Benefits and Drawbacks of Social Media in Education

Every day, about 250 million people log in to Facebook. Twitter has 15 million regular users; they send 65 million messages each day.

People watch more than 2 billion video clips on YouTube daily. Every hour, users upload an average of 24 hours of video content.

Every day, more than 90 percent of college students visit a social networking site.

That’s a lot of information bombarding students. Trying to keep up with it all can change the way the brain functions. Is this good or bad?

Both. WCER researcher Mark Connolly acknowledges that these social media show value in educational settings—as long as they are used prudently.

Many have pointed to the educational benefits of these media (also called Web 2.0). Social media tools and networking sites encourage students to engage with each other and to express and share their creativity.

Connolly suggests an additional benefit: establishing enduring relationships with real people. This means going beyond seeing others simply as peers who trade digital content. For example, connecting with fellow dorm residents through Facebook can help a student overcome the kind of isolation that otherwise might lead her to leave school. A Twitter account can provide a shy student with information about events that facilitates face-to-face encounters with other students. Such personal interactions are vital to creating and sustaining a sense of belonging.

These relationships can be fostered on the community level too. For example, Chicago’s DePaul University sponsors a “This is DePaul” contest for students to contribute short YouTube videos that best capture the DePaul experience. In 2009, the winning videos drew nearly 20,000 viewers. Social networking sites also can help students develop leadership skills, from low-level planning and organizing to activities that promote social change and democratic engagement.

The drawbacks of social media

Along with the benefits, Connolly cautions that students who use social networking tools might pay significant hidden cognitive costs. Facebook, Google, and other web services simultaneously seize and fragment our attention. They can subvert higher-order reasoning processes, including the kind of focus, concentration, and persistence necessary for critical thinking and intellectual development. Some researchers have correlated heavy Internet use with greater impulsivity, less patience, less tenacity, and weaker critical thinking skills. The need to rapidly
In this issue of *Research Highlights* Allan Odden explains that strategically managing human capital goes far beyond the practices of what was once called “human resources.” It requires restructuring the entire personnel system to include recruitment, selection, distribution, induction, professional development, performance management and evaluation, compensation, and career progression. Restructuring these processes can boost teacher and principal effectiveness in ways that dramatically improve student learning.

When hiring new teachers, innovation can help. Steven Kimball and colleagues describe the hiring practices of one principal who worked with teachers to develop six attributes they expect from their new colleagues. With these attributes in mind, they assess the strengths of each prospective teacher. Following candidate interviews, those who do well are invited back for “finalist day,” where they participate with other finalists in a group exercise on student data, and work together to solve a school issue.

Facebook, Twitter, and other social media technologies are here to stay. Mark Connolly says it’s important to help students learn how to use social media in an instrumental way, learn how to think deliberately about their use, and consider the sorts of outcomes for which using social media are proper. In the real world, students will find themselves facing a difficult situation involving social media that rules alone cannot resolve.

Research has revealed surprising strengths in children’s abilities to reason inferentially in non-mathematical domains. Traditional views have considered children as limited to understanding obvious relations among observable properties. Eric Knuth says there is growing evidence that children are capable of developing sophisticated causal theories, and of using powerful strategies of inductive inference when reasoning about the natural world.

FROM THE DIRECTOR

Adam Gamoran
WCER Director
Professor, Sociology and Educational Policy Studies

shift from object to object online can weaken students’ ability to control their attention. Prolonged Internet use exposes students to interactive, repetitive, and addictive stimuli that produce permanent changes in brain structure and function. The more one uses the Internet and social media, the better the brain can skim and scan. But research suggests that these gains degrade the capacity for concentration, reasoning, and reflection—in fact the very sort of critical thinking and evidence-based reasoning needed to honestly appraise the full costs of using social media.

**Considerations for the educational use of social media**

Students must learn to distinguish the skill needed to locate information online from the ability to understand that information. Using social media to cultivate and demonstrate deep learning is possible, but that requires overcoming the persistence of distraction, the surfet of irrelevant information, and the temptation to wander.

Students can develop a capacity for practical reasoning when using social media. Educators and students should have multiple, purposeful discussions about social media’s pros and cons. Social media can enhance and impede student learning, and educators can use realistic case studies to help students identify trade-offs. For example, the use of social media in educational settings may incorrectly suggest that learning should be easy and quick. If so, students should be shown the value of reinvesting the time and effort saved by technology into higher-order tasks that really matter to their learning, such as writing a complex argument, reading difficult texts, and debating ideas with others.

