BYOD or BYOT

Bring your own device or bring your own technology

Canterbury School, a preK3-12 independent, college preparatory school in Fort Myers, FL, is pursuing a plan that integrates technology into the curriculum in order to inspire inquiry-based learning. In an effort to provide proper training and professional development opportunities to parents and teachers, Canterbury recently launched Parent University, a program dedicated to inspiring parents to become 21st century learning advocates and to providing insight and understanding of the school's technological changes.

According to Katrina Keene, Canterbury's director of innovation, "With an increase in technology comes the need to provide professional development for teachers and parents. Just as educators strive to stay ahead of the game with technology, parents are eager for up-to-date information on technology so they can be a part of their child's education."

Source: Forsyth county school website 2015

Forsyth County Schools, North of Atlanta Georgia is an international leader in the effective practice of BYOT, which encourages students to bring their personal technology tools to school for learning. The acronym "BYOT" stands for Bring Your Own Technology, a practice also sometimes often referred to as BYOD – Bring Your Own Device. It is an initiative that is having an impact in the business world as well as in education. From a user's point of view, there is a certain comfort with using a technology tool that has been customized and personalized to one's needs and interests. As students utilize their personal technology devices in school, they can learn new ways to use them for collaborating and interacting with their teachers and each other to research information, solve complex problems, create original products, and publish their work.

The district began its BYOT initiative several years ago by expanding the wireless infrastructure so that every school now has a guest "BYOT" wireless access point that provides filtered Internet access. The initial pilot phase for BYOT involved 40 teachers in seven schools who explored innovative uses for students' technology tools through the 4 C's of Digital Age Learning - Creativity, Collaboration, Communication, and Critical Thinking. These skills are essential for successful careers in today's colleges and businesses. Over time, teachers have also developed strategies to address the following issues: equity of devices, responsible use, and classroom management. Now, BYOT is supported in every school within the district, and as devices and tools continue to change, new instructional skills and strategies are evolving to promote their use

4 C's of Digital age learning

Teaching the 4 C's in classroom around the country

The 4 C's:

Creativity

Critical Thinking

Communication

Collaboration

The Partnership for 21st Century Skills has developed a Framework for 21st Century Learning that identifies key learning and innovation skills, otherwise known as the 4 C's: Creativity, Critical Thinking, Communication, and Collaboration.

In the Bring Your Own Technology (BYOT) classroom, facilitating the 4 C's becomes a logical extension of classroom instruction as students are connected to their learning and each other with their personal technology devices.

With their own tools, students are able to practice and develop the 4 C's as the teacher coaches, scaffolds, and models the learning. Of course, the students are the experts in their own devices, but the teacher has to create an environment that is conducive of exploration and inquiry so that students have the opportunity to learn how to learn with their technology. One way the teacher can encourage this type of environment is by learning alongside the students.

Another strategy for implementing the 4 C's within instruction is to promote them with the use of web tools and project-based learning.

Source: http://byotnetwork.com/

Creativity: using VoiceThread in the BYOT classroom

Teaching the 4 C's in Classroom around the country using the latest technology

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A VoiceThread is an online slide show that enables students to upload and present images, documents, and videos and then share comments by writing or recording messages. They can also draw on the slides in order to annotate them during the presentation. Although VoiceThread is a great tool for supporting all of the 4 C's, it can encourage creative expression with the students' devices. Students can take their own photos and create presentations to demonstrate what they have learned, and the other students can provide creative comments. For example, in a study of similes (comparisons using like or as), a student can take a photo of an object with an iPod Touch and optimize it in a free photo app (one of my personal favorites is Pixlr-o-matic). The student then saves the photo and uploads it into VoiceThread. The other students can then provide interesting similies in their responses that involve the object in the photo. There is an app for VoiceThread that can be downloaded on the iTunes store for iPods and iPads, or VoiceThreads can be created online on Macs or PCs.

Source: http://byotnetwork.com/

Critical thinking: using Socrative in the BYOT classroom

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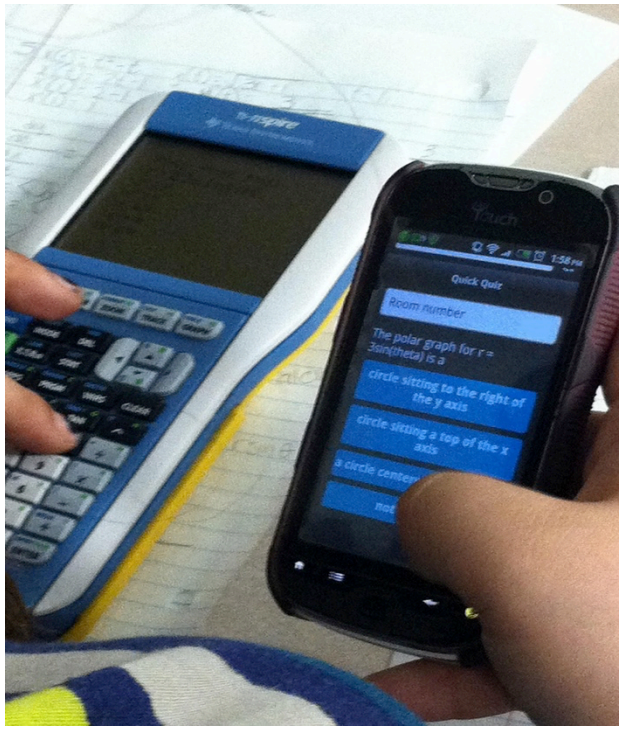

Source: http://byotnetwork.com/

Socrative is a web-based student response system that enables teachers to ask multiple choice, true/false, or short answer questions that students answer on their own devices. Teachers can also create and save quizzes ahead of time for students to complete, or they can begin ad-hoc sessions during class discussions with students. One aspect of Socrative that promotes critical thinking is that after asking an open-ended short answer question, the teacher can easily choose to have student vote on their answers. Teachers can also have students participate in an activity in Socrative called Space Race in which students can compete in random or assigned teams to complete a teacher-made quiz and be the first to get their team's rocket to the finish line. I have seen this activity increase collaboration even in a high school AP Calculus class as the students worked in groups to solve problems and answer the questions. It works effectively even if every student does not have a device because the students can take share a device to answer questions and the new concepts are more likely to be retained as the students learn them in groups. The short answer option can be useful for the students to text in their own questions, and the teacher can then pose these questions back to the class or use them in a future quiz. Socrative also provides a preset Ticket Out the Door to assess student understanding of the learned content. There is a teacher app for Socrative (iOS, Android) as well as a student app (iOS, Android), so teachers are able to conduct the session from their smartphones or laptops, and students can participate via smartphones, laptops, or desktops.

