Modern Learning: Re-Discovering the Transformative Promise of Educational Technology

By Steve Hargadon (@stevehargadon)  

Introduction

This report was funded by Acer Education and attempts to synthesize the answers to three key questions about technology and learning which were part of a longer 2017 survey which was sent to the members of several online educational networks that are part of my Learning Revolution project (more information is in the end notes).

_Acer Education:_ With four decades of experience in the computing sector, Acer is dedicated to serving the needs of the education market and to furthering knowledge through technology. Acer's support for this project, to build a better understanding of the role of technology in learning, has been authentic: I developed the survey questions and the final report reflects the survey responses and my own interpretations. Learn more about Acer Education [here](http://www.modernlearning.com).

The three survey questions for which the answers form the basis of this report are:

- _When do you believe technology enhances learning, and when do you believe it does not?_
- _How has technology impacted your own learning?_
- _Does your school, library, or organization have a specific learning philosophy that guides ed-tech purchases and implementation? If yes, what is that philosophy?_

More than 450 responses were received (those that agreed for their answers to be shared publicly can be seen at [http://www.modernlearning.com](http://www.modernlearning.com)). This was not a scientific or statistically-rigorous process, but rather an attempt to find and highlight common-sense observations about the use of technology in teaching and learning. As such, I am hopeful that it might provide a springboard for those looking to clarify thinking, and to help guide organizations, in discussions and decisions.
about educational technology.

For the purposes of this report, “educational technology” (often abbreviated as “ed tech”) is assumed to refer principally to the use of modern electronic computing and other high-tech, mostly Internet-enabled, devices and services in education. For those who have followed ed tech for some decades now, there can be a feeling of “technology opportunity fatigue”--that is, of watching educators and innovators pin their hopes on successive technology waves, each of which are promised to revolutionize education. And yet, unlike so many other fields of professional endeavor, it feels to many that an actual technology revolution in education has never actually arrived.

The question of when or if a revolution in education will take place, I would argue, is really one of “framing;” that is, how we perceive changes that are taking place and the context within which they are doing so. Quite assuredly, dramatic changes in teaching and learning are taking place, and perhaps the elusive nature of tracking those changes is the result of our not having the right “frames” for talking about them. If we are looking primarily at the lack of dramatic or widespread structural changes to our education system, we might not recognize that very significant changes are currently taking place at largely personal levels. Hopefully, the observations below will help to build frameworks for not only identifying these changes, but also seeing why and where these personal changes could lead to structural changes, why there might be confusion, and how to focus on those elements which are most important in teaching and learning.

For at the core of this conversation, I believe we must remember that education is a particularly human endeavor. As the wise Jim Vanides, now retired from H-P, has said: educational technology works when it magnifies the best aspects of our human connections. My perception is that the survey responses corroborate this perspective, and that the “red herrings” of educational technology are those promises which are made that technology can substitute for or replace the human relationships that are at the core of actual learner growth. To encourage exploring this perspective, I’ve included at the end of this report a series of follow-up questions (see “Continuing the Conversation”) that learning communities can explore, as well as an activity that can be done in a group setting to help identify those conditions that lead to personal learning “revolutions” (see “Conditions of Learning”).

Some other quick notes:

- The observations in this report assume that while there may be practical disparities between actual learning and how that learning is measured and assessed, improvements in actual learning are the primary goal and can be talked about in general terms without necessarily debating their assessments.
- Because this survey was sent to people who had already shown a strong
interest in using technology in teaching and learning, the results should not be taken as representative of the views of all educators. Even within this self-selected group of respondents are those in different circumstances and with different experiences and beliefs. However, I believe that the responses of this group do represent some general viewpoints that are likely to move from the vanguard to the mainstream over the next years.

- The survey and this report mark the initial phase of a larger effort to create an annual online global conference on the topic of educational technology. To be kept informed, please join the network at learningrevolution.com or add your email on the “Stay Informed” page at modernlearning.com.

I hope you find value in the observations and notes that follow.