Social technologies are here to stay. Connolly says that it is important to help students learn how to use social media in an instrumental way, learn how to think deliberately about their use, and consider the sorts of outcomes for which using social media are proper.

In the real world, students will find themselves facing a difficult situation involving social media that rules alone cannot resolve. Connolly says the problem will require their best judgment—a kind of practical wisdom that cannot be taught, but instead is learned through practice accompanied by guidance and support.

Knowing when, where, and with whom to use social media, Connolly concludes, may be the most important learning outcome of all.

Best Practices in Hiring and Evaluation

Of all the challenges facing principals, maybe the most important are finding and then keeping the best possible teachers in the classrooms. Principals must be strategic in both hiring and managing teaching talent. Below, WCER researcher Steven Kimball discusses the process by which a principal can become a strategic talent manager.

Best practices in hiring

Staffing decisions require a number of steps, including planning for turnover, marketing the school, networking with talent sources, and enacting careful selection procedures.

The key in planning for turnover is to identify possible openings early and then bring in the best candidates before they’re hired by other schools or districts.

Developing a recruitment message means marketing the school to prospective talent within the district and beyond.

As part of a recruiting strategy, principals also develop professional contacts and networks of outstanding staff members to augment district recruitment efforts.

Perhaps the most important aspect of talent acquisition is the selection process. Many principals, though, have little training in candidate selection. They rely on improvised interviews or use weak criteria that don’t predict teaching effectiveness. Making the right hiring decision can mean the difference between obtaining a high-functioning team member or someone with deficient skills.

While researching the ways principals managed human capital, Kimball and colleagues found one innovative principal who stood out. This high school principal worked with teachers to develop six attributes they expect from their colleagues. With these attributes in mind, they assessed the strengths of each prospective new teacher.

At this principal’s school, a standard resume screen eliminates about 50% of the applicants. Then a phone interview focuses on the six chosen attributes. That typically yields 5 to 10 candidates for serious consideration. The principal and relevant department chair then interview each candidate. Those who do well are invited back for “finalist day,” where they participate with other finalists in a group exercise on student data. They analyze the data, generate solutions, and develop an action plan. Candidates are observed as they work together to solve a school issue, have a one-on-one conversation with a parent, and complete a writing prompt.

Principals in Kimball’s study emphasized the importance of giving candidates a realistic job preview. It’s important that candidates know the job requirements, resource constraints, culture of the school, and any social challenges facing families and students.

Best practices in evaluation

Once hired, teachers deserve an evaluation system that ties their performance to school goals and to consequences if those goals are not met. Ideally, evaluations are administered fairly and reliably. Unfortunately, principals and district leaders often just want to get the evaluations done and hand in the form to the personnel office. As a consequence, the vast majority of teachers are rated satisfactory or above.

But evaluation can improve instruction if it’s embedded in a performance management process that includes setting goals, providing coaching and support, and recognizing success, as well as consequences for poor performance.

Ongoing, timely feedback also is essential. Few things are more nerve-wracking and irritating to teachers than having an administrator interrupt a classroom, take vigorous notes for 40 minutes, then disappear with no follow-up.

Kimball’s study reinforces the notion that principals must connect school improvement strategies with management activities that recruit, select, develop, and retain effective teachers. Leaders who strategically manage human capital ensure that a high-talent organization is in place, focused on a common instructional strategy, and producing measured student achievements.

[Adapted from the article Strategic Measures of Teacher Performance. Kappan, v92 N7, April 2011, pp 13-18.]

This research was conducted by Steven Kimball with Herbert Heneman and Anthony Milanowski, with funding from the Ford Foundation.
A primary challenge students face in developing an understanding of deductive proof is overcoming their reliance on empirical evidence. In fact, the wealth of studies investigating students’ proving competencies demonstrates that students overwhelmingly rely on examples to justify the truth of statements.

Knuth and colleagues categorize as empirical those justifications in which people use examples to support the truth of a statement. General justifications (or proofs) are those in which one demonstrates that the statement is true for all members of the set.