Communication: using Edublogs in the BYOT classroom

Teaching the 4 C's in Classroom around the country using the latest technology

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Source: http://byotnetwork.com/

With Edublogs, teachers and students can develop blogs for education that help to provide opportunities for communication in the classroom and in a global community. When students have their own blogs, they are able to publish the results of their project-based learning and collaboration and share what they have accomplished with others. Writing becomes more authentic as students have a purpose for their writing assignments, and students are able to customize their blogs according to their personal learning interests and styles. Although a blog is useful for publishing creative writing, it can also be used to communicate technical concepts like the steps in a scientific process accompanied with photos of the activity. Edublogs also publishes an annual list of the best blogs in education as well as additional web tools and apps on The Edublog Awards Blog. This list can be a useful resource for teachers and students as they begin developing their blogs. A teacher can sign up each student in the class for a blog, even in elementary grades, because an email address is not required. There is no app for Edublogs, but blogs can be edited through the Internet browser on smartphones, tablets, netbooks, and laptops.

Collaboration: using Wikispaces in the BYOT classroom

Teaching the 4 C's in Classroom around the country using the latest technology

The Partnership for 21st Century Skills has developed a Framework for 21st Century Learning that identifies key learning and innovation skills, otherwise known as the 4 C's: Creativity, Critical Thinking,Communication, and Collaboration. In the Bring Your Own Technology (BYOT) classroom, facilitating the 4 C's becomes a logical extension of classroom instruction as students are connected to their learning and each other with their personal technology devices.

Source: http://byotnetwork.com/

A wiki is a collaborative space for teachers and students to construct their learning experiences together. Teachers can develop class wikis inWikispaces and easily upload all of their students, even if they do not have email addresses. In the wiki, the teacher and students can encourage a sense of community in the classroom by sharing files and creating content. As the students edit their work within the wiki, the teacher can track who made all of the changes to determine student participation. Like a blog, a wiki makes a good launchpad for encouraging BYOT. Since the students are working independently or in small groups, the wiki gives them a place to continue their projects or assignments while the teacher is learning alongside and coaching other students in the class. One example of how a wiki was used in a middle school math classroom, is that the teacher divided the students into groups to explain particular problem solving strategies and mathematical concepts. In this manner, the students in the class actually produced their own math "textbook" as an on-going project that they were able to use as a resource. Although, there is no app for Wikispaces, the students are able to edit text on the browser of their handheld devices, and they are able to use tablets, laptops, and desktops to complete all of their other editing in the wiki.

Will Colleges Adjust Priorities In Time?

It's time for higher ed to begin preparing for the future, before it's too late.

11% The number of **employers who think graduates are ready to enter the workforce**

that fiaure stands in stark contrast to the

75% of **university provosts** who took the opposite view.

Source: http://www.edtechmagazine.com/higher/article/2015/08/getting-it-right

The needs of students and industry continue to evolve, and higher education must innovate to better prepare students for success in the new reality, Southern New Hampshire University President Paul LeBlanc told an audience at Campus Technology 2015.

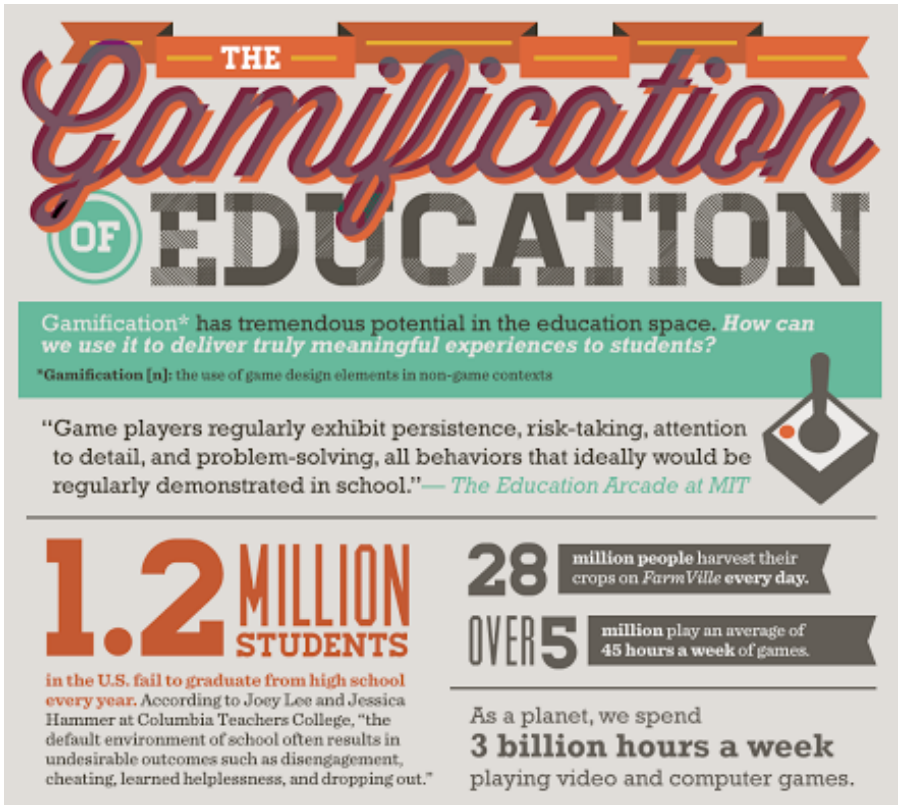
Todays students juggle competing demands for their time, attention and finances, and the work environment they face after graduation has grown increasingly difficult to navigate.