Observations

I’ve chosen to highlight six observations from the responses to the three main survey questions, and which I believe are important to the discussion if the value of modern technologies to education. The survey and report website have commenting features enabled, and I encourage your own responses and ideas at modernlearning.com or on my blog at stevehargadon.com.

Observation 1: There is general agreement that there are good and pedagogically-sound arguments for the implementation and active use of ed tech; and that technology is changing, and will change, education for the better.

The perceived benefits of educational technology fell into four broad categories, in a sequential order of increasing impact:

- First, ed tech allows different ways of doing currently prescribed tasks—for example, using computers instead of pen and paper to make it easier to do homework or to administer tests.
- Second, ed tech can improve how current tasks are done—providing access to more information and to more people, from more locations, thereby speeding up learning and allowing it to be individually paced and done anywhere and at any time. Examples of this which were mentioned included: accessing information and working from mobile or handheld devices; greater peer-to-peer learning; virtual meetings and collaboration; learning when and where it’s most convenient; as well the ways in which online technologies reduce mundane tasks, e.g., backing up data.
- Third, overlapping with the immediately previous category, ed tech allows
people to do new things—for example: affording opportunities to curate, to create, or to visualize information in new ways; to listen to lectures at home and do “homework” at school (flipped learning); to participate in virtual and global events, overcoming geographical and language barriers; and more generally to open up possibilities for greater individual learning differentiation and for learner agency.

- Finally, and most profoundly, ed tech facilitates changing roles: that is, opening up “school walls” and changing the locus of power for learning. This radical re-envisioning of education puts the learner increasingly in the primary role with the educator as mentor, coach, and guide. (I’ll discuss this further in the report conclusion.)

“Tech has the potential to revolutionize teaching and learning by allowing students to follow their interests and by connecting them with other learners across the globe to make a real difference in solving a problem.”

As we’ll see in more detail in Observation 3, many of the educators who responded clearly believe, because of their own learning experiences over the last several years, in the transformative power of educational technology. Here are some examples of responses from them which were highly enthusiastic and which were also pedagogically-based, and which therefore may hold keys to a common-sense understanding and clarification of the benefits of ed tech.

*When do you believe technology enhances learning, and when do you believe it does not?*

- “Technology in education is absolutely essential to our students learning how to navigate the world in which they live and will work.”
- Ed tech enhances learning “when [you are] clear about the ‘why’ and when there is institutional support.”
- When we recognize “the impact of the affordances of digital tools and their ability to facilitate personalized learning.” (There is good nuance in this answer as well, which is that the tools allow for enhanced learning, but they don’t guarantee it or do on their own.)
- Ed tech provides for differentiated learning, and can help provide authentic options for those with different temperaments and or learning styles (but, as a caveat, doesn’t train teachers and students in how to do it).
- Ed tech can provide a natural exposure to the read/write world, and to learners becoming contributors.
- An “equally important use of the computer can be as a way to explore our own thoughts. We can show our students how to wrestle with ideas and concepts in a digital way. We can model how we can come to deeper understandings but without getting 500,000 likes on FB.”
Observation 2: There is general agreement that technology is not always beneficial to teaching and learning.

Educational technology is seen as unequally beneficial, and sometimes can even get in the way of good learning. Our survey respondents consider technology to be mostly but not always beneficial for learning, for both professional educators and the students in their respective learning.

The following were mentioned as ways in which ed tech does not help learning:
- When it becomes a distraction.
- When there is little or no preparation for it.
- When just used for testing / score tracking.
- When used for consuming and not creating, or just for rote learning.
- When “following the education trends: everyone else is doing it.”
- When the tech is “an end rather than means” (also stated as, “when I don’t have a plan or learning goal...”). We found this very significant, and it is the focus of Observation 6.
- When there is a lack of guidance in how to effectively use new ed tech tools (“when there is no PD”). This is the focus of Observation 4.
- Finally, when it “gets in the way of real time talk / sharing.” Forgetting that the tech “cannot mentor, motivate, show beauty, interact fully, give quality attention, [or] contextualize.” Also: “outcomes related to acquiring the skills and attitudes cannot be enhanced by technology.” As mentioned in the introduction, this would be missing the “human factor.” One respondent captured this as follows: “3 reasons tech innovation fails: Misunderstanding Human Motivation, Human Learning, or Human Systems.”

