Future of Education

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"The day is coming when the work done [via distance learning] will be greater in amount than that done in the class-rooms of our colleges."

Former President of University of Chicago & Bradley University

"[The use of technology will put] American education 25 years ahead."

Chairman of the Federal Communications Commission
“The day is coming when the work done [via distance learning] will be greater in amount than that done in the class-rooms of our colleges.”

-William Rainy Harper, 1885
Former President of University of Chicago & Bradley University

"[The use of technology will put] American education 25 years ahead."

-Technology referred to is delivering lessons over the radio in 1948
Chairman of the Federal Communications Commission
Youngsters Not Enrolled in College

20 countries with largest population of youngsters not enrolled in college

Total number of college age youth left out of tertiary education worldwide: 366 m
# Projected Enrollment in Global Tertiary Education

<table>
<thead>
<tr>
<th>Year</th>
<th>Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>99.4 million</td>
</tr>
<tr>
<td>2011</td>
<td>183 million</td>
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<tr>
<td>2025</td>
<td>262 million</td>
</tr>
<tr>
<td>2030</td>
<td>414.2 million</td>
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<tr>
<td>2035</td>
<td>520 million</td>
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</tbody>
</table>
US and OECD College Attainment

Percentage degree attainment in OECD countries and the U.S. by age group, 2010

- 55-64: United States: 32%, OECD average: 16%
- 45-54: United States: 29%, OECD average: 19%
- 35-44: United States: 33%, OECD average: 24%
- 25-34: United States: 33%, OECD average: 29%

Source: National Center for Education Statistics

THE CENTURY FOUNDATION
Educational Level - US

How Well Educated Are Americans?

Highest level of education among adults ages 25-64

- Advanced degree: 11%
- Bachelor's degree: 19%
- High school diploma or less: 31%
- Some College: 40%

Notes: Based on Pew Research Center calculations of 2009 American Community Survey data. Some college includes two-year college graduates. Total percentage does not equal 100 due to rounding.

A Growing Share of Young Adults are College Graduates

College attainment of 25- to 29-year-olds

Notes: March Current Population Survey (CPS) Integrated Public Use Micro Sample
Notes: Prior to 1992, persons with at least a bachelor's degree refers to those with four or more years of college. Before 1992, persons with at least some college refers to those who completed at least one year of college.
By 2018, the US will need 22 million more credentials to fill good jobs, but will fall short by 3 million. College enrollment in 2012 declined by nearly a half million students compared to a year earlier, according to the U.S. Census Bureau.
College Graduates

Percentage of population that has attained tertiary education, by age group (2009)


Countries are ranked in descending order of the percentage of 25-34 year-olds who have attained tertiary education.


StatLink ➤ http://dx.doi.org/10.1787/888932459831
Education as an Investment - US

Returns to Education Compared to Other Investments

Note and sources: Sample is civilian, natural-born U.S. citizen population. Earnings data come from the Current Population Survey (2010-2012) and tuition data come from NCES (2012). An individual with some college was assumed to have stayed in college for 1.83 years, the average duration of post-secondary schooling of individuals reporting “some college”. Data for returns to other assets come from Robert Shiller, the National Mining Association, and the Federal Reserve Bank of St. Louis and reflect real returns between 1928 and 2012.
Those who graduate from a four-year college, on average, earn $20,000 more a year as a result of the degree.
Mean Earnings by Age, 2009

Source: 2009 American Community Survey (ACS) Integrated Public Use Micro Sample

Notes: Estimated for full-time, full-year workers. Plots show a 3-year moving average.

PEW RESEARCH CENTER
Earnings and Employment for College vs. High School Graduates (Ages 23-25)

- Difference in mean earnings (left axis)
- Difference in employment rate (right axis)

Note: Earnings and employment figures include all Americans between the ages of 23 and 25 (inclusive).
Source: Data are from the CPS for the non-institutionalized population, and from the U.S. Census for the institutionalized population.
Unemployment Rates by Education, 1962-2010

Source: March Current Population Survey (CPS) Integrated Public Use Micro Sample
Notes: For persons age 25 and over. Prior to 1992, persons with at least a bachelor’s degree refers to those with four or more years of college.
How Education Impacts Work Life

Has College Been a Good Investment for You Personally?

% of college graduates

- Yes: 86
- Not sure: 7
- No: 6

Note: Based on college graduates ages 18-64 who are not currently enrolled in school, n=513. "Don't know/Refused" responses not shown.

