Pursuit of Knowledge Through Online Technologies
Message from the Dean

Dear Alumni, Faculty, Staff, Students, and Friends,

“The mission of Brigham Young University ... is to assist individuals in their quest for perfection and eternal life.” We do this by creating learning experiences that are spiritually strengthening, intellectually enlarging, and character building, leading to lifelong learning and service. These aims will continue to serve as standards for the faculty and staff of the David O. McKay School of Education in the future.

Modern prophets have repeatedly discussed how new scientific and technological developments contribute to building the kingdom of God. President David O. McKay, for whom the School of Education was named, said, “This marvelous age has only now begun, and the youth of today, and many of us, will yet see exciting developments unfold as research continues.”

During the past decade an incredible array of educational innovations has emerged, challenging us in our quest to continually improve our research, teaching, and service. Our stewardship is to seek the best ways to continue learning and expanding our own knowledge, to improve our teaching methods, to strengthen the learning outcomes of our courses and programs, and to advance the field of education. Numerous technological tools and methods developed by inspired individuals are extending our ability to advance teaching and learning—for example, social communication technologies, online learning, blended learning strategies, open courseware, and the Internet. We are now responsible to use these tools in innovative ways for the benefit of children and youth in our K–12 schools.

Everyone entering the education profession should have experienced taking online courses, developing and teaching online and blended courses, and using data for decision making. Educators who combine an understanding of technology with subject-matter knowledge, pedagogical strategies, and interpersonal skills will be well prepared to teach in 21st-century learning environments.

We must be aware that technological environments and online learning do not marginalize the need for positive personal relationships. We must also be innovative and creative in making use of digital tools to enhance our spiritual and intellectual growth, strengthen our character, and truly become lifelong learners. I hope that this issue of the McKay Today Magazine may contribute some ideas and resources to support you in your quest to learn and progress throughout your lives.

Sincerely,

K. Richard Young
I remember observing as a teenager an encounter between my mother and my older sister. My mother and I were upstairs in the kitchen, and my sister was downstairs in the family room singing. My mother, who had never noticed that my sister had a good singing voice, dropped what she was doing in the kitchen and went downstairs. After carefully listening, my mother asked, “Would you like to take voice lessons?” My sister was excited at the prospect. She took private voice lessons with a superb teacher, became a skilled soloist, and eventually sang with the Mormon Tabernacle Choir.

This brief encounter between my mother and my sister illustrates the inseparable connection between agency and learning. My mother chose to listen and then extend an invitation to my sister to take voice lessons. My sister chose to accept the invitation. She also chose to continue pursuing her goal of becoming a skilled singer. And then she chose to share her talent freely in choirs and church meetings.

Agency in Learning
The act of pursuing is based on agency. My sister was striving to obtain her goal of improving her talent. She was pursuing knowledge. Her pursuit required that she open herself to the guidance of her voice teacher, practice, and accept invitations to perform. All of these actions were premised on my sister wanting to do it. Knowledge itself was not my sister’s ultimate goal. Her ultimate goal was to bless others with her talent.

I once worked with former BYU professor Arthur Henry King. Although Arthur passed away 12 years ago, below is a conversation I created that I might have had with him if we were discussing the pursuit of knowledge. The phrases with quotation marks are Arthur’s actual words taken from his book The Abundance of the Heart:

Russ: How do you see this whole issue of the pursuit of knowledge?
Arthur: “One of the mistakes we make over and over again in life is to go directly for the things we think are important.”
Russ: Are you saying that we should not pursue knowledge we think is important?
Arthur: I said not to go directly for things we think are important.
Russ: You mean like setting our hearts on riches?
Arthur: Yes, but more. “If we aim at self-fulfillment, we shall never be fulfilled.”
Russ: Are you saying happiness is a by-product of something else?
Arthur: Yes, but I don’t like the word by-product. People talk about getting an education, but “if we aim at education, we shall never become educated.”
Russ: Education seems like a fairly important goal to aim for, but you’re saying that we should not go for it directly.

Arthur: Yes. Even “if we aim at salvation, we shall never be saved. These things are indirect, supreme results of doing something else; and the something else is service, it is righteousness, it is trying to do the right thing, the thing that needs to be done at each moment.”

Consider how agency is at the root of all that Arthur is saying. We not only choose the goal we will pursue but also choose the reason for which we will pursue it. If we are exercising our agency to pursue learning that will permit us to help those around us, then we will become educated. Nephi did not initially set a goal to become a shipbuilder, but he became a very skilled shipbuilder as an indirect result of doing what needed to be “done at each moment.” He listened, obeyed, and acted. My mother did the thing that she needed to do by asking my sister if she wanted to study voice. And my sister responded in the same spirit.

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Doing what needs to be done at each moment demands that we know what the Lord would have us do. Then, once we know, we exercise our agency by following His will for us at each moment.

Russ: The Prophet Joseph became educated—but not because he pursued the goal of education. He pursued knowledge: We answer the compelling question at each moment. On the surface, some of these answers may not seem to be too consequential, but, in the end, learning what we need to learn at each moment is essential.