“It’s not about the device, it’s about student learning.”

There were also two extremely intriguing “deep” answers:
- When “information [is] not interpreted (raw), or [is] not understood to be interpreted.” This is beyond the scope of this report, but seems to fall into the category of “digital literacies,” and the interested reader can reference the free recordings my recent Library 2.0 mini-conference on this topic.
- “World as vending machine.” We’ll leave this to your own interpretation and discussions, but it this comment did seem to point out a very important concern: perhaps the enticement of pre-packaged, pre-formulated (maybe commercial) information, which can be attractive and easy to consume when life presents difficult questions, especially in situations where determining clarity and nuance are not so easy.
Observation 3: The benefits of ed tech to educator learning are described much more positively, and much less ambiguously, than are the benefits to student learning.

This was an intriguing, and unexpected, finding. The survey responses show that educational technology has benefitted professional educators as much as, if not more so, than it has the students in their classrooms. I have come to the conclusion that the professionals in education, if we consider them “professional learners,” are like “canaries in the coal mine”—that is, they signal or warn in advance of both the opportunities and the potential drawbacks of these tools. In particular these early adopters uniquely can show the benefits of ed tech for learning because they have figured out how to do it for themselves.

The answers of these educators to the question of “how has technology impacted your own learning?” produced more unambiguously positive and cogent descriptions of the benefits of technology and learning than any other question. A cursory review of changes I’ve seen over the last several years in educator professional development seems to buttress this optimism, as more and more professional development has become peer-to-peer, facilitated by the technology and often held online, and has extended into physical, face-to-face “unconference”-style activities that mirror the collaborative aspects of the online technologies.

The main benefits cited by professional educators were that modern technologies:
- reduced their isolation by helping them to connect with their peers;
- allowed them to feel part of larger educational movements;
- afforded them opportunities to become contributors.

The same answers were given for student learning, but not nearly with such confidence in them actually taking place and in being proven. Perhaps this points out that we are still early in the cycle of adopting relatively new Internet-related technologies, and increasingly these benefits will be translated into helping students in their learning. Alternatively, it could also be that the translation process is difficult because so much of the student experience of schooling is not necessarily directly organized around real learning (this is also explored in the conclusion).

Understanding that teachers are learners themselves, and noting the transformative impact that many of them describe of technology benefiting their own learning, should allow us to draw parallels with student learning that could be very beneficial to the larger conversation.
Observation 4: There is a lack of good professional development for educational technology.

This probably does not come as a huge surprise, and will seem obvious when we get to Observation 6 (the lack of pedagogical bases for technology purchases). As such, we’ll leave this observation in its simplest form here.

Learning to use a technology tool is different than learning how to use a tool to promote real learning. It’s worth noting that the lack of formulating, communicating, and supporting pedagogically-focused professional development for ed tech could be seen to translate directly into teachers then not being able to help students with their own pedagogical framing of technology tools and their uses in learning.

Observation 5: Educational technology is prone to grandiose promises.

Perhaps because of the dramatic changes in both business and social spheres that have been facilitated by computing and Internet technologies, there is a temptation to paint the potential of new educational technology in grandiose terms, and to promise revolutionary outcomes for education. Part of this may also be the role that commercial companies play in education, and the need to “sell” their products. (I give great credit to Acer for supporting this report’s inquiry to the topic without asking for any shaping of the conclusions.)

In our survey responses, those who were enthusiastic about the use of technology in education were typically highly enthusiastic. While many of those responses seemed appropriately positive, a not-insignificant number could be categorized as grandiose, naive, and often overly-simplistic. It is not hard to draw a parallel from this kind of “irrational exuberance” to large-scale technology purchases and implementations by education organizations which then resulted in a lack of tangible results and overall disappointment.

Some respondents saw technology as a panacea that, in unexplained ways, always enhances learning or critical thinking skills. Perhaps a belief in technology as an unalloyed good, no matter what the technology is, or how it’s deployed, is an example of wishful thinking—that is, being emotionally desirous to find a “silver bullet” and being willfully blind to potential pitfalls. Given all the demands on educators and educational institutions, this is understandable.