How Education Impacts Work Life
Based on employed adults

- % saying work is very satisfying:
  - All employed adults: 45
  - Graduate school: 69
  - College graduate: 48
  - Some college/Vocational: 39
  - High school grad or less: 40

- % saying work is very interesting:
  - All employed adults: 52
  - Graduate school: 68
  - College graduate: 53
  - Some college/Vocational: 47
  - High school grad or less: 51

Notes: Based on adults who are employed either full or part time, n=1,281. "Graduate school" includes those who attended graduate school but did not receive a degree. "Some college/Vocational" includes two-year college graduates.
Affordability

Is College Affordable?
Agree or disagree: College costs in general are such that most people can afford to pay for a college education. (%)

Disagree | 75
---|---
Agree | 22

Note: “Don’t know/Refused” responses not shown.

Reasons for Not Going to College
% saying this applies to them

- Need to support family: 67%
- Would rather work/make money: 57%
- Can't afford school: 48%
- Don’t need more education: 34%
- Not accepted at schools: 5%

Note: Based on adults ages 18-34 who do not have a four-year college degree and are not currently enrolled in school, n=311.
College Tuition - US

$22,261
Average cost of a public college education in 2012-2013

$43,289
Average cost of private college education

The cost of a private non-profit four-year college institution has risen 267% over the past 30 years

The cost of a public four-year college institution has risen by 357% in the same period
Tuition vs. Other Price Indices - US
CPI, cumulative % change since 1990
Families’ Student Loans - US

More Families Have Outstanding Student Loans

Share of families with student loans

... and the Average Amount Owed Has Increased

Amount owed per family for families with student loans (in 2007 $)

Education loans
Student Loan Debt

MOVE BACK HOME?!... KIDS TODAY ARE SO LAZY AND IRRESPONSIBLE! YOUR MOTHER AND I STARTED OUT WITH NOTHING...

FIVE-FIGURE STUDENT LOAN DEBT

TRUST ME, I WOULD'VE LOVED STARTING OUT WITH NOTHING!!

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Two-thirds of students graduating from American colleges are graduating with some level of debt.

The average borrower has a debt of $26,600.

One in ten graduates accumulate more than $40,000 of debt.

Student loan debt has crossed $1.2 trillion.

It almost tripled between 2004 and 2012.

One in five graduates who borrowed for tuition via the federal direct loans program are not paying the money back.
Student Loan Debt vs. Household Debt - US

- The graph compares student loan debt (in trillions of dollars) to all other household debt (in trillions of dollars) from Q3 2008 to Q1 2012.
- Student Loan Debt has been steadily increasing over the period.
- All Other Household Debt has also been increasing but at a slower rate compared to student loan debt.
Student Loans vs Other Loans - US

$1.0 trillion

Student loans
Home equity credit lines
Auto
Credit Card

% of 90+ Day Delinquent Student Loans - US
In 2011, only **56%** of US college students complete four-year degrees within six years. Only **29%** of those who start two-year degrees finish them within three years.
Among adults ages 18 to 34 who are not in school and do not have a bachelor’s degree, 67% say a major reason for not continuing their education is the need to support a family. 48% say they can’t afford to go to college.
## Tertiary Enrollment Rates Vary Vastly

<table>
<thead>
<tr>
<th>Country</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mozambique</td>
<td>5%</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>15%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>25%</td>
</tr>
<tr>
<td>Paraguay</td>
<td>35%</td>
</tr>
<tr>
<td>Panama</td>
<td>45%</td>
</tr>
<tr>
<td>Turkey</td>
<td>55%</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>65%</td>
</tr>
<tr>
<td>Norway</td>
<td>75%</td>
</tr>
<tr>
<td>Belarus</td>
<td>85%</td>
</tr>
<tr>
<td>Finland</td>
<td>95%</td>
</tr>
</tbody>
</table>
Differing Budgets

Public spending on education as a % of GDP is...
higher than 7% in Denmark, New Zealand, Norway, Sweden, Moldova, Maldives, Cyprus

less than 7% in Austria, Finland, Estonia, South Africa, Ireland, Belgium

less than 6% in the US, UK, Switzerland, Slovenia, Israel, Brazil

less than 5% in Russia, Chile, Romania, Greece, Serbia

less than 4% in Kazakhstan, India, Venezuela, Egypt

less than 3% in Bangladesh, Peru, Turkey

less than 2% in Lebanon, Zambia

less than 1% in Myanmar
The average age of students will rise, with more people becoming lifetime learners. College enrollment in the US between 2006 to 2017 is projected to increase by 10% for people under 25, and by 19% for people 25 and over.
Technology in Education

**Education 1.0**, or simply education as was known in its time, took place in a classroom, imparted by the teacher, from textbooks.

**Education 2.0** cautiously adopted computers and then the internet. Technology aided the teacher to teach, and the student to learn.