Information Accessibility

The Internet has made knowledge more accessible than at any time in human history. Wikipedia is the fifth most frequently visited site on the Web. A few months ago I was watching a BYU football game with my eight-year-old grandson. A penalty was called, and the camera showed a close-up of the V on the back of the official’s shirt. My grandson asked, “So, Grandpa, what does the H mean?” I responded, “I’m not sure.” Looking a little puzzled, my grandson asked, “Why don’t you just look it up on your iPhone?”

Instant access to knowledge—that’s what my grandson is used to. He knew I had the answer in my pocket, so why didn’t I settle the issue? I did just that, pulling out my phone and finding the answer to his question. This pervasive access to knowledge allows all of us to learn what we want to learn when we want to learn it. This brings us back to agency and its relationship to learning. Even with such universal access, some still choose not to learn.

Some choose not to do what they ought to do at each moment. They might use the Internet constantly and still not be learning what they really should be learning—what would lead them to service and righteousness.

Our challenge is to take advantage of our current digital access to knowledge without allowing it to take advantage of us. I need to ask myself if I am exercising my agency appropriately to do what the Lord would have me do at each moment. I need to know if the learning I am pursuing is the learning that I need to be pursuing. I also need to find ways to help others do the same.

My Strongest Support

When I wrote the book The Education of the Heart, I visited regularly with Arthur Henry King in his home. He was 84 years old. The following is an excerpt from an account of one of my visits.

Arthur has been so supportive, never adamant, never demeaning when I was unaware of something that for him was fundamental. He has given me the encouragement I needed to pursue what still seems to be a daunting task and has given me, somehow, the strength to keep pursuing it. His sincere interest in my work—not his actual words of counsel—has been my strongest support.

During those encounters with Arthur, I was pursuing knowledge—the knowledge I needed to acquire so that I could write the book I was trying to write. Like my grandson, I wanted answers instantly, and sometimes Arthur helped me find those answers instantly. At other times I had to keep asking and seeking and knocking. He was using his agency as he conversed with me, and I was using my agency as I sought his counsel.

A Lifelong Pursuit

The pursuit of knowledge is a lifelong pursuit. It never ends. It is actually the reason for which we came to earth—to keep learning what God wants us to learn so that we can live with Him again. The Lord gave us agency so that we could do exactly that. He gave us the power to choose what we would pursue and how we would pursue it. All of us simply need to ask ourselves if we are exercising that priceless gift as we learn what He wants us to learn and teach what He would have us teach. The miracle of all of this is that as we seek for guidance in our individual pursuits of knowledge, our ability to choose what God would have us choose increases as we become the individuals He wants us to become.

Russell T. Osguthorpe, a professor of instructional psychology and technology, currently serves as director of the Center for Teaching and Learning at Brigham Young University. He also serves as the Sunday School general president for The Church of Jesus Christ of Latter-day Saints.

For a fully referenced version of this article, visit education.byu.edu/magazine/agencyandlearning.

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The Internet has become so much a part of daily life that today people of all ages would be socially inconvenienced without it. Without it, how would we communicate with the grandchildren? Find a gift? Text a friend? Stay current with the news? Check Facebook?

Most people use the Internet to socialize. In contrast, the origins of the Internet were strategic. In a cold war atmosphere, scientists needed a safe and secure channel for communicating research data and findings, which were in turn used for creating further knowledge. Scientists used the Internet to benefit themselves and society. We should consider that perhaps this early role of the Internet as a knowledge tool is closer to what will be needed in the future: a tool not only to build social connections but also to stay competitive in a changing world.

Evolving Use of the Internet

How did the Internet evolve from a tool for knowledge production into what it is today? From the early 1990s Web browsers supplied easy interfaces to Internet content for the nonprogrammer. From that point Internet use exploded. This growth shows no sign of slowing—in fact, quite the opposite. Consider these projections by the Cisco Corporation:

**WHAT WE DO ONLINE**

Percentage of American adults who do the following activities during an average day online

<table>
<thead>
<tr>
<th>Activity</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use a social networking site</td>
<td>43%</td>
</tr>
<tr>
<td>Read news about politics</td>
<td>28%</td>
</tr>
<tr>
<td>Use online banking</td>
<td>24%</td>
</tr>
<tr>
<td>Check the weather</td>
<td>34%</td>
</tr>
<tr>
<td>Check Email</td>
<td>59%</td>
</tr>
<tr>
<td>Get news</td>
<td>45%</td>
</tr>
<tr>
<td>Go online just to pass the time</td>
<td>44%</td>
</tr>
<tr>
<td>Use a search engine</td>
<td>59%</td>
</tr>
<tr>
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</tbody>
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By Andrew Gibbons

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SPRING 2012
The social uses of the Internet were what attracted new users, and at present it appears that further growth will be stimulated by the same forces. Yet the Internet puts at our fingertips a body of information and resources unparalleled in history. What are we doing with what we send and receive?

A recent Ziti comic strip showed a moon’s-eye view of earth with communications satellites orbiting around it. Titles close to the satellites stated: “Over 2 billion cell phone subscribers worldwide,” “More than 8,000 satellites currently in orbit,” and “Trillions of signals continuously beamed into space and back to the satellites stated: “Over 2 billion cell phone subscribers with communications satellites orbiting around it.”

