multiple forms of feedback is provided to learners for further improvement	Support of other organizations is welcomed and used in innovative school practices	Integrate information and communication technologies into the teaching and learning environment
Learners are willing to take initiative to solve problems	Sustainable partnerships involve the different school communities	Facilitate learner-centered activities and are willing to let students take a lead
Learners are actively engaged in authentic, meaningful tasks that develop critical thinking and problem solving skills within the context of their lives	Time is provided within the school day for collaboration and school networking	Seek out opportunities for partnerships and collaboration while respecting individual contributions
Student peer learning, such as in an open discussion, is encouraged	Innovation is encouraged and supported with no repercussions for trying new things	Demonstrate an attitude of increased educational effect through a blending of new and old methods
Learners have access to accurate and reliable information resources (print and non-print)	All staff is receptive to implementing ideas from teachers and learners	Effectively manage unplanned or unspecified questions and situations
Learners display pleasure in learning	Innovative ideas are funded	Take initiative and are not afraid of taking risks
Learners have access to multiple audiences		Are open to new ideas
Information and communication technologies is one type of many tools used by learners and teachers		

Innovation in Education

Literature Review

The development of information and communication technologies (ICT) has transformed our world into a “knowledge society” and changed the skills people need to be successful. The Framework for 21st Century Learning (2006) lists necessary learning and thinking skills such as creativity and innovation, critical thinking and problem solving, communication, collaboration, information and media literacy, and contextual learning.

Education has a responsibility to prepare citizens of the knowledge society who are able to be creative, face changes, manage and analyze information, and work with knowledge (Hargreaves, 1999). Schools and teachers are in various states of reform to adapt their instructional practices to be more effective. The role of teachers has shifted from being a subject matter expert who transmits information to acting as a facilitator of student learning in the knowledge society (Hartnell-Young, 2003). Chan & Pang, (2006) state that reforms in Asia currently emphasize teachers develop students’ capabilities in problem solving, teamwork, and learning to learn.

Teachers and schools exist within this knowledge society, which requires that they be adept at the same skills they are developing in their students. David Hargreaves (1999) states that, “If teachers do not acquire and display this capacity to redefine their skills for the task of teaching, and if they do not model in their own conduct the very qualities—flexibility, networking, creativity—that are now key outcomes for students, then the challenge of schooling in the next millennium will not be met” (p.123). The challenge is to create conditions that facilitate innovation in education and educators. In this paper, we will review the literature that discusses innovative practices at the school, classroom and educator levels, and the conditions under which they develop and are sustained.

Innovative School Environment

Innovative school environments are characterized by high levels of collaboration, strong leadership, shared decision making, and shared values. Bill Mulford (2003) states that there are three necessary elements to successful school reform: 1) people are empowered, trusted, encouraged and valued; 2) a professional community shares norms and values, including valuing of diversity, a focus on implementation and enhancement of learning for all students, collaboration and reflective practice, especially that based on performance data; and 3) the school has the capacity for change, learning and innovation. Other research shows these three elements are supportive of innovative school environments, as discussed below.

Collaboration

Collaboration is an integral practice in innovative schools with benefits to the teachers and the students. Greater collaboration in a greater number of ways distinguished high-innovation from low-innovation schools in a study from the Netherlands (Cumming & Owen, 2001). It provides a structure for sharing ideas and practices, and establishes a network of support (Ross, Ertmer & Johnson, 2001). Collaboration has been shown to increase teacher efficacy and satisfaction, establish a reflective dialogue, and increase collective responsibility for student learning (Kruse, 1996). Professional dialogue where teachers work together to analyze and improve their practice leads to higher levels of student achievement (DuFour, 2004). Goddard, Goddard & Tschannen-Moran (2007) used statistical modeling of data from 47 elementary schools to show that students have higher achievement in math and reading when attending a school characterized by high levels of teacher collaboration. In the literature, two distinct, but related ideas emerge: innovative teachers are more likely to be collaborative and teachers who collaborate are more likely to be innovative.

A number of articles related to innovation in education described innovative teachers as highly collaborative. They reached out to other teachers and administrators for support and were comfortable sharing their own practices and learning from others. A case study of innovative teachers in Australia described them as willing to share their knowledge, skills and strategies with others and active contributors to the school and professional communities (Cumming & Owen, 2001). In another study, “knowledge building” teachers acted within a community of practice where they talked about learning processes, planned activities and curriculum, and invited others into their classrooms (Hartnell-Young, 2006).