Today's changing scenario, termed **Education 3.0**, takes place everywhere, in the class and outside. It uses the Internet and Communication Technologies, and is imparted by the teacher, students, and even strangers from half way across the globe.
63% of institutions surveyed said that online learning was an essential part of their future strategy.

Almost 30% of all enrollments now are in online courses.

Nearly three-quarters of institutions report that the economic downturn has increased demand for online courses and programs.

Enrollments in online courses increased by 21% between 2009 and 2010, compared with an increase of two% for campus enrollments.

More than 5.6 million students were enrolled in at least one online course in fall 2009, an increase of nearly one million students over the previous year.

Online enrolments have benefited from the recession in the USA and therefore could act as a stabilizing factor for student enrolment in both for-profit and public universities.

Online delivery may exceed US $69 billion by the year 2015.
Forecast for 2014 - US

In 2009, there were a total of 27.04 million students in higher education programs:

- 4.6% took all of their classes online
- 39% took some of their classes online
- 54% took all of their courses in traditional classrooms

In 2014, there will be 27.34 million students in higher education programs in total (an increase of 2% over the five years):

- 12.8% will take all of their classes online
- 68% will take some of their classes online
- 19% will take all of their courses in a physical classroom

More than 80% of all higher education students will be taking at least some of their courses online by 2014.
South Korea has invested $2 billion to make all textbooks digital by 2015. The total textbook sales industry is $7.5 b, out of which $5.5 b are sales of new textbooks. Digital textbooks are, on average, 53% cheaper than new print books.
Features of Digital Textbooks

**Note taking:** On screen keyboards and stylus allow students to take notes

**Writing:** Writing using the finger or stylus is possible

**Compactness:** One (e)book holds all the books, notes and more

**Highlighting:** Digital books make highlighting text possible

**Research:** Multiple content sources can be referred to from within the device. Multiple books, notes, websites, journals, videos, audio, images, are accessible in a single device

**Quiz:** Learning and testing become integrated. Clearing a quiz takes the student to the next level

**Animated content:** Explanations can be accompanied by animated illustrations and video, instead of static images

**Games:** Games are integrated with lessons, making learning and testing attractive to students

**Interactive timelines:** History can be learnt through interactive timelines laced with images, audio, video

**Study groups:** Study groups can be formed online, from the digital books. Text, audio and video chat can be done from within a page of the textbook
Effectiveness of Online Education

Students in online conditions perform modestly better, on average, than those learning the same material through traditional face-to-face instruction.

Instruction combining online and face-to-face elements have a larger advantage relative to purely face-to-face instruction than does purely online instruction.

Effect sizes are larger for studies in which the online instruction is collaborative or instructor-directed than in those studies where online learners work independently.

The effectiveness of online learning approaches appears quite broad across different content and learner types.

Effectiveness of Online Education

E-Learning was found to be 11% more effective than classroom training when it leverages its inherent advantages to offer tutorials, real time communication, and interactive exercises.

Results show that e-Learning participants can learn as much as classroom trainees, but in 70% of the classroom study time.

An age effect was not found with e-Learning. Older participants learn just as well as younger people.

62% of Chief Academic Officers rate the learning outcomes in online education as the same or superior to those in face-to-face classes.

The effects of e-Learning on all types of professional and academic training have been dramatic, and all indications point to its influence for years to come.

Advancements in the use of technological tools enable learning content to become more dynamic than ever.

In 70% of the cases, students taking courses by distance education outperformed their student counterparts in the traditionally instructed courses. The probability of Distance Education outperforming Face-to-Face increased from 1991–2009 and will continue to increase in strength.

Online learners reported deeper approaches to learning than classroom-based learners and experienced better use of higher order thinking skills, integrative thinking, and reflective learning.
Michael J. Sandel, Professor, Harvard University, teaching the course ‘Justice’ at Sanders Theater, Harvard University
Global Classroom

There are students behind him too. In Sao Paulo, New Delhi, Tokyo and Shanghai. He teaches them through video conferencing.
Prof. Sandel has students asking questions, answering them, or holding discussions not only at Harvard...
Global Classroom

...but in South America and Asia as well!
Interactivity and participation can be taken to whole new levels.

A class spread over Boston, Tokyo and Shanghai has students discussing nuclear power plants.
Interactivity

Translation services and subtitles help overcome the language barrier

Here the student quips about Rousseau’s views being altered by Youtube
Youngsters separated by distance and language are able to directly talk to each other, and see each others’ point of view. This has long term social and political implications apart from being a great educational method.
Source

Statistics, images and charts courtesy of:

- http://www.pewsocialtrends.org
- http://www.gse.harvard.edu
- http://www.oecd.org
- http://www.hcmstrategists.com
- http://nces.ed.gov
- http://dx.doi.org
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