The report stated that “knowledge is now recognised as the driver of productivity and economic growth, leading to a new focus on the role of information, technology and learning in economic performance.” Whereas value has in the past been produced from intellectual capital—ideas, knowledge, innovations, and solutions—bright minds capable of solving problems. What is important about this changing vision of the new competitive world is that it will require more than just a few problem solvers within a society to raise the level of the whole society.

Walter Powell and Kaisa Stelman of Stanford University pointed out “the centrality of theoretical knowledge as a source of innovation” in the future. “The key components of a knowledge economy include a greater reliance on intellectual capabilities than on physical inputs or natural resources.” The need for these intellectual capabilities is spread across a range of knowledge-producing fields rather than being concentrated within a few scientific sectors. According to Powell and Stelman, this will “integrate improvements in every stage of the production process, from the R&D lab to the factory floor to the interface with customers.”

Economist Lester Thurow described a competitive 21st-century world in which “brainpower and imagination, invention, and the organization of new technologies are the key strategic ingredients.” Thurow explained that the value of firms in the future will not be in production equipment, which everyone buys from the same supplier, but rather “in the minds of the firm’s employees who know how to use that equipment in unique or enhanced ways.” “The infrastructure that is really going to count in the future . . . is not so much the physical infrastructure but the knowledge infrastructure.”

Symptoms of this shift appear in occasional news stories from the software industry describing “gentlemen’s agreements” between corporate leaders to not recruit key knowledge workers from each other. Though these informal agreements give employers protection for what they consider trade secrets, they can also effectively trap employees from moving among comparable industry jobs. This example is cited not to argue who is right as much as to show the existing tension as the center of gravity shifts from physical capital to intellectual capital.

Given that those before us have always had to wrestle with challenging new issues, what is really different about the challenge that presents itself to our generation? It is perhaps that having just a few notable problem solvers will not do in this highly competitive age. Consider the additional burden that is placed on those who are asked to participate in an increasingly complex world, serve within it at all levels, and provide the leaven that will help the whole lump to rise.

**RISING WITH THE WHOLE**

Paul A. David and Dominique Foray described a new knowledge-based economy in which “individuals penetrate conventional organisations [e.g., corporations, governments, etc.], to which their continuing attachment to an ‘external’ knowledge-based community represents a valuable asset.” In this world described by David and Foray, individuals add value to the organization mainly because they share in a knowledge community that is outside the organization. As they explain, “as members of these communities develop their collective expertise, they become agents of change for the economy as a whole.” These authors noted:

**ECONOMIC HISTORIANS**

Economic historians point out that nowadays disparities in the productivity and growth of different countries have far less to do with their abundance (or lack) of natural resources than with the capacity to improve the quality of human capital and factors of production: in other words, to create new knowledge and ideas. The implication, according to David and Foray, is that the workers within a society, in order to contribute to the continued prosperity and progress of the society as a whole, must acquire a range of skills that they continuously adapt. These
skills, they say, underlie the “knowledge economy.” Most significantly, the knowl-
edge and skills needed are not within the traditional knowledge silos but across them. Needed skills include the capacity not only to apply knowledge but also to create it—not merely codified knowledge but “tact” knowledge that supports the solution of novel problems.

DEFINING A NEW EDUCATION

This emerging concept of a new competitive playing field coincides with the emergence of a new concept of the educated mind. Carl Berente, in his book Education and Mind in the Knowledge Age, proposes that it will require “a new way of thinking about knowledge and the mind” to educate a new generation of youth who can live on an equal footing among worldwide societies that are also advanc-
ing in knowledge production. His recommendation is to recognize that knowledge is not just something that resides in the mind. Rather, it is also a collection of con-
ceptual artifacts that can be separated from individual minds and regarded as objects of examination and study. This process will result in the ability of learners to take charge of and therefore improve the objects through ongoing conversation that references them.

Berente contended that there exists “a confusion between the knowledge used in productive work and the knowledge that is the object of such work.” He suggests that we can “pry loose” knowledge from how it is used. He continues:

What happens with such prying loose, I believe, is a level shift that is as radical as the shift from a barter to a money economy. Indeed, the shift is very similar to that from barter to money, and it is what makes a knowledge-based economy a realistic possibil-
ty rather than merely a figure of speech.

Making learners aware of knowledge as a conceptual artifact produced by human activity makes it possible for them to become aware of participating in the production of knowledge. Instead of thinking of themselves as consumers of infor-
mation or even as problem solvers using preexisting knowledge, they can think of

RECOGNIZING IMPLICATIONS OF A KNOWLEDGE ECONOMY

What are the educational implica-
tions of the knowledge economy—an economy that is not as much as a forecast as a present reality? And what does all of this have to do with the Internet? As David and Foray point out, access to infor-
mation has become easier and less expen-
sive thanks to the Internet. At the same time it is tempting, in the face of this surfeit of information, to mistake infor-
mation for useful knowledge. Skills for dealing with knowledge in the abstract were previously held by relatively few: to select and efficiently use information, to disregard irrelevant information and detect patterns, to deal with codified public knowledge critically, to move tacit knowledge toward codified form so it can be shared, to express codified knowledge and engage in its application, and to learn and devise new ways to handle knowl-
edge as a shared object and adding to it.