In the face of those truths, colleges and universities must adjust their priorities and shift their focus to online, competency-based education, which offers students greater flexibility while still equipping them with the skills they need to succeed in the modern workplace.

“Today, 500 institutions are moving to competency-based education, and they are not-for-profit,” “There’s a lot of opportunity. There are new models of delivery, a lot of potential partners.”

The Gamification of Education

Gamification has tremendous potential in the education space. How can we use it to deliver truly meaningful experiences to students?



Source: https://www.knewton.com/gamification-education/

Hacking your Education

Massive open online courses (MOOCs) are becoming increasingly popular.

- *Coursera: provides free online education from top universities and organizations in the world.*
- *Upgrade Capital: Students competes for best trading algorithm to get access to hiring managers at top hedge funds.*
- *QuantStart: Website discussing algorithmic trading strategy research, development, backtesting and implementation.*
- *Khan Academy: Khan's unique teaching with quality of content and breadth of topics*
- *Codeacademy: Free teaching of coding skills. Science, technology, engineering, and math skills (STEM). You can learn to write code in several different programming languages.*

Source: http://www.wired.com/

A growing trend is for students to enroll as part-time off-campus students to take the bare minimum number of classes required at the university, at the cheapest price they could, and only "spending" those on requirements for their majors.

All of their education and enrichment beyond their requirements was through massive open online courses (MOOCs). MOOCs are free non-degree online courses with open global engagement that have exploded in popularity over the last few months. These two students were choosing to build their own education through outside resources both to save money – they said the cost was way less, even though it would take 6 years instead of 4 to earn a degree – and for the material. According to them, the MOOCs had far more options for advanced material. I was blown away by the steel-trap optimization these two students were applying to their own education.

It's clear that the economic downturn has bred a whole generation of "just-try-to-stop-me" kids, determined to get the knowledge they need for success even if it comes from outside the traditional educational framework.

With the skyrocketing costs of higher education and the increasing availability of online resources, smart people around the globe are "hacking their education."

Learning to learn

The 4 steps to learning

Your path for most effective learning is through knowing

- **yourself**
- **your capacity to learn**
- **the process you have successfully used in the past**
- **your interest in, and knowledge of, the subject you wish to learn**

Step 1: Begin with the past

- What was your experience about how you learn? Did you: Like to read? solve problems? memorize? recite? interpret? speak to groups? know how to summarize?
- **What are your study habits?** How did they evolve? Which worked best? worst?

Step 2: Proceed to the present

- How interested am I in this? How much time do I want to spend learning this?What competes for my attention?

Step 3: Consider the process, the subject matter:

- What is the heading or title? What are key words that jump out? Do I understand them?
- What do I know about this already? Do I know related subjects?

Step 4: Build in review

- What did I do right? What could I do better?
- Did my plan coincide with how I work with my strengths and weaknesses?
- Did I choose the right conditions? Did I follow through; was I disciplined with myself? Did I succeed? Did I celebrate my success?

Source: http://www.studygs.net/metacognitiona.htm

Facts about Gender Inequality

Gender inequality is costing the world $28 Trillion

Gender is a central concept in modern societies. The promotion of gender equality and women's empowerment is key for policymakers, and it is receiving a growing attention in business agendas. However, gender gaps are still a wide phenomenon. While gender gaps in education and health have been decreasing remarkably over time and their differences across countries have been narrowing, gender gaps in the labour market and in politics are more persistent and still vary largely across countries.

Source: http://www.makers.com/

1. In 2015, only half of the world's working-age women are in the labor force, compared to 77 percent of working-age men. (Department of Labor)
2. By 2018, there will be 1.4 million open technology jobs in the U.S. and, at the current rate of students graduating with degrees in computer science, only 29% of applicants will be women.Girls Who Code aims to educate and expose at least 1 million girls to computer science by 2020.(Microsoft Research)
3. Only 30% of the world's researchers are women. Google has a program to inspire the next generation of tech innovators. (UNESCO)
4. Women with full-time jobs still earn only about 77 percent of their male counterparts' earnings. Talk about how much you earn, and report inequality. (White House)
5. African-American women earn 64 cents and Latina women earn 56 cents for every dollar earned by a Caucasian man. (White House)
6. 62 million girls are denied an education all over the world. #UpForSchool (UN Foundation)
7. Every year, an estimated 15 million girls under 18 are married worldwide, with little or no say in the matter. Girls Not Brides studies the problem and is working to find workable solutions. They know that education and empowerment for girls are the first steps. You can help by sharing the facts or donating to projects making a difference.
8. On average, 30% of women who have been in a relationship report that they have experienced some form of physical or sexual violence by their partner. The National Coalition Against Domestic Violence offers volunteer opportunities, and you can support them at their events by checking their calendar here. (WHO)

Gender equity

Having it all!

Women still bear the largest burden of child care across the world.

Sheryl Sandberg has encouraged men to get involved in advocating for women's equality at work and at home, academics have pointed out that men's participation is necessary for real change and earlier this year in his State of the Union address, President Obama said: "It's time we stop treating child care as a side issue, or a women's issue, and treat it like the national economic priority that it is for all of us."

Source: http://www.theguardian.com/commentisfree

Men need to step up and actually help women out at home and at work. In the ongoing national conversation about work life balance and domestic parity between men and women: "having it all" or "leaning in" are not just a women's issue.

It's true; child care, housework, balancing work and home life - these are issues that men absolutely need to care about and take action on. But not just because it benefits them to, or to do so as a favor to help women out. Men need to get off the bench and do something because gendered domestic disparity is a problem that they created. It's only fair that men fix it.
But repeating "this is not just a women's issue" over and over simply has not worked. For years feminists have argued that work life balance and the unequal division of labor in the home and with children is a family issue. Nothing has changed.