Here are some responses that seemed overly-optimistic or overly-general to the question, “When does technology enhance learning?”

- “Always improves learning.”
- “I believe technology always is beneficial in all areas and for everyone.”
● “Students no longer passive, but [are] now empowered to innovate and create solutions to some of the world's most complex problems."
● “Cannot imagine learning without technology.”

To the last comment I would respond: no, of course there is much learning that takes place without technology. While grandiose promises in no way mean that there aren’t real benefits to ed tech, they risk overshadowing or even distracting from identifying accurate and meaningful learning opportunities.

Observation 6: Some significant percentage of educational technology purchases do not appear to have a pedagogical basis.

I hold an annual ed tech event called “Hack Education.” This is an all-day unconference held the Saturday before the annual and well-known educational technology conference, ISTE ([www.iste.org](http://www.iste.org)). Hack Education (originally EduBloggerCon) typically attracts a few hundred attendees, and in 2016, in a general session at the event, I asked the attendees to raise their hands if they worked at a school, library, or institution that had a defined philosophy of learning which drove their technology purchases. Only three individuals, all from the same school, raised their hands.

Any objective observer of this survey would remark that our questions that address this (“Does your school, library, or organization have a specific learning philosophy that guides ed-tech purchases and implementation? If yes, what is that philosophy?) carry an implied intent to focus on this issue and to highlight what I already considered to be a problematic situation. The answers to the survey did seem, in fact, to confirm my suspicions that in most schools and institutions of learning, technology purchase decisions are largely unrelated to established, shared, and clearly communicated pedagogical beliefs. Or that such beliefs are not established, shared, or clearly communicated.

An early reviewer of this report said it this way:

> It’s like the tail wagging the dog. Purchases are made and teachers have to figure it out. There are so many stories of buying equipment without PD or a learning plan… like they were buying magic beans.”

Perhaps a less-critical way of expressing this would be to say that the adoption of educational technology appears to be mostly reactive rather than strategic, and what this highlights is an almost universal need for better strategies to pre-determine and then assess the impact and value of technology for teaching and learning.
A related and potential ed-tech drawback stemmed from not having an answer to “why” of technology before deciding on “how”—without knowing the destination, it’s hard to know if something is really helping you, holding you back, or taking you to a desirable destination. Not being able to easily ask and answer these questions can make it easy (at best) for the acquisition of the latest technology to simply become an end in itself, or (at worst) for it to be an huge cost in time, money, and energy for organizations that largely may be very limited in each.

“This seems obvious, but in the pressure of everyday schools and schooling, it can be a struggle to find the time and sometimes the willingness to have this [deeper] discussion. The end result, though, of not having it should convince most of us that the cost, both financially and to the learners, is very high when it’s not held.”

In other words, educational technology is not being subjected to what I’ve taken to calling “The Amish Test”—a process Kevin Kelly describes in his book What Technology Wants. Rather than necessarily being anti-technology, as they are often perceived, the Amish are in fact just very deliberate in determining whether or not to use a technology based on the effects they believe its use will have. A few members of an Amish community test out a new technology to explore these effects before it is decided whether or not, or how, to use the technology. If we look at the effects of new technologies on “learning” or “our educational values,” then a modified version of The Amish Test could be very helpful to our learning organizations.

This principle is worth re-emphasizing: it is crucial to define shared educational values, beliefs, and priorities as a part of, or preceding, technology purchases.

**Conclusion**

It’s commonly been hoped that computer and Internet technologies, having dramatically transformed our personal and work lives, would provide major benefits to teaching and learning, even possibly reinventing some aspects of education. However, decades into using what we call “ed tech,” while there are scattered stories of new-styled schools, such benefits are recognized as not having been realized more generally. The potential for change itself can seem questionable when large and small implementations of technology have not been seen to improve student learning or its measured outcomes enough to foster widespread adoption of new practices.