This type of work requires a con-
tinuous learner who has been taught

the concept of intellectual property—not in the sense of own-
ership but in the sense of shared inquiry. That learner will
have to value inventiveness and creativity—thinking out of
the box, thinking analytically, and collaborating in problem
solving. Problem-solving skills alone will not be sufficient. As Thurow pointed out, “The depth and breadth of knowledge
necessary for successful economic production requires put-
ting people to work together in skilled teams.” These must, of necessity, be interdisciplinary teams; inflexible discipline advocates will be uncomfortable in such a working environ-
ment. Communication skills and team-building skills will be at a premium.

As stated in the 1996 OECD report, “Education will be the centre of the knowledge-based economy, and learning the tool of individual and organisational advancement.” So why the reference to the Internet as we use it today? Should such a rich source of connectivity with its vast sea of information be seen negatively? Only if we mistake the sea for what produced it and how it was produced, and only if we content ourselves with paddling on the surface without truly exploring its depths.

CONCLUDING CAUTIOUSLY

The Internet is only as good or as bad as how it is used. If we can learn to use it to stimulate and train minds in the kinds of skills that will be required to contribute in the knowledge economy, then it can be a force for good. However, if we allow ourselves to chase attractive but not really useful information, we may find ourselves eating an economic dish prepared by others. Most regrettable, we may find we have lost communi-
cation with, and effective participation in, a world in which we would otherwise “leaven the whole lump.”

Andrew S. Gibbons is a BYU professor with design industry experience. He is the current chair of the Department of Instructional Psychology and Technology. For a fully referenced version of this article, please visit education.byu.edu/ magazine/21stcenturythinking.
Building Towers and Lighting Candlesticks

In Matthew 5:15-16 we read, “Neither do men light a candle, and put it under a bushel, but on a candlestick, and it giveth light unto all that are in the house. Let your light so shine before men, that they may see your good works, and glorify your Father which is in heaven.” The candlestick mentioned is an example of using simple technology to amplify one’s good works.

In his address “When the World Will Be Converted,” included in the October 1974 Ensign, President Spencer W. Kimball recalled that in Mosiah 2, King Benjamin “caused a tower to be erected, that thereby his people might hear the words which he should speak unto them.” President Kimball then commented, “Our Father in heaven has now provided us mighty towers—radio and television towers with possibilities beyond comprehension—to help fulfill the words of the Lord that “the sound must go forth from this place unto all the world.”

Decades after President Kimball’s address, the Internet has become the mightiest tower and tallest candlestick ever given by God to men. The good and worthy works of our age—including education—can be magnified and amplified globally when they are placed on the Internet.

Part of the reason the Internet is such a remarkable candlestick, allowing educators to shine their light across the entire world, is due to the economics of the network. For example, while a 250-page book costs approximately $20 off the shelf and another $5 to ship across the globe, an electronic version of the same book can be uploaded to the Internet for approximately $0.001. The Internet makes sharing educational materials essentially free.

However, just because sharing educational materials across the Internet is essentially free doesn’t make that sharing legal. In fact, the powerful capabilities of the Internet that enable free copying and distributing are directly at odds with copyright laws, which specifically prohibit copying and distributing without permission. What the Internet enables, copyright law often prohibits.

Opening Up with OER

In response to this tension between what is possible and what is legal, a group of lawyers and faculty from several prestigious universities created the Creative Commons licenses. These copyright licenses make it easy for people who create educational materials and other creative works like books, songs, and videos to say to the world, “I give you permission to take my work and share it with others, for free.” When educational materials use a Creative Commons license, we call them “open educational resources” (OER). With OER, users have permission to do the things referred to as the “4Rs”:

• Redevelop. You are free to make any changes you need to the materials, such as translating a syllabus into Spanish or making an audio version of an article.
• Revise. You are free to combine the open educational resource with other open educational resources to create something new, such as putting two videos together with some music to explain a topic.
• Reuse. You are free to publicly use the original open educational resource or your modified version—for example, showing photographs on a big screen during class.
• Redistribute. You are free to make and distribute copies of the original open educational resource or your modified version—for example, making 500 handouts of a book chapter or posting it on your Web site.

Developing Open Educational Resources

Since the launch of Creative Commons licenses in 2002, over 400 million pictures, songs, videos, and pieces of writing have been licensed as OER. Thus they are free for anyone to use to tutor children or grandchildren, teach religious or other lessons, share with a reading group, send to colleagues, or learn about the latest advances in any field.

Some of the world’s most prestigious universities publish the materials they use in their classes as OER:

• MIT OpenCourseWare. MIT publishes syllabi, lecture notes, readings, and other materials used in over 2,000 of their on-campus courses. They also publish dozens of courses in video format so that anyone can “sit in the back of the class” for free and learn along with the on-campus students (ocw.mit.edu).
• Stanford Engineering Everywhere. Stanford publishes videos and other materials for over a dozen of their most popular engineering courses (see.stanford.edu).
• Open Yale. Yale publishes videos and other materials for dozens of courses ranging from astronomy to poetry (oy.c.yale.edu).
• Webcast.Berkeley. The University of California, Berkeley, offers videos and audio for hundreds of courses from subjects across the university (webcast.berkeley.edu).

Universities aren’t the only entities creating and sharing high-quality, open educational resources. Dozens of individuals, foundations, and public schools are producing OER aimed at K-12 students. Among them are the following:

• Khan Academy has published over 2,700 brief videos on math, science, and finance topics, with an extensive catalog of computer-graded practice exercises. They also publish SAT and GMAT prep materials (www.khanacademy.org).