Adolescents are limited in their understanding of what constitutes evidence and justification in mathematics. Moreover, they demonstrate a tendency toward empirical-based, inductive reasoning, rather than more general, deductive reasoning. In prior work, Knuth found that middle school students attempt to produce more general, deductive justifications as they progress through middle school, yet still less than half the students produce such justifications even by the end of their middle school mathematics education.

Adolescents’ difficulty with mathematical reasoning raises the question of whether there is some developmental constraint that limits their mathematical reasoning. There is probably nothing special about adolescence in terms of acquiring deduction. Younger children have been shown to appreciate that deductive inference leads to certain conclusions and is stronger than inductive inference. At the same time, however, even adults struggle to reason formally and deductively. Thus, deductive inference seems neither impossible before adolescence nor guaranteed after it.

Deductive and inductive arguments have very different qualities. In making a deductive argument, one tries to show that the hypothesized conjecture must be true as a logical consequence of the premises. One common form of deductive reasoning is the syllogism: All men are mortal. Socrates is a man. Therefore, Socrates is mortal.
On the other hand, in making an inductive argument, one seeks supporting evidence as the means for justifying that the conjecture is likely to be true. When repeated observations reveal patterns that persist over time, one can infer things and one can generalize. For example, every raven in a random sample of 3200 ravens is black. This strongly supports the hypothesis that all ravens are black.

Deductive arguments prove their conclusions through logic, while inductive arguments provide evidence that conclusions are likely.

By the time they reach middle school, children can see that many examples are more convincing than are fewer, that a diverse set of examples is better than a set of very similar examples, and that an argument based on a typical example is stronger than an argument based on an atypical example.

Knuth and colleagues want to know more about how adolescents use such abilities to evaluate both mathematical and non-mathematical conjectures and how they think about the nature of evidence used to support conjectures. Insight into this process may suggest a means for leveraging their inductive reasoning skills to foster the development of more sophisticated (deductive) ways of reasoning in mathematical domains.

An important first step toward developing a deeper understanding of students’ inductive reasoning is to explore their representations of similarity relations among mathematical objects. Successful inductive reasoning depends on seeing objects as similar to the degree they really do share important features or characteristics.

How do students’ similarity judgments compare with experts’ similarity judgments? Answers to such questions may provide insight into students’ choices for the empirical evidence they use to justify mathematical conjectures. These, in turn, may provide insight into means to foster their transition to more deductive ways of reasoning.

In one study, Knuth and colleagues interviewed 14 middle school students, 14 undergraduates, and 14 doctoral students in the fields of science, technology, engineering, and mathematics (STEM experts). Participants examined various numbers and shapes on individual cards and then sorted and re-sorted them into groups, according to whatever principles they chose.

In a number-sorting task the researchers noted a number of similarities between the middle school students and the STEM experts, in terms of which features they noticed. These similarities between the students and the experts led the researchers to wonder, were there any features that one group attended to but the other did not?

Findings from another exercise showed that, in general, there were not many differences between the middle school students, the undergraduates, and the STEM experts in terms of the characteristics of number and shape that they attended to. Further, some of the most salient features of number included multiples, parity, primes, and intervals (i.e., the relative size of numbers). Several of the more salient features of shape included the number of sides, the shape’s size, recognizable features of a shape, and the size of its angles. Knuth says these findings are important: They reveal particular characteristics that participants find noticeable, such as a number’s relative size or a shape’s size, that matter to students, but in many cases are not mathematically important.

The results from this initial study suggest that adolescents and experts use similar representations of similarity among (some) mathematical objects. In particular, adolescents did notice mathematically significant relations among the objects. Part of what makes two numbers or shapes similar is that they share relevant mathematical properties.

The pressing question for future research is how adolescents use such relations to evaluate conjectures.

Knuth and colleagues have taken a relatively new perspective (in mathematics education research) on adolescents’ use of empirical strategies for evaluating mathematical conjectures, and in particular, how students make decisions regarding their selection of evidence. Rather than seeing such strategies as limited, or as failures to adopt deductive strategies, Knuth suggests that there may be value in such inductive strategies.

His research team proposes considering inductive inference about mathematical conjectures as an object of study in and of itself. To that end, they seek to better understand the adolescents’ inductive reasoning in the domain of mathematics.

This research is a first step in a larger project of exploring how adolescents use empirical examples and inductive methods to reason about mathematical objects. Knuth and colleagues believe inductive inference strategies should play an important role in mathematics. Understanding adolescents’ inductive reasoning may provide important insights into helping them transition to more sophisticated, deductive ways of reasoning in mathematics.