Not having commonly-accepted and commonly-articulated benefits to learning from
technology creates challenges and problems for participants at all levels: from the student, teacher, parent, and administrator; to the commercial company and to those involved in policy-related public dialog. Reasonably, skeptics ask if this is because such benefits do not exist?

My conclusion from the survey responses is not only that such benefits do exist, but that there is good evidence that they are, and can be, as transformative as we might hope. This short report has attempted to create a framework for highlighting where this is true and where it may not be, hopefully in a way that can facilitate open conversations by those at all levels of the education process (especially including parents and students). This task feels eminently urgent and important, because without such clarity, the potential for real change is significantly diminished, or may only be possible with some innovation that is so disruptive that it overturns the education system as we know it.

Why am I skeptical of easy change coming just by the existence of the current technologies? Because learning is not the only, or sometimes even the primary, focus of schooling. That is, schools perform several functions for us all at the same time, and only one of them is building the capacity for individual learning. We look to schools to provide cultural assimilation and conformance, to perpetuate shared values and societal narratives, to care for emotional and physical needs, to provide job or work training, to spearhead social programs, and to provide a form of youth oversight for working parents. Were the only task and focus of schools to help individuals become better learners, it is likely the changes we are talking about would already be upon us. But the kind of dramatic changes in power or agency from the educator to the learner that ed tech could facilitate would likely have negative impacts on the other activities we depend on schools to provide. The very structure of schools would be challenged by such a shift.

If computer technology and the Internet together represent the “new printing press,” perhaps that historical comparison hints at the uniqueness of this moment. The printing press not only changed how words got on paper, it ushered in dramatic social, cultural, and political changes. Changes of such a magnitude in human history do not happen overnight, as they can realign roles, power, and influence—and face both overt and subtle forms of opposition. Do we blame taxi drivers and hotel owners for the opposition they feel to technology-enabled ride- and home-sharing? No, we likely see the inevitability of these changes and understand that they negatively impact previous ways of doing business, and even threaten individual jobs and careers. Might it be that the true changes from technology-enabled learning face a similar resistance, as institutional forms of learning would have to cede aspects of their work to independent or learner-directed opportunities?

Networked information technology has rendered the words “teacher” and “student” more ambiguous. YouTube tutorials and social-media discussions, just to cite a couple of obvious examples, have made it abundantly clear that at any given
moment anyone—regardless of age or background—can be a learner or a teacher, or even both at once.

So perhaps we could expand our thinking here to a cultural level, and suggest that the work to adopt and adapt a new set of technologies in education serves as a challenge to each new generation: that challenge is that such adoption requires re-defining and re-articulating the goals of our educational systems. Additionally, it is the important task of re-defining and re-articulating of what we mean when we talk about learning and going through the process of thinking again, deeply, about what we do and why we do them in education. And we may be in the midst of one of the most important generational challenges ever to face humanity in this regard.

The cultural negotiations of such a challenge can only be helped by clarity of understanding as we discuss them. Of course we are having these conversations and currently struggling to understand the impact of Internet-related educational technology, since the potential consequences are so significant. My hope is that the observations herein contribute to progress in this discussion.

“Continuing the Conversation” - Having a discussion on the changing learning landscape.

In the process of overcoming the challenges and magnifying the significant learning potential of educational technology, I offer some questions that could be used for local discussions:

- How would you answer the three main questions of this report?
  - When do you believe technology enhances learning, and when do you believe it does not?
  - How has technology impacted your own learning?
  - Does your school, library, or organization have a specific learning philosophy that guides ed-tech purchases and implementation? If yes, what is that philosophy?
- Why might it be that there is so much consistency in the benefits ed tech offers for teachers, and yet so much variation in the perceptions about the benefits ed tech offers for students?
- What is the value of the human factor in learning?
- The year is 2030. What skills will your students need to live productively and happily? What will they need to start learning now in order to do so?
- How much learning about learning do students need to do? When should they begin to be in charge of their own learning, and their own assessing that
learning?
• What would happen if students were to use tech as a learning tool the way teachers use it (on an as-wanted and as-needed basis, essentially self-directed learning)? Might students’ and parents’ expectations for the rest of schooling change? What domino effects would that have, and how would the system be transformed?
• How might the relationship between teachers and students be changing because of the Internet and computer technology? Are teachers afraid of being replaced by technology? Is that fear appropriate?
• What important topics or ideas did this report not cover? Were there things you disagreed with? Why?