Education

Education is primarily an enterprise of sharing. In fact, sharing is the sole means by which education is accomplished. If a teacher is not sharing what he or she knows with students, education is not happening. If a teacher is not reviewing student work and sharing feedback from their evaluation, learning is diminished. Those educators who share themselves most thoroughly with the greatest proportion of their students are the ones deemed most successful. Does every student leave a classroom possessing the knowledge and skills the teacher tried to share? In other words, is the teacher sharing successfully? If so, then the teacher is a successful educator. If his or her attempts at sharing fail, the teacher is a poor educator. Simply put, education is sharing.

By David Wiley
and schools will be unwilling to pay for curriculum from commercial sources. The effective than freely available open educational resources. Otherwise, students
ity materials when they are competing with higher quality, openly available content relatively unknown individual or company will have difficulty selling average qual-
answer is that they have to compete with free and open materials. In the future a
the companies that want to make a profit selling educational materials?” The short
impact on education is “What happens to the people who want to make a living and
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iterally hundreds of other sites exist in which people and organizations are
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Impacting the World

While “openness” may at first seem like a quirky online subculture, the
presence of OER materials in the market will benefit students and schools in
two ways. Either students and schools will get materials of current quality for
free, or they will get significantly better materials at competitive prices.

Another question that commonly arises when thinking about OER is “Does
a large collection of high quality, openly available educational materials make
education systems obsolete?” The short answer is no. If large collections of content were sufficient to support meaningful, fulfilling learning, libraries would never have evolved into universities. Social interaction—including the opportunity to ask questions, debate, argue, and discuss—is a critical part of learning. Although campus-based learning will be increasingly augmented by online learning, a physical campus where people gather to interact and learn will always be needed.

IMPACTING THE WORLD

While “openness” may at first seem like a quirky online subculture, the idea of freely sharing educational and research materials is quickly becoming mainstream. For example, the Utah State Office of Education now recommends open textbooks for use by secondary language arts, math, and science classes across the state. In research published in 2012, my colleagues and I demonstrated that open textbooks could be printed and provided to students for about $5 per book, in contrast to the $80 textbooks schools had been using, with no impact on learning outcomes. As the model propagates across the state, Utah schools stand to save as much as $5 million dollars per year.

In fall 2010 the Washington State Board of Community and Technical Colleges launched the first phase of its “Open Course Library.” This library will eventually include open textbooks created for the 80 highest enrolling courses at the WSCTC’s 54 campuses across Washington State. According to a study by the Student Public Interest Research Groups (PIRGs), the one-time $1.18 million investment in the first 40 textbooks will save Washington students $1.26 million in the program’s first year.

How does the existence of high-quality, freely available content impact education? As seen in the above examples, the first impacts are significant improvements in the affordability of education. Given that total student loan debt held by American students has surpassed $1 trillion dollars—an even larger body of debt than that of credit cards—improvements in the affordability of education are desperately needed.

The second impact of OER is the potential for greater personalization of curriculum. When teachers, schools, districts, and states have open permissions, they can remove examples or content that is irrelevant or confusing for their students. They can also add local examples that speak directly to students’ lives and engage students to a greater degree.

GIVING FREELY

Matthew said in chapter 10 of the Bible, “Freely ye have received, freely give.” For millennia it has been easy to freely share what you know—words spoken cost nothing. For the first time in human history, the Internet now makes it economically possible for us to freely share educational materials with everyone around the globe. Open educational resources make it legal to exercise this new capacity to its fullest.

As sharing is the core of education, the Internet and open educational resources combine to significantly amplify the power to educate—everyone.

David Wiley teaches in the Department of Instructional Psychology and Technology. He is the associate director for research in the Center for the Improvement of Teacher Education and Schooling and director of the open education research group. He also serves as a senior fellow for open education with the national center Digital Promise.

To learn more about open education, visit opensourcesourcesweek.org/about-open-ed.

For a fully referenced version of this article, please visit education.byu.edu/magazine/educationsharing.
The average 8- to 18-year-old spends
7 HOURS & 38 MINUTES
using media every day.

When does it start?

A Common Sense Media study stated that more than 25 percent of parents have downloaded apps for their children.

Apparently babies have achieved virtual celebrity for mistaking a magazine for a broken iPad. Children learn to “swipe” before they can tie their shoes, and iPads are the most coveted gift of tweens and teens.

Key findings from the report “Learn II: An Analysis of the Education Category” on Apple’s App Store included the following:

1. Over 80 percent of the top-selling paid apps in the education category of the iTunes Store target children.
2. Early learning apps for toddlers and preschoolers are particularly prominent as one of the fastest growing categories.
3. Out of over 140,000 apps available on the Apple iPad, over 20,000 (and counting) are educational apps—some of which have been created by teenagers.

Technology will have a major impact on how we do our work of instruction. Will the Internet classes and technology take the place of professors? No. Will it change what we do? Yes, in very significant and profound ways.
—David A. Bednar

The rapid use of technology by all ages has brought varied and positive change. Educators, many of whom are digital immigrants, are preparing students for jobs that do not even exist at this time. More than ever, teachers are helping students to become more responsible for their own learning.