Collaboration can encourage teachers to be innovative. In one study, the probability of teachers using a technology innovation was most strongly influenced by peer collaboration and peer modeling (Ross, Ertmer & Johnson, 2001). When teachers see innovation in action by others around them, it is more likely to become part of their teaching repertoire. There is also evidence that collaboration alone would not necessarily produce innovation. In some circumstances collaboration can produce group think or support the status quo (Giles & Hargreaves, 2006). Innovative practices often require a network of support and studies show that teachers who have knowledge of the organization and social culture of the school are more likely to use innovative practices (Zhao, Pugh, Sheldon & Byers, 2002; Cumming & Owen, 2001). These teachers know what they need from others and they know how to get it, which eliminates a barrier faced by teachers who try to work outside of the norm. Teachers from high-innovation schools are adept at creating alliances and identifying advocates to support their work (Cumming & Owen, 2001, p.3).

In a study on the extent to which teachers collaborate and the conditions under which collaboration occurs, Kruse (1996) concluded that structure and social conditions, such as time reserved for teachers to work together and encouragement from others to share practices, were not sufficient. There also needed to be a sense that there was a need and benefit to collaboration.

School Leadership

Collaboration is increased in schools where there is an open and trusting atmosphere that is largely influenced by the school leader (Geijsel, Van den Berg & Slegers, 1999). Leadership has the ability to transform the school environment, which can be a necessary role during large scale reforms (Slegers, Van den Berg & Geijsel, 2000). As will be discussed in the section on sustaining innovation, school leaders are crucial in maintaining an environment that stimulates innovation. Leaders in innovative schools are supportive of teachers and their efforts toward innovation.

Supportive leadership was concluded as necessary for educator innovation in a study on teachers who implemented an innovation (Hartnell-Young, 2003). It leads to greater teacher satisfaction, which in turn leads to improved teacher classroom performance and enhanced student outcomes (Mulford, 2003). Leaders from high-innovation schools are effective in motivating others and offer individual support to teachers (Geijsel, Van den Berg & Slegers, 1999).

Shared Leadership and Shared Values

In a study comparing high-innovation and low-innovation schools, the researchers state that “participation of teachers in decision making is clearly stimulated in high-innovation schools” (Geijsel, Van den Berg & Slegers, 1999, p.189). These schools informed teachers of ongoing matters and encouraged them to participate in team meetings where decisions were made.

Similarly, a case study of ten schools in England showed that the opportunity for teacher leadership was found to empower teachers and improve their performance. When teachers were given responsibility for school development, they had an impact on school improvement. A supportive culture and structures, strong leadership, collective creativity, and shared professional practice created the environment where teacher leadership was most effective (Muijs & Harris, 2006).

Part of shared leadership is a shared vision of the school's mission. High-innovation schools were more likely to have a vision and mission shared by the leaders and teachers (Geijsel, Van den Berg & Slegers, 1999). When there are agreed upon goals that unite the school, they individually and collectively make more progress towards the goals.

Innovative Classroom Environment

In an innovative classroom environment, the focus is on student learning. A study of seventeen exemplary technology-using teachers revealed that their practices focused on student centered lessons (Ertmer, Ross & Gopalakrishnan, 2000). According to the literature, innovative classrooms feature relevant learning activities where students practice 21st century skills listed earlier, and student data informs teachers' practice.

Student Learning

According to Hartnell-Young (2003), instruction in an innovative classroom is teacher facilitated, rather than the teacher transferring knowledge to students. In "Innovative School: Organization and Instruction" (Sharan, Shachar & Levine, 1999), the authors state that in innovative environments, learning involves "considerable investigation of problems by students" that "encompass a range of disciplines and thereby approximate the real-life problems confronting people and society." Students should have access to a variety of useful resources to assist them in solving such problems and be assessed on their ability to make use of their acquired knowledge (Slegers, Van den Berg & Geijsel, 2000).

Assessment

Using formative assessments and turning data into useful and relevant information is characteristic of schools that function under the professional learning community model (DuFour, 2004). Using student data to improve teaching and learning is also noted as an innovative practice. Supovitz & Klein (2003) conducted site visits to nine schools that were identified as using data in effective ways. Their data included external test data (such as district tests) and "creative and highly customized assessment systems" of student classroom work. Teachers used the data to inform their practice in a variety of ways, including assessing the effectiveness of their instructional approaches, guiding decisions on topics for additional study, or identifying who needs individual attention. The study concluded that simply having the conversation around the student learning outcomes can be transformational in refocusing teacher practice.

Educator Innovation

Innovative teachers have been characterized by a number of personal attributes such as creativity, passion, and altruism. They are described as knowledgeable on a range of topics, deeply involved, highly motivated and skilled at a number of teaching strategies (Cumming & Owen, 2001; Bitan-Friedlander, Dreyfus & Milgrom, 2004). Cumming & Owen's (2001) case studies of eight Australian innovative teachers aims for greater specificity in identifying innovative teaching, with indicators to measure quality and performance and to guide the establishment of innovative teachers.