RESEARCH

Eric Knuth
“Strategic management of human capital”—this phrase captures new thinking about the role of managing educator talent and draws from emerging approaches to talent management in the private sector.

UW–Madison education professor Allen Odden says that, during the past 15 years, many business leaders realized that strategic agendas must include people. Current, organizational strategies in the private sector now emphasize designing ways to strategically managing people so as to improve their performance.

It’s time for school and district leaders to understand the potential for improving teacher performance through strategic management of human resources. In educational settings, Odden explains, strategically managing human capital requires restructuring the entire human resource system. That includes recruitment, selection, distribution, induction, professional development, performance management and evaluation, compensation, and career progression.

Restructuring these processes can boost teacher and principal effectiveness in ways that dramatically improve student learning. And yet, Odden says, most current educational human resource systems don’t recruit, train, hire, induct, deploy, develop, retain, or strategically manage the top talent needed to accomplish this goal. This shortcoming is acute in both large urban districts and rural districts where chronic human resource shortcomings, more than funding problems, make it nearly impossible to acquire the best and brightest into education. It’s difficult to staff high-needs schools, and too many of them have excess numbers of unqualified and ineffective teachers and principals.

To manage human capital strategically, Odden says that schools need two ingredients. The first is talented people. All school systems need smart and capable people at all levels, yet poor urban and rural districts face more talent shortages and are most in need of strategic talent management. These school districts should emphasize strategies that recruit, place, develop, and retain top talent.

The second ingredient is strategic management of that talent. Just finding talented people and turning them loose is not sufficient. As businesses have learned, the highest performing organizations go beyond recruiting and retaining smart and capable individuals; they also manage them in ways that support the organization’s strategic direction.

Educators can measure progress in strategic talent management according to two outcomes: student performance and teaching performance. Education leaders have significant expertise in how to test students. But measuring teaching effectiveness and using the measures as a management tool are only in the beginning stages, although Race to the Top has accelerated attention to this issue. To determine what effective teachers must do to boost student achievement, the measured elements of instructional practice must be statistically linked to improvements in student performance.

Once those involved understand that student achievement needs to be increased by considerable levels, then districts can begin to design an education improvement strategy. Central to an effective improvement strategy is a well articulated vision of what makes a good teacher and effective instructional practice.

Furthermore, Odden says, to make a human resource management system strategic, the school’s instructional
vision must drive its human resource programs. For example, one study of how to improve instructional practice found that centralized professional development was more effective than site-based professional development. And when effective instructional practices were more consistent across classrooms within schools, higher levels of student performance emerged.

Designing, implementing, and staying true to new approaches to developing teacher and principal effectiveness requires a large change in the normal operation of school systems. Changing an established human resources system can be complex and politically charged. Yet, Odden cites three ways schools and districts can do to meet this challenge.

Many urban districts are partnering with the two national talent recruiting organizations: Teach for America and The New Teacher Project. By doing so, the districts recruit large numbers of the country’s best and brightest into schools—particularly high-poverty schools—that have been starved for top talent.

Tochon says that electronic portfolios (e-portfolios) and reflective practice are efficient ways of organizing professionalization. The portfolio has been defined as a “thoughtful, organized and continuous collection of a variety of authentic products that document a professional or student’s progress.” Tochon’s portfolio project aims to reinforce policies that strengthen teacher quality and enhance equality in education. Tochon says portfolios do many things; among them, they help create a cohesive discourse community; stimulate attitude change; help preservice teachers develop their own literacy; elicit the values underlying teaching decisions, and provide evidence of reflective practice.

Volunteer student teachers have integrated the standards into their teaching and demonstrated how they did so in their portfolios. The teacher educators gather in subgroups led by one coordinator for in-service development workshops. They collect student teachers’ feedback on their experiences and propose adaptations to the model to make it more effective.

A coordinator conveys suggestions for improvement to the participatory action science (PAS) team. The PAS process contributes to institutional learning and will be integrated as a way of monitoring change.

The following article on this experiment has been published by Transnational Curriculum Inquiry in three languages: Tochon, F. V., & Ökten, C. E. (2010). Curriculum Mapping and Instructional Affordances: Sources of Transformation for Student Teachers. Transnational Curriculum Inquiry, 7(1).