This isn't to say that men haven't gotten involved, many have. But we need more than men's grudging participation - we need them to take active responsibility. In the workplace, where they can do more to fight for equal pay and against discrimination, but also in the home.

Women didn't choose to make less money, bias does that. Women didn't choose to be the default care giver, socialization does that. Women didn't create this problem, so How are we going to fix this? & Who is going to fix it?

The Length of the School Year

How does the US compare?

As U.S. Department of Education Secretary Arne Duncan stated at a recent Congressional hearing: "Our students today are competing against children in India and China. Those students are going to school 25 to 30 percent longer than we are. Our students, I think, are at a competitive disadvantage. I think we're doing them a disservice."

There is a perception among policymakers and the public that U.S. students spend less time in school than students in other countries.

But is perception reality? Do students in other countries spend more time in school than students here in the U.S.? According to the OECD, the hours of compulsory instruction per year in these countries range from 608 hours in Finland (a top performer) to 926 hours in France (average) at the elementary level, compared to the over 900 hours required in California, New York, Texas, and Massachusetts. Of particular note, no state requires as few hours as Finland, even though Finland scores near the top of nearly every international assessment. As a matter of fact, Vermont – a high-performing state -- requires the fewest number of hours (700 hours) for its elementary students (grades 1-2) than any other state, and it still requires more than Finland.

The data clearly shows that most U.S. schools require at least as much or more instructional time as other countries, even high-performing countries like Finland, Japan, and Korea. It is important to keep in mind, however, that these comparisons are based on required minimums. It's possible that certain schools in these countries and states do provide more time for instruction. Furthermore, students in countries like China, India, Japan, and Korea have a tradition of receiving additional instruction through non-formal schooling such as tutoring and night schools, especially at the high school level, which could also have an impact

Source: http://www.centerforpubliceducation.org/

Homeschooling on the Rise in the US

The changing landscape…

Say “hello” to experiential learning, hands-on field trips, and college courses!

“Our decision to homeschool our child came after observing, first hand, a public-school environment that was focused more on administrators filling their own agendas rather than meeting the needs of each child,” says Denise, who felt that while the public system placed a lot of emphasis on help with special needs, it was too easy for “average Joe” kids to fall through the cracks.

Source: http://www.salon.com/2015/09/28

By most measures, homeschooling is on the rise in America.

The U.S. Department of Education says that 3.4 percent of K-12 students were homeschooled in the 2011-2012 academic year, and the government’s own data suggests that number will go up. And the reasons parents are choosing to educate their kids at home seem to be changing as well, with the number of non-religious homeschoolers growing at a faster rate than those who cite religious reasons.

Good-bye, modest attire and daily Bible instruction; hello, experiential learning, hands-on field trips, and college courses. The new homeschoolers are educated, involved, and fed up with what they see as a broken system of public education. Parents are opting out of institutional education in an attempt to better prepare their children for the world we’re all living in.

Some of their kids have been remarkably successful. A recent article in Boston magazine profiled some of that city’s homeschooled youngsters, starting with a newly minted Harvard freshman. And it’s exhilarating to read about what some of these homeschooled kids are doing. Andre’s son built a composter as part of learning about science. Denise, who homeschools her son in Georgia, has connected with a group of homeschoolers in an enrichment program that includes speech lessons with a trial attorney, and drama taught by the head of the local theater company. For Sandy, the freedom to ignore the public-school calendar has brought the flexibility to travel with her son, visiting historic sites and museums, a kind of rolling field trip.

It’s easy to relate to why these families have opted out of their local schools.

The "University of Everywhere"

Does this mean the end of college as we know it?

Source: http://www.forbes.com/ April 2015

MOOCs help many people learn new things—lifelong learners, college-educated workers who wish to build new skills, or gifted high school students angling for admission to an elite college. And that is a good thing. Up to now, though, enrollments in open online courses have mostly come from the ranks of the well educated. Helping the smart get smarter is a net benefit, but it does little for those who are currently left behind by our education system.

In his much-debated new book The End of College, Kevin Carey really wants us to believe that the future of undergraduate education will run through MOOCs, or at least things that sound a lot like MOOCs. Carey envisions a "University of Everywhere" (U of E) that will be powered by open, online courses: "Anything that can be digitized—books, lecture videos, images, sounds, and increasingly powerful digital learning environments—will be available to anyone in the world with an Internet connection"

The U of E's promise is that anyone, anywhere, at any time will be able to use these free digital resources to learn, and in turn earn some sort of credential. Carey admits that the lack of personalization and customization is a main flaw of current massive online courses. But he argues that this problem will eventually melt away in the face of advances in artificial intelligence that can "diagnose the strengths and weaknesses of each individual learner and customize his or her education accordingly".

The truth is, if you draw a Venn Diagram with three groups—those who are already well-served by our higher education system, those who are not, and those who complete open online courses—you'd find that the third circle is almost completely contained within the first. The second circle barely overlaps with the third at all—and much of the existing overlap reflects demand from bright, motivated international students. That doesn't mean that open online courses won't factor into the future of learning—they already are—only that they are not the future of learning.

Keeping up with Ed tech

Cool resources to be in the know...

Zach Sims, 24, cofounder and CEO of Codecademy says it best, "Technology may be the silver bullet to enhance the material and the way we teach. Our students already live in a tech-saturated culture, so they will certainly welcome such change. Technology can help America's students better prepare for the future, and keep preparing—since learning will increasingly need to be continuous as the stunning pace of technology change further accelerates."