Today’s ubiquitous technology is no longer confined to the “computer room.” Technology tools are not a passing fad. Unlike the previous generation, students of today spend a considerable portion of their day interacting with technology for a multiplicity of functions and purposes.

The Portable iPod touch Lab is for individual use or for collaboration.

WHAT IS BLENDED LEARNING?

Blended learning combines face-to-face instruction and technology-mediated instruction. Blended learning instruction is effective when the strengths of technology are combined with the advantages of human interaction. The challenge of the teacher is to provide rich human interaction along with rich content presented in interesting and interactive ways.

The reasons some educators are choosing blended learning systems are (1) they improve pedagogy, (2) they increase flexibility and access, and (3) they are cost effective.

In 2002 the Pennsylvania State University president said that the convergence between online and residential instruction is “the single greatest unrecognized trend in higher education today.”

Future learning systems may not be differentiated as much based on whether they blend but rather by how they blend.

WHAT HAPPENS WHEN THEY GO TO SCHOOL?

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THE WAY IT IS
Open High School of Utah

The Open High School of Utah is a full-service online charter high school serving students across the state of Utah. It is a free public option that provides individualized instruction tailored to student needs and schedules.

Students can go full time or take one or two classes in addition to attending their traditional high school. All students learn through technology, with open educational resources that are aligned with Utah state standards as the foundation of content.

The Mission

The mission of Open High School of Utah “is to facilitate lifelong success by meeting the needs of the 21st-century learner through individualized, student-centered instruction; innovative technology; service learning; and personal responsibility.”

Students’ Thoughts

Students report that they like the individual attention they receive from one-on-one tutoring with an emphasis on personal learning. With open resources, teachers are able to modify the curriculum to meet individual needs. Students love the flexibility and mobility of the program.

The Reach of “Open”

The curriculum is accessible to anyone in the world. For instance, the devastating 2011 earthquakes in New Zealand placed a great strain on the educational system because many of the country’s schools were damaged or destroyed. The Greater Christchurch Schools Network provided a form of blended learning and online learning for the teachers and students, with the greatest single addition of curriculum coming from Open High School of Utah.

Options in Open

DeLaina Tonks, director of Open High School of Utah, feels that school choice creates options for students but also provides career options for educators. She says that today’s educators “are able to match their ideal teaching position with the school environment that best fits their schedule and ultimate vision for education.” This is true for the traditional public school or a charter, private, or online virtual school.

In large schools, portable laptops are shared within the school so there is more access to technology for students.

Open Education

Students memorize their math facts with the help of the iTouch— the new flash cards.

Technology in the Classroom

The Student Response System (Clickers) provides the opportunity for everyone to answer each question and then discuss answers.

The Computer Lab is one place to practice skills. Parents can download programs so students can practice skills at home.

Teacher and students work together with the Interactive White Board, which can be used with a document camera.
EMERITUS

Paul Felshaw Merrill

Paul Felshaw Merrill served for over 15 years as chair of the Department of Instructional Psychology and Technology. He obtained his undergraduate degree from BYU and his PhD in educational psychology from the University of Texas at Austin, then spent five years on the faculty of Florida State University. He joined the BYU faculty in 1977 and retired in 2010.

At BYU Merrill taught classes in instructional design and computer applications in education. The constant change in computer technology over 35 years required him to be a continual learner. He learned and taught numerous computer-programming languages and authoring systems. Having served a mission in Argentina, he had a particular interest in foreign languages that led to the development of several Web-based second language acquisition applications (open.byu.edu/projects/readers). Merrill voluntarily taught religion classes at BYU as well.

Merrill was born in Thatcher, Arizona, and moved often with his family as he was growing up—living in Arizona, California, Utah, and Idaho. Merrill’s interest in teaching came to him through example, since his father was a high school history teacher, school principal, and superintendent. His mother was a public school nurse.

Merrill continues to love teaching. Currently he is the high priest group instructor in his ward. He has also served as bishop, branch president, counselor in a stake presidency, Gospel Doctrine teacher, executive secretary, and ward clerk. To be more efficient in his duties as ward clerk, he developed a computer-based ward membership system that became a prototype for the Church’s current membership system.

Merrill and his wife, Sunny, are the parents of four, the grandparents of eleven, and the great-grandparents of one.

ALUMNI

Margaret A. Johnson Fox

Margaret (Maggie) A. Johnson graduated from BYU in 1969. Her entire career was spent in the Clark County School District, in which she was a classroom teacher for 24 years and an elementary librarian for nine years. She received her master’s degree from the University of Nevada—Las Vegas. Maggie says she learned her greatest lessons while teaching. Her teaching was enriched by great colleagues who cared, shared, and mentored her. In retirement Maggie has continued to be involved in education. She works with the Clark County READS program to promote literacy and replace outdated library books with funding provided by local organizations. Maggie trains tutors in the Reading Partner Program and has supervised student teachers from BYU—Idaho. She enjoys reading, traveling, and gardening and is married to Charles B. Fox.