The “Conditions of Learning” Activity

I formulated this exercise as part of a “Reinventing K12” retreat I organized in Park City, UT, with a small group of educational thought leaders. The exercise was then refined as part of a country-wide series of workshops.

The "conditions of learning" exercise can be done by any group, large or small, interested in building a framework or set of shared values together around teaching and learning. It’s based on the belief that asking constructive questions can allow us to build understanding and solutions, and that answers to significant educational challenges can come from within those involved and at the local level.

We start by having the group identify their most significant learning experiences from their own individual lives, and then use those experiences to identify the conditions which led to that significant learning taking place.

Use the following question: "Can you remember a specific experience when you felt like you were really learning--that is, when you were deeply engaged and growing as a learner?" If this is a school group, I usually add, "this can have been inside or outside of school," as they may feel they are supposed to pick an academic moment when that may often--even usually--not be the case. In a small group, you can then share responses all together. In a larger group, I encourage people to share their experiences in groups of 3 or 4, then I bring the larger group back together and ask for some examples to be shared. A list is kept on a chalkboard or whiteboard in a column.

In my experience, these stories almost always involve feelings: feeling supported, or challenged, or trusted, or encouraged, or inspired. And these feelings almost always have come from one other person, in a very individual interactions that respected our agency and our desires for self-direction. “Someone took the time to really help me understand how to do something,” or “someone understood what I needed,” or “someone believed I could do something,” or “someone cared enough to take extra
time to help me.”

Note that just talking about these experiences typically re-evokes good feelings. The stories shared are usually stories that have become scaffolding for how we see ourselves and our lives. Or they are touchstone stories by which we measure other experiences we have since had. They are often the reason someone has become an educator.

As you can imagine, the stories are never about "that test I took in fourth grade." Maybe the story was about a challenging class assignment, but it still had a caring individual who understood how the challenge would help you.

The exercise can stop there, just with the sharing of those experiences, since in and of themselves they provide a really valuable lesson in how we actually influence others. However, there is a very good follow-on question: "What were the conditions that led to your particular experiences?" This question naturally allows the group to explore how we can create the conditions that will invite those kinds of experiences and deep learning and growth to take place for others.

Whether we're talking together as a family, a class, a school, a community, or a work group, thinking about the conditions for real learning and growth remind us that influencing others authentically is about interesting in very human ways and creating opportunities to do so.

Again, in a small group, the answers to this follow-on question can be shared and recorded all together. In a larger group, have the sharing in smaller groups, then report back highlights to the larger group. On your board a second column of "conditions" now can parallel the first of "experiences."

Ed tech friend Marie Bjerede has added a third step. She relates:

_We did the exercise twice in two different districts. The first one went approximately the same as when you did it. The second time we did something a little different. The room came up with about 4 conditions that they felt were critical. We then used those as the basis of an inquiry exercise where they broke into groups, researched each of them, and reported back on what those conditions really meant and where they came from and what the research said about them. Then they brainstormed about how to bring them into their schools. It was a great way for them to get the feeling of what self-directed learning feels like while thinking about what great learning experiences really are and how to create them!!_

This exercise is also available at [conditionsoflearning.com](http://conditionsoflearning.com).
Credits / End Notes:

Steve Hargadon is the founder and director of the Learning Revolution Project, the host of the Future of Education interview series, and founder or co-founder of a number of annual worldwide virtual events, including the Global Education Conference and Library 2.0. He blogs at stevehargadon.com and tweets (occasionally) at @stevehargadon.

Substantive help in thinking about this report was provided, both written and in conversation, by Luba Vangelova.

The Learning Revolution Project: The survey was sent electronically to 150,000 individuals around the world who had participated in Steve Hargadon’s virtual events. A full listing of events and educational networking communities can be found at LearningRevolution.com.

This work is licensed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License.