Personal Growth

Innovative teachers are noted for their “insatiable desire to improve their own practice and ‘reinvent’ themselves in response to new demands, challenges and opportunities” (Cumming & Owen, 2001, p.3). In one study, teachers from high-innovation schools were more likely to feel the need for personal growth and were open to professional development and expressed a desire for schooling and training compared to those from low-innovation schools (Geijsel, Van den Berg & Slegers, 1999).

Pedagogical Beliefs

Slegers, Van den Berg & Geijsel (2000) state that teachers’ perceptions of an innovation are based on their previous experiences with innovations, their personal biographies, and the organizational context. Teachers are more likely to use an innovative practice that aligns with their attitudes and beliefs, current practices and district or state standards (Toolin, 2004; Zhao, Pugh, Sheldon & Byers, 2002). If their students have high-stakes testing, teachers use the test as a reference point to judge the value of various innovative teaching practices and decide which components and material to use (Boardman & Woodruff, 2004).

Large scale innovations elicit concerns, worries, conflicts, uncertainties and resistance among teachers, which often prohibits full implementation of such innovations (Geijsel, Slegers, Van den Berg & Kelchtermans, 2001). Van den Berg, Slegers, Geijsel, & Vandenberghe (2000) name these emotional undertone problems or questions the “concerns-based model,” which includes self, task, and impact concerns and indicate that the concerns play a large role in the decision-making process. However, Bitan-Friedlander, Dreyfus & Milgrom (2004), researchers from Israel, found that teachers did not necessarily make judgments based on their attitudes or concerns about the innovation they were being asked to apply in their practice, but focused on whether they felt able and had the time to use the innovation in their classroom.

Sustaining Innovation

Over time, educational change is shaped by various forces that at some point converge to reaffirm traditional and standardized high school practices and push innovative practices away (Hargreaves & Goodson, 2006). Forces of standardized reform movements that micromanage the process of learning take up large portions of teacher time and effort, leaving less energy for teachers to develop innovative practices (Giles & Hargreaves, 2006). According to Matusov (1999), innovative schools maintain themselves through a community with experienced members and the development of newcomers who are attracted to the school philosophy.

Giles & Hargreaves (2006) state that innovative schools frequently have difficulty sustaining success over time. A small study of innovative schools in Canada and the United States showed forces of change, including the departure of a school leader, increases in size, and the hiring of numbers of teachers who were not “socialized” into the schools culture. Sustaining success was more difficult when there was a lack of support from the outside community perhaps because as an innovative school, they thought themselves superior to other schools and operated in professional isolation. The school with steady leadership, outside support, and distributed leadership among teachers were able to face pressures of change more effectively.

Hargreaves & Fink (2003) identified principles of sustainable leadership, such as securing success over time, sustaining the leadership of others, and developing environmental diversity and capacity, so that an innovative school does not fade upon the absence of its leader. Recognizing and describing factors such as these principles of sustainable leadership is crucial in creating an environment where innovative practices are standard.

Conclusion

The literature reveals a number of practices and conditions that foster the development and maintenance of innovation. Theorists argue that schools should develop innovative structures and processes that enable them to develop the professional capacity to learn in, and respond quickly and flexibly to, their unpredictable and changing environments that are characteristic of the 21st century “knowledge society” (Strain, 2000). With a history of failed reform efforts in the United States and internationally, it has become apparent that a number of conditions need to exist in order to sustain reforms. Just as students need to be prepared with 21st century skills to be successful in the knowledge society, schools and teachers also need to be creative, collaborative, flexible, and critical thinkers who manage and analyze information.

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Keys to Innovation Reflection Tool

Based on the characteristics listed on the Keys to Innovation chart, this reflection tool was developed to help educators begin a conversation about innovation in their schools, as a planning tool, and to track the growth of innovative practices over time.

Directions:

1. Assign a rating for each of the characteristics listed below the categories.
2. Compare your responses to those of others from your school, grade level, or educational setting.
3. Discuss your findings.
4. Use the Action Planning form to chart your next steps.

Innovative Classroom Environments are those where:	At Our School
Educators use methods that ensure success for all learners	0 1 2 3 4
Implement data-driven curriculum designed to improve instruction	0 1 2 3 4
There are high expectations for achievement	0 1 2 3 4
Learners can clearly articulate instructional outcomes and assessment procedures	0 1 2 3 4
Learners provide input on assessment standards and can clearly articulate the assessment procedures for activities	0 1 2 3 4
Learner feedback is encouraged	0 1 2 3 4
Multiple forms of feedback is provided to learners for further improvement	0 1 2 3 4
Learners are willing to take initiative to solve problems	0 1 2 3 4
Learners are actively engaged in authentic, meaningful tasks that develop critical thinking and problem solving skills within the context of their lives	0 1 2 3 4
Student peer learning, such as in an open discussion, is encouraged	0 1 2 3 4
Learners have access to accurate and reliable information resources (print and non-print)	0 1 2 3 4
Learners display pleasure in learning	0 1 2 3 4
Learners have access to multiple audiences	0 1 2 3 4
Information and communication technologies is one type of many tools used by learners and teachers	0 1 2 3 4