Source: http://www.teacherswithapps.com/keeping-up-with-ed-tech/

- EdSurge: The EdSurge weekly online newsletter.
- Education Gadfly: Weekly ed tech updates produced by the Thomas Fordham Institute.
- EdTech Times: Boston-based group whose site features daily news updates and features.
- Edutopia: focuses on practices and programs that help students acquire and effectively apply the knowledge,attitudes, skills and beliefs to achieve their full potential.
- EdWeek Digital Directions: Part of EdWeek, Digital Directions covers news, trends, and best practices for the K–12 tech audience.
- EdTech Handbook: A series of contributed articles.
- eSchool News: Provides the latest educational technology news K-12 and higher education.
- Getting Smart: It covers K-12, higher education and lifelong learning. Focus on innovation and personalized learning.
- Graphite: Created by Common Sense Media, Graphite provides reviews of ed tech products where educators can filter results by type (app or website), subject, grade level, and price.
- KQED MindShift: Deeper dive into topics related to learning. New Learning Times: Provides daily coverage of learning opportunities to transformation education.
- Startup Digest EDU: shares the latest news and information about startups and innovations in education.
- Tech and Learning: Tech andLearning includes a website, newsletter and monthly magazine.

Helicopter Parents

Hovering over a child throughout their life and experiences

The term "helicopter parents" is a pejorative expression for parents that has been widely used in the media.

The metaphor appeared as early as 1969 in the bestselling book Between Parent & Teenager by Dr. Haim Ginott, which mentions a teen who complains: "Mother hovers over me like a helicopter..."

A helicopter parent is one who pays extremely close attention to a child's or children's experiences and problems, particularly at educational institutions.

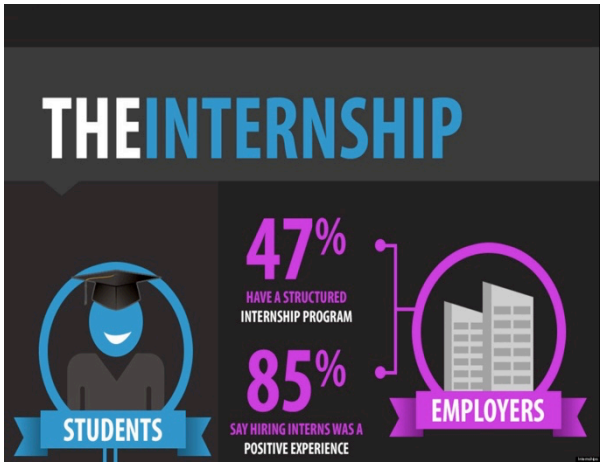
The term helicopter parents gained wide currency when American college administrators began using it in the early 2000s as the Millennial Generation began reaching college age. Their baby-boomer and Generation X parents in turn earned notoriety for practices such as calling their children each morning to wake them up for class and complaining to their professors about grades the children had received. Summer camp officials have also reported similar behavior from parents.

University of Georgia professor Richard Mullendore blames the rise of the cell phone for the explosion of helicopter parenting — having called it "the world's longest umbilical cord". Some parents, for their part, point to rising college tuitions, saying they are just protecting their investment or acting like any other consumer

Source: https://en.wikipedia.org

Internships

An internship is job training for white-collar and professional careers.



Internships for professional careers are similar in some ways to apprenticeships for trade and vocational jobs, but the lack of standardisation and oversight leaves the term open to broad interpretation. Interns may be college or university students, high school students, or post-graduate adults. These positions may be paid or unpaid and are usually temporary.

Generally, an internship consists of an exchange of services for experience between the student and an organisation. Students can also use an internship to determine if they have an interest in a particular career, create a network of contacts or gain school credit. Some interns find permanent, paid employment with the organizations for which they worked. This can be a significant benefit to the employer as experienced interns often need little or no training when they begin regular employment. Unlike a trainee program, employment at the completion of an internship is not guaranteed.

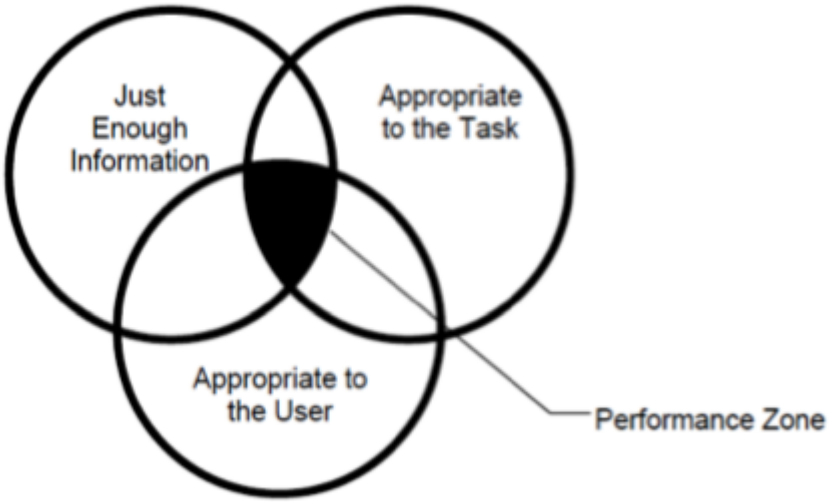
The two primary types of internships that exist in the United States are:

- Work experience internship: Most often this will be in the second or third year of the school period. The placement can be from 2 months to one full school year. During this period, the student is expected to use the things he/she has learned in school and put them into practice.
- Research internship (graduation) or dissertation internship: This is mostly done by students who are in their final year. With this kind of internship a student does research for a particular company. The company can have something that they feel like they need to improve, or the student can choose a topic within the company themselves. The results of the research study will be put in a report and often will have to be presented.

Source: https://en.wikipedia.org

Just in Time Learning

Rather than semester-based learning to deliver training to workers when/where they need it



"Electronic learning is big at IBM. Last year, the company saved $200 million in internal training costs related to traditional training sessions and time away from work, according to Rick Horton, general manager of IBM Global Services' Learning Services group."

- **Just-in-time learning is particularly useful in the IT world.**

Source: http://www.computerworld.com/

In a rapidly changing business environment where information can quickly become obsolete, staying on top of training can be a mountainous task.