Lincoln J. Card

Lincoln J. Card earned a degree in elementary education in 1952. He taught in Canada and Utah, then obtained a master’s degree in educational administration from BYU and an associate doctorate from Utah State University. Lincoln was a principal 29 of the 34 years he spent in education. He worked closely with BYU to implement education initiatives. He also served on various state advisory committees, including the Professional Practices Advisory Committee. In 1985 he was named National Distinguished Principal of the state of Utah. After retiring he taught at the McKay School, then served a mission in Texas with his wife, Irene. The Cards are the parents of four children, 21 grandchildren, and 17 great-grandchildren.

Hermona Anderson Holdaway

Hermona Holdaway was named after her parents Herman and Donna. Hermana attended Snow College after graduating from high school. She married Glade Holdaway, had children, and attended Utah State University, Chabot College, BYU Salt Lake Center, and BYU. In 1976, as the mother of four, she graduated with a degree in education from BYU. Hermana says, “It had taken me 18 years to graduate from college, the same amount of time it took to graduate from high school.” She enjoyed teaching first, second, and fourth grades. She was close to her students and continues to communicate with several of them. Now retired, the Holdaways divide their time between Utah and Arizona but remain avid BYU fans.

Lora Hilton Whiting

Lora Hilton Whiting served as BYU’s first female student body president. She graduated with a degree in clothing and textiles and taught for a year while her husband, Ray, finished school. She later certified as an elementary teacher and taught for 16 years at Mapleton Elementary. Lora loves to quilt and gives her quilts to grandchildren and to humanitarian causes. She has volunteered at the Utah Valley Hospital for 20 years. She says that while at BYU she learned to plan well, be prepared, and never stop learning. Her advice is to “keep actively involved in good things, such as church, family, and friends—and BYU sports.” In 2011 Lora was named Grand Marshal of the Mapleton Pioneer Day Celebration.

Brad Wilcox: Friend of Education

The career aptitude test I took in high school suggested I should become a rabbi or a priest, but the test I took at BYU had elementary school teacher as the top item. It felt right. I loved learning about everything, and teaching about everything would be great! I have never looked back. My choice has provided the opportunity to teach with variety, work with children, be a professional, and make a difference.

Working with kids means lots of ups and downs, but my wife, a nurse, reminds me that on a heart monitor you don’t want a straight line. It’s the up and down lines that let you know you’re alive. Working with children keeps me young and vital.

Education allows me to make professional decisions. I didn’t want to spend my life following teachers’ manuels. I wanted to write them. I didn’t want to learn just what teachers are supposed to do; I wanted to discover how to do things more effectively.

A professional sees needs and meets those needs—whatever they may be. As every teacher knows, the greatest needs are not necessarily academic.

The opportunity to make a difference is the main reason I chose education as a career and stayed. I love knowing that what I do matters.

My life isn’t rich in possessions, but it’s certainly rich in significance. I’m not having a midlife crisis. I don’t have time for one. I am too busy changing the world!

Brad Wilcox, an associate professor in the Department of Teacher Education, teaches graduate and undergraduate courses in literacy and children’s literature. He is an author and popular speaker at programs such as Especially for Youth and Campus Education Week.

At the annual McKay School Take a Principal to Dinner event, Wilcox presented the topic: “Why I Went Into Teaching and Why I Stayed.” You can view the presentation at mckay.byu.edu/
Responsibility for Answering Our Own Questions

David A. Bednar

“it is impossible for a man to be saved in ignorance.”
—D&C 131:6

W

We are blessed in this life with the gift of moral agency and “are agents with the capacity and power to act”: and are not merely objects ‘to be acted upon’ (2 Nephi 2:26),” writes Elder David A. Bednar. In his 2011 book Increase in Learning: Spiritual Patterns for Obtaining Your Own Answers.

As a member of the Quorum of the Twelve and with his background in education, Elder Bednar provides powerful insights into gaining knowledge, understanding, and intelligence. He emphasizes that with the precious gift of agency, we are responsible for what we learn, when we learn it, and what we do with the knowledge we receive. Elder Bednar highlights the compelling example provided by Joseph Smith. Returning “to his home from the Sacred Grove immediately after the appearance of the Father and the Son,” he spoke to his mother and said, “I have learned for myself” (Joseph Smith—History 1:20; emphasis added).

In a world of turmoil and commotion in which voices with conflicting messages seem to shout at us, it is vital to take responsibility for our personal learning. Along with forming our own thoughts, conclusions, and questions, we also need to develop the ability to discern. “Discernment is a light of protection and direction in a world that grows increasingly dark,” says Elder Bednar. “The spiritual gift of discernment is not exclusively about discerning other people and situations, but also about discerning things as they really are within us.” It helps us find the good concealed in others and in us. Elder Bednar further explains that “the gift of discernment opens to us vistas that stretch far beyond what can be seen with natural eyes or heard with natural ears.”

Elder Bednar gives us a caution: “Indeed, all information and knowledge are not equally important.” As we prayerfully ask, seek, and knock with the aid of the Holy Ghost, we will receive answers, get direction, and continue to learn and progress in this life. As Elder Bednar points out, “Only as we gather together in one all things in Christ can we diligently strive to become what God desires us to become.”

In October 2002, Elder David A. Bednar was ordained and set apart as a member of the Quorum of the Twelve Apostles. He received bachelor’s and master’s degrees from BYU and then received a PhD in organizational behavior from Purdue University in 1980. Elder Bednar was on the faculty at the University of Arkansas and at Texas Tech University before being named president of BYU–Idaho in 1999.