0 = Not used, not evident
 1 = Beginning use, barely evident
 2 = Sometimes used, sometimes evident
 3 = Consistent use, consistently evident
 4 = Inventing new ways to do this, fully evident

Keys to Innovation Reflection Tool - page 2

Directions:

1. Assign a rating for each of the characteristics listed below the categories.
2. Compare your responses to those of others from your school, grade level, or educational setting.
3. Discuss your findings.
4. Use the Action Planning form to chart your next steps.

In Innovative School Environments:	At Our School
There is a shared understanding and vision for innovation	0 1 2 3 4
Leadership promotes improvement through professional development	0 1 2 3 4
Leadership comes from many levels in the school	0 1 2 3 4
Learners' parents are part of the learning community	0 1 2 3 4
The school's learning community uses shared vocabulary	0 1 2 3 4
Sustained professional development is connected with learner success	0 1 2 3 4
Support of other organizations is welcomed and used in innovative school practices	0 1 2 3 4
Sustainable partnerships involve the different school communities	0 1 2 3 4
Time is provided within the school day for collaboration and school networking	0 1 2 3 4
Innovation is encouraged and supported with no repercussions for trying new things	0 1 2 3 4
All staff is receptive to implementing ideas from teachers and learners	0 1 2 3 4
Innovative ideas are funded	0 1 2 3 4

0 = Not used, not evident
 1 = Beginning use, barely evident
 2 = Sometimes used, sometimes evident
 3 = Consistent use, consistently evident
 4 = Inventing new ways to do this, fully evident

Keys to Innovation Reflection Tool - page 3

Directions:

1. Assign a rating for each of the characteristics listed below the categories.
2. Compare your responses to those of others from your school, grade level, or educational setting.
3. Discuss your findings.
4. Use the Action Planning form to chart your next steps.

Innovative Educators:	At Our School
Have a vision that includes the kind of learning needed to prepare today's learners for their future	0 1 2 3 4
Are passionate about teaching and learning	0 1 2 3 4
Are willing to take risks, embrace change, and face difficulties	0 1 2 3 4
Are reflective and use analytical skills on a continuous basis	0 1 2 3 4
Openly continue learning and updating professional knowledge and skills	0 1 2 3 4
Are willing to accept and give constructive criticism to learn from peers	0 1 2 3 4
Integrate information and communication technologies into the teaching and learning environment	0 1 2 3 4
Facilitate learner-centered activities and are willing to let students take a lead	0 1 2 3 4
Seek out opportunities for partnerships and collaboration while respecting individual contributions	0 1 2 3 4
Demonstrate an attitude of increased educational effect through a blending of new and old methods	0 1 2 3 4
Effectively manage unplanned or unspecified questions and situations	0 1 2 3 4
Take initiative and are not afraid of taking risks	0 1 2 3 4
Are open to new ideas	0 1 2 3 4

0 = Not used, not evident
 1 = Beginning use, barely evident
 2 = Sometimes used, sometimes evident
 3 = Consistent use, consistently evident
 4 = Inventing new ways to do this, fully evident

The Microsoft Commitment to Innovation

Teachers who participated in the Microsoft Worldwide Innovative Teachers Forum demonstrated that they are forging the future of education. They embrace innovative leadership, teaching, and learning. And they are creating learning environments that are relevant in the 21st century. Teachers are on the frontlines of innovation in education. They are creative, talented, and eager to make education relevant in the 21st century. As they experiment with new ways of leading, teaching, and learning, teachers are reflective and insightful about the challenges ahead for education. The Microsoft mission fits well with the mission of education around the world. Our role in education is creating innovative, effective tools that help educators and students imagine and reach their full potentials. Through our global Partners in Learning initiative, Microsoft is taking its long-standing commitment to education to the next level by helping individuals, communities, and nations develop and grow programs that provide access to technology tools and that foster technology skills and innovation. The Microsoft Innovative Teachers program, which is active in 64 countries, is dedicated to:

- Bringing together a community of teachers as learners.
- Facilitating the creation of collective knowledge.
- Creating a platform for the advancement of best practices and adoption of innovation.
- Providing training and access to technology resources.
- Helping teachers develop confidence using technology in the learning process.
- Engaging teachers intellectually and offering them opportunities to be active stakeholders in their profession.

To Learn More

For more information about the Microsoft Innovative Teachers program, visit www.microsoft.com/education/innovativeteachers.mspx

For more information about Partners in Learning, visit www.microsoft.com/partnersinlearning

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