Rather than having employees take time away from work to sit through traditional classroom courses, many companies are using technology-based, self-guided tutorials and databases that allow users to focus on "nuggets" of information as needed to perform specific tasks and solve problems as they crop up.

Just-in-time learning incorporates Web- and intranet-based applications as well as CD-ROMs, satellite channels and videotapes.

Companies save travel and education costs. And workers like the just-in-time approach because they can train at their own pace, wherever and whenever they like.

Users can customize their training to fit their needs and engage in online collaborative learning communities, where they can exchange experiences and access the latest opinions from around the world.

Striking a balance is important. The idea that just-in-time learning will replace classroom instruction is "baloney," says Anderson. Corporate training, he says, will eventually evolve into a mix of delivery methods.

"You have to offer a range," says Anderson. "The delivery vehicle will always depend on the content."

Labor Market Going Global

The number of college degree holders outside of the US continues to increase

	1990	2010
Number of College degree holders outside the USA	**119 Million**	**303 million**
US Share of World College degree holders	**26%**	**18%**

It may entertain people to talk about "building a wall" around the United States, either physically to keep out low-skilled labor or through laws that prevent international students or others from working at high-skilled jobs in America. However, the world is moving toward a single global market for labor, particularly for high-skilled work. Restrictive laws will only make Americans poorer by encouraging more work to take place outside the United States.

The increasing supply of technical skills available outside the United States affects everything from the salaries offered to U.S. workers to the decisions made by U.S. employers on where to invest. Yet critics of immigration generally ignore the existence of the global labor market.

Between 1990 and 2010, the supply of college degree holders outside the United States increased by 155 percent (larger than the entire U.S. labor force.)

The increasing educational levels around the world are altering the extent to which U.S. professionals can outcompete individuals in other countries based solely on education. The U.S. share of world college degree holders declined from 26 percent to 18 percent between 1990 and 2010.

Changing educational levels, restrictions on immigration and U.S. policies that tax money earned abroad at high levels if repatriated back to the United States have discouraged the growth of research and development (R&D) in America.

Between 1996 and 2013, research and development expenditures increased around the world by more than $1 trillion (in current dollars). Within the United States, R&D spending increased by $245 billion. However, the U.S. share of global research and development expenditures fell from 36 percent in 1996 to 27 percent in 2013, according to the National Science Foundation.

Source: Barro-lee database & Forbes.com

Disconnected Youth

¼ young adults in Philly are disconnected from both work and school

A report, released September 2015, was conducted by Paul Harrington, PhD, director of Drexel's Center for Labor Markets and Policy, and Neeta Fogg, PhD, a labor economist in the Center.

Source: http://m.phys.org/news from 9/30/2015

...and education has a big part in it.

"Disconnected youth are disengaged from school and work, both of which are considered 'human capital' building activities that add to the long-term productive abilities of individuals. The 'human capital deficits' among Philadelphia's disconnected youth are sizable."

If these young people aren't in school or at work, where are they?
They are "essentially idle," the report states, "at a time in their lives when most young people are intensely investing in the development of their long-term productive abilities and simultaneously making key career and life decisions that will impact the quality of their lives and the lives of their children for decades into the future."

"Young people are making very important life decisions about where they are headed in life – whether they are cognizant of that or not – decisions about schooling, job prospects, family formation, drug and alcohol use and so on," said Harrington. "Seventy-five percent of young people are making good choices, but 25 percent are disconnected from the productive side of life and this does not bode well for them in the future."

Human Capital: Educational Attainment
There are sharp differences between the educational attainment of disconnected youth and their counterparts who were engaged in work or school. Disconnected youth had considerably lower levels of formal educational attainment than youth who were connected.

Lifelong Learning

Stimulating your mind

SHEPHERDSTOWN, W.Va. — Frances Lynch said her life blossomed when she entered Shepherd University's Lifelong Learning program. "I began to read books I had never read before," said Lynch, 75, of Boonsboro. Lynch is one of about 150 participants in the program this semester.

Founded in 2011, the Lifelong Learning program offers courses, lectures and activities to mostly retired adults looking for intellectual development, cultural stimulation and social interaction.

"They do it for the fun of taking classes and for the enjoyment of learning," said Karen Rice, director of continuing education and lifelong learning at Shepherd. "Mine is a combined role." Many of the program's students are former government employees from the Washington, D.C., area who owned second homes in and around Shepherdstown before they retired and moved there, Rice said.

As a result, "Lifelong Learning has been reaping these benefits," Rice said.
Classes last 1 1/2 hours and meet once a week for six weeks, Rice said. Students don't earn college credits. Volunteers teach the program's topics and courses in class, and also oversee brown-bag luncheon lectures and cafe-society discussion groups at venues around the campus.

According to the current brochure, topics covered include "Modern-Day Iran, Iraq, Turkey, Jordan, Syria and Israel"; "Sociological View of Police Use of Force"; "Causes of the Holocaust"; "Coal Mining Songs"; "Readings from the Private Journal of a Public Historian"; "Short Stories: Memory and Perception"; and "Investigating the Mozart Effect." Costs for the Lifelong Learning program range from $85 per year for free lunches and tour discounts to $325 per year for all classes and lectures, plus tour discounts. Classes cost $60 each.
Rice credits Jack Young, a retired U.S. Navy officer who moved to Shepherdstown 16 years ago, with presenting the idea of lifelong learning to Shepherd administrators. The vice president of advancement at the time appointed an advisory committee to see if it could be done, Rice said.

"At first, there were so few people who signed up, they had to cancel classes," Lynch said. "Now, we have the happy problem of too many students."