For a fully referenced version of this article, please visit education.byu.edu/magazine/bednararticle.
awarded to students and practicing teachers for outstanding work and promise shown in teaching science, technology, engineering, or mathematics (STEM).

Alumna at White House
McKay School alumnus Wendy Uptain was one of only 12 honored educators invited to the White House to consult with officials from the U.S. Department of Education. The purpose of the event was to get expert advice from educators and to receive recommendations for federal education policy improvements.

Retiring Faculty
The McKay School says goodbye to retiring faculty Ellen Williams. Working at BYU for 11 years, she served as the codirector of the Leaders Preparation Program and as codirector of the Principals Academy in several Utah school districts. Williams spent 30 years as an educator in Utah.

Funding Award
David Wiley, of the Department of Education Policy, Curriculum, and Instruction at BYU, recently received two technology-related grants. The William and Flora Hewlett Foundation will provide support for the statewide rollout of open science textbooks in grades 9–12 in partnership with the Utah State Office of Education. The second grant is sponsored by the MacArthur Foundation partnering with the National Manufacturing Institute and Degreed.com to create education credentials, called badges, for manufacturing and related industries.

Assistant Principal of the Year
Alumna Dana McConnell was recognized as the Utah Middle School Assistant Principal of the Year for her work at Pine View Middle School.

Elementary Ed’s New Look
The McKay School’s Elementary Education program recently changed much of its framework and curriculum. The changes will align the program to national standards. As part of the change, students will be required to complete the TESOL minor, which meets Utah state requirements for the TESOL endorsement.

Principal of the Year
Alumna Suzanne Kimball was recognized as the Utah Middle School Principal of the Year while teaching at Mapleton Junior High. Kimball has also received the Excellence of Education Award from the PTA in 2001 and the Reading Principal for the Year Award by the Utah Council of the International Reading Association.

Cliff Lecture Presenter
Clayton Christensen was the featured speaker at this year’s Benjamin Cluff Jr. Lecture. His speech was titled “Theories of Disruption in Education.” Christensen is world renowned for his work on innovation and is regarded as the creator of and the world’s foremost authority on disruptive innovation.

Mentored Research Conference
The David O. McKay School of Education annual Mentored Research Conference was held April 3. The conference showcases undergraduate and graduate student research conducted with faculty members in the McKay School. The conference is sponsored by the Center for the Improvement of Teacher Education and Schooling Research Division.

Take a Principal to Dinner
MSE students and local principals networked at the annual Take a Principal to Dinner event held recently at the Hinckley Alumni Center. Students learned about working in the field of education from administrative perspectives. Brad Wilcox spoke. His remarks are included on page 21.

I AM A TEACHER

I AM A TECHNOLOGIST

By Richard Culatta

Recently I was invited to interview for a position at a teacher training organization. After some initial conversation, one of the interviewers asked, “Do you consider yourself a technologist who knows about teaching or a teacher who knows about technology?” I just stared back. What a funny question! It seemed like he was asking if I was a chemist who knows about technology or a teacher who knows about chemistry. However, the question did make me reflect on how teaching and technology became intertwined for me.

It happened as I stood in front of a group of grumpy teenagers attending my Spanish class. We were studying the Dirty War, a dark period in Argentine history known for abuse and sequestration of those who opposed the government. Unfortunately the facts on the page of the textbook were as ineffective at conveying the history as they were important to leave to my class awake. I remember thinking, “This story is far too important to leave to these dusty pages.”

With some creative sleuthing on the Internet, I was able to locate a collection of images of the victims. I also discovered a popular Sting song that was written about this very topic. With some digital duct tape and string, I created a presentation for my class for the following day. As the presentation played, I watched the faces of my students do something very unusual for teenagers: show emotion. Questions like “Why would people do this to each other?” and “What keeps this from happening in our country?” started a meaningful discussion. During that hour, as history became meaningful to my students and to me, teaching and technology became inseparable.

During that hour . . .
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These days I don’t spend much time in K–12 classrooms, but my excitement about using technology to make education meaningful has only increased. I’m particularly excited about the customization of learning that technology affords. Technology allows us to hold a high standard of learning for all students, even as the timelines and the paths for getting there vary. New data sources and the ability to obtain large sample sizes in near real time can open worlds of research possibilities.

Learning analytics allow rapid iterations of new educational products while simultaneously cutting the time required to make research-based decisions.

As I watch the possibilities unfold, I feel much as I did when I stood in front of a Spanish class and watched the light bulbs of engagement turn on in the students’ minds as they watched a presentation about the Dirty War. The next time I’m asked if I’m a teacher or a technologist, the answer will simply be “Yes.”

Richard Culatta is the deputy director of the Office of Educational Technology for the U.S. Department of Education. Prior to holding this position he served as an education advisor to U.S. senator Patty Murray. Richard received a master’s degree in instructional psychology and technology.
Andrea Velasquez’s BYU education was made possible by generous donors. While attending BYU Andrea learned to connect with and nurture students using technology. As a PhD student in the Department of Instructional Psychology and Technology, she is now teaching "face-to-face" online.

You can use the Internet to connect with other students like Andrea. Stay connected to the McKay School by donating for scholarships. Give online at tinyurl.com/givemse.