

The whole difference between  
construction and creation is  
exactly this: that a thing  
constructed can only be loved  
after it is constructed; but a thing  
created is loved before it exists.

Charles Dickens

A creative person sees  
the invisible, believes  
the incredible, and  
receives the  
impossible.

Texas A&M University was founded in 1876 as the Land Grant College for the State of Texas to provide leadership and expertise in the transition from the Agrarian Age to the emerging Industrial Age.

Texas A&M has succeeded in this mission beyond anyone's imagination. Now A&M must provide new expertise and leadership to involve the entire university in guiding the "State of Texas" transition into the Knowledge Age and beyond.

“There is no use trying,” said Alice.

One can’t believe impossible things.” “I daresay you haven’t had much practice,” said the Queen.

“When I was your age, I always did it for half an hour a day. Why, sometimes I’ve believed as many as six impossible things before breakfast.”-Lewis Carroll

Seventeenth century  
educational reformer  
John Amos Comenius  
described schools as  
“the slaughterhouses of  
the mind.”

Charles Dickens referred  
to school methodologies  
as “childhood with its  
beauty gone, and only  
its helplessness  
remaining.”

Many highly successful  
persons were behavioral  
problems in school!

If you were bouncing  
off the walls and colored  
outside the lines in  
school, you probably  
were drugged!

The University  
remains a  
Medevil Institution!

“Schools waste 2/3’s  
of the talent in  
society! Universities  
sterilize the other  
1/3!”

Edward DeBono

“I am alarmed at the  
tendency of higher  
educational institutions to  
credential rather than  
educate!”

Jane Jacobs

“Education is all about  
rationing prestige in most  
universities. It has nothing  
to do with seeking  
knowledge.”

McKenzie Wark

The University will be  
the least prepared to  
prepare you for a world  
of change!

If universities aren't responding to future needs, are they prepared to go out of business?

Teachers complaints  
about students and  
advancing technology!

John L. Morrison

# 1703 Complaints

Students can no longer prepare bark to calculate problems. They rely instead on expensive slate. What will they do when the slate breaks.

John L. Morrison

# 1815 Complaints

Students depend too much on paper instead of slate. What will they do when we run out of paper.

John L. Morrison

# 1917 Complaints

Students depend too much on ink. They can't sharpen a pencil with a knife anymore.

National Association of Teachers

John L. Morrison

# 1928 Complaints

Students depend too much on store bought ink. They don't know how to make their own. What happens when they run out?

Rural American Teachers Association

John L. Morrison

# 1955 Complaints

Teachers refuse to accept papers written with ballpoint pens. A fountain pen is the only acceptable instrument!

# 1960 Complaints

Take away students' slide rules and they no longer have the skills to solve a problem!

# 1980 Complaints

Can students even  
function today without a  
calculator?

# 2000 Complaints

Students are totally dependent on their computers. What will they do when there is a blackout?

2004

## Big Brother on Board

School buses are installing biometric scans. Fingerprints are required to enter the bus and it indicates to the driver the student's identity and stop.

Surveillance cams are being installed inside and outside the buses. The cams give school officials information on misbehavior and drivers who whiz by when the bus is stopped.

Buses are being equipped with a GPS Tracker to monitor buses and an emergency button to indicate terrorists and notifies police of the exact location of the bus.

# 2004 Complaints

Cellphones and palm devices must be banned from quizzes. Students are cheating through instant messaging and photographing tests with their cellphones to send to friends.

# 2020 Complaints

How can I tell which students are intelligent and which ones have been implanted with chips?  
Will they be able to function when the chips go bad?

# 2020

Textbooks are automatically updated daily in their electronic books and information that students must unlearn has been underscored. Assignments may change daily as new information makes old assignments obsolete!

A \$400 iPod today has 40 gigabytes of memory. Moore's Law says that by 2024, it will have 20 petabytes of storage. (20 million gigabytes)

Today's iPod can store 20,000 books. In ten years your iPod might be able to hold 20 million books which will be more than are in Harvard University's collection.

If you want the pictures and diagrams in those books you will have to wait an additional 3 years. By then you will be able to carry around the complete text for all the volumes in the Library of Congress

Rodney Brooks, director of MIT's Computer science and AI Lab

# 2023 Complaints

They