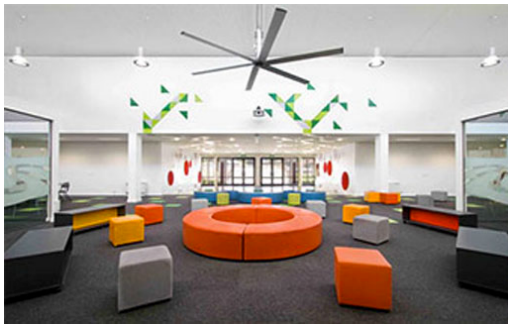
One of the biggest benefits of lifelong learning is taking advantage of the experience and backgrounds of people involved in the program, Young said.

"There was a wealth of talent going to waste," he said. "If we don't keep learning, we come up short. If we rest, we rust."

Source: http://www.heraldmailmedia.com/ from 9/30/2015

Learning Space Design ~ Trend #1

Space, whether physical or virtual, can have a significant impact on learning.



Learning Spaces focuses on how learner expectations influence such spaces, the principles and activities that facilitate learning, and the role of technology from the perspective of those who create learning environments: faculty, learning technologists, librarians, and administrators. Information technology has brought unique capabilities to learning spaces, whether stimulating greater interaction through the use of collaborative tools, videoconferencing with international experts, or opening virtual worlds for exploration.

Trend 1: Active & Social learning Strategies
Over the past two decades, a great deal of research has focused on how people learn. Previously, teaching was most often a kind of "broadcast" of course content at regularly scheduled intervals, from an expert to student "receivers." Iit is no surprise that learning spaces—classrooms as well as informal spaces—have an increasingly important role in catalyzing this type of learning.

While platforms and applications come and go, the psychology of how people learn does not. Constructivist learning principles, specifically activities identified as encouraging learning, can be translated into design principles that guide tactical decisions, ensuring that the designs we build and the technology we deploy serve a clear educational purpose. This suggests a design methodology with a clear "genealogy" having constructivist principles as the "parent" of design principles leading to specific tactics that support and enhance learning.

The traditional layout of auditoria and lecture halls has rarely provided for social engagement among students. Old style arrangement is not conducive to discussion among students; the design optimizes instructor transmission. In the traditional classroom floor plan, students receive content, packaged and presented with a "one size fits all" approach, regardless of the learners' unique needs or styles. There is an increased emphasis on alternatives to a simple transmission model of pedagogy. Personal response systems, videoconferencing capabilities, floor plans that foster face-to-face contact among students, technology that supports the sharing of computer screens, and virtual whiteboards indicate a shift in learning spaces to support how people learn.

Source: http://www.educause.edu/

Learning Space design ~ Trend #2

Space, whether physical or virtual, can have a significant impact on learning.

Source: http://www.educause.edu/

Trend2: Human-Centered Design

The trend toward human-centered design is embodied in the shift from the *information commons* to the *learning commons*. The term "commons" means "land or resources belonging to or affecting the whole of a community," according to the *Oxford American Dictionary*, which seems particularly pertinent to the trend of human-centered approaches in learning space design.

Systems Design Requirements: An initial prerequisite to building a space that increases learning effectiveness is understanding what kinds of teaching and learning activities the space should enable. This entails identifying the demands for curriculum, learning, laboratory, and workshop activities that the space must meet. With a clear definition of the learning goals, space design becomes grounded. Critically important is identification of the clients who will use the space, a process made easier when the space is designed for a specific department's needs. Building classroom spaces without a defined client base results in a design that meets no one's needs optimally.

Learning Activity Analysis: Determining what activities the space must support is perhaps key to distinguishing a well-designed learning space from a room in which activity happens. Learning mode analysis (LMA) characterizes learning activities in terms that affect space design. Knowing what students should learn permits defining the learning activities necessary to achieve mastery of critical subjects; this generates an LMA description. Once the activities and their consequences for space design are known and prioritized, architects can design spaces for these activities.

Integrated Product Team: Inevitably in any construction project, discrepancies emerge between the ideal and the reality. A process for responding to this gap is a normal part of the construction process. Learning-centered design differs in that the group responsible for addressing these gaps includes the original clients—faculty and students. The trend toward a more human-centered design requires that the people who teach and learn in the built space remain engaged throughout the process, ensuring that effective teaching and learning remains the focus.

Learning Space design ~ Trend #3

Space, whether physical or virtual, can have a significant impact on learning.

Source: http://www.educause.edu/

Trend 3: Devices That Enrich Learning

The pace of technology change makes it increasingly difficult for colleges and universities to provide a robust, contemporary technology infrastructure. Colleges and universities have the opportunity to redirect resources previously dedicated to computer labs to leverage the technology students bring to campus.

Podcasting: With the explosion of MP3 players, a tool for distributing audio content already is in student backpacks.

Software Deployment: Software deployment options range from an application server environment that works with many different client computers to building installer packages to load institutionally licensed applications on student-owned machines.

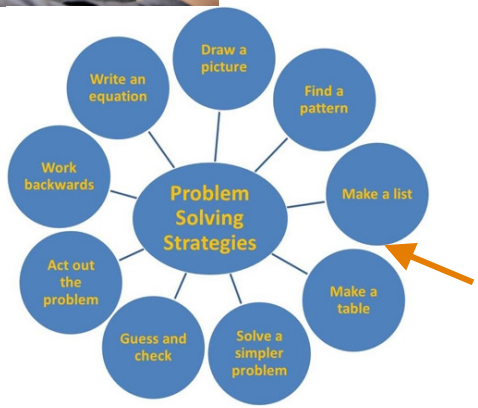
|**Thumb Drive Virtual Environments:** As the capacity of USB flash memory drives (UFDs) increases (up to 8 gigabytes at the time of this writing), these raw data storage devices can also serve as self-contained portable application environments. Students would carry their digital computing environments on their UFDs, equipped with bootable operating systems, a suite of applications, security tools, and even a biometric identification feature so that a lost UFD could not be accessed easily by someone other than its owner.

Cell Phones: Device convergence rouses speculation about the future of cell phones, PDAs, MP3 players, and computers. Using cell phones to better support teaching and learning has largely focused on extending the short message service (SMS) communications function to support interactive personal response services (PRS).

Controlling Lab Experiments from a Browser: The Internet promises to extend student access to resources that are in short supply, expensive, dangerous, or otherwise inaccessible to them. Browsers have made astronomy observatories, scanning probe microscopes, and scanning electron microscopes available to researchers around the world.

Mathematical habits

What separates an experienced problem solver from an inexperienced one?



Because we've practiced them over and over, these seemingly thoughtless repeated habits or behaviors, the pathways in our brain have become so broad, fast, and efficient in carrying them out that we do them automatically without even thinking. **Yet these unconscious habits and behaviors add structure and order to our lives and help us to make sense of the world we live in.**

Experienced vs. Inexperienced Problem Solvers

According to Levasseur and Cuoco, it's the mathematical habits of mind, or modes of thought, that enable us to reason about the world from a quantitative and spatial perspective, and to reason about math content that empowers us to use our mathematical knowledge and skills to make sense of and solve problems. It's these habits that separate the "experienced" from the "inexperienced" problem solver.

Far too many students can be classified as inexperienced problem solvers who don't know what to do when they don't know what to do. These are the students who lack experiences in making sense of and solving problems, and in communicating and using precise, appropriate mathematics and mathematics language. They have never developed the overarching habits of a productive mathematical thinker. When they're presented with a problem to which they don't know the immediate answer, their bad habits often rise to the occasion. On the other hand, experienced problem solvers know what to do when they don't know what to do! They practice perseverance and automatically employ the mathematical habits of mind of a productive problem solver in their quest for a problem solution. They automatically engage in Polya's four-step problem-solving process to find a solution to the problem.

No one has to remind experienced problem solvers to first make an attempt at understanding the problem and ask clarifying questions that help them interpret and understand the conditions of the problem. They instinctively try to make sense of the mathematical situation at hand and choose a strategy, tools, and/or models, often based upon previous learning experiences or problems they've solved -- experiences that they see as relevant and applicable in solving the problem. If they try a strategy and it doesn't work, they try a different one – all part of perseverance in problem solving. And like any good problem solver, once they have a solution, they take one last look to determine if their solution is a reasonable solution to the problem.

Source: http://www.edutopia.org/

Free college for all

Dream, Promise or Fantasy?

A few facts:

#1 - In 1978, the average student loan debt for a bachelor's degree was $29,400.
#2- The U.S. is no longer the most educated nation on the world – it's the 12th & most countries ahead have lower cost for their public university options.
#3 - Completion rates for MOOCs hover around 5 to 7 %.

The unique thing about education, and what makes it so hard to control the price, is that it's not just a service or a good. It's a process, and the learner takes an active role in creating its value.

Source: NPR

A few "promise" programs around the country pay up to 100 percent of college tuition at State colleges and universities for graduates of the city's high schools. In Tulsa, Oklahoma, a program pays up for 2 years of community college for county residents.

A few companies like Starbucks offer tuition benefit for its employees that will cover classes taken online from Arizona State University.

But in reality there is NO FREE COLLEGE.

The real policy discussion is about how to distribute the burden of paying for it between individual families and the rest of the public. Conservatives give a simple answer: An education makes individuals richer and individuals should bear the cost, said Ronald Reagan when he was running for Governor of California.

On the other hand, most people think that paying for the education of our citizen is a public obligation....like equal rights for all – but no one seems to agree on how.

In 1965, the USA has followed this "mass" higher education model with the "Higher Education Act establishing federal student-aid programs for all. Suddenly the number of college graduates went up and so did the demand for them. A college degree pretty much meant you made more money, therefore paid more taxes (some estimate $6 for every dollar spent on the GI bill).

The Massive Open Online Course (MOOCs) could be the holy grail: free & high quality college for everyone!

http://www.npr.org/sections/ed/2014/06/19/322563525/free-college-for-all-dream-promise-or-fantasy

Green-collar jobs

What is that & what are the top rated jobs?

***A green-collar worker** is a worker who is employed in the environmental sectors of the economy. Environmental green-collar workers (or green jobs) satisfy the demand for green development.*

Top 5 green collar jobs for 2025 (in no particular order)

Sun Catcher [Solar Power Installer]: We'll see massive automated solar panel factories teeming with robots, churning out solar panels night and day. This will include printed PVs [on paper, film and plastic], glazing integrated, building fabric-integrated and plug'n'play systems. Car assembly plants are already being re-geared to produce components. But it will be a bit longer before we don't need humans to install the stuff because the installation sites will be so incredibly varied. Sun Catchers will be busy retro-fitting our homes and existing buildings for years to come

Woodsmith [Carpenters and Joiners]: in the property game we're at the early stages of a timber revolution. We'll soon need teams of skilled carpenters to build our new buildings, renovate existing, and even help design and program the automated pre-fabrication factories that are already starting to reach scale. Wood, in my view the ultimate carbon sink, will become stylish again.

Forester [Ecologist or Conservation Biologist]: double-demand – to protect and understand our remaining biodiversity and also to restore what we've lost. Nature's health is inextricably entwined with our agricultural production, fresh water supply, food supply and even our community health and wellbeing. These skills will even scale down to our cities and buildings, contributing to occupant health and healing, and urban agricultural production.

Integrator [Resilience Planner or Urban Planner]: We're only at the starting point of grappling with climate change, adaptation and disaster planning. As we gain momentum we'll see rocketing demand for those who can see the systems-basis of our world and can orchestrate the synthesis of ideas. Integrators are big thinkers and will require high-end people and change management skills. In this respect Integrators will also be great Communicators.

Sparkitecht [Systems Programmer]: we are still experiencing exponential growth in computing power and speed [Moore's Law]. The Internet of Things; networked devices, appliances, cars and buildings; smart dust and the ubiquitous 'net; networked and smart wind and solar farms will all require increasing levels of integration with our physical and then physiological world. Maybe the geeks will still inherit the Earth.

https://digbyhall120.wordpress.com/2013/08/07/the-top-5-green-collar-jobs-of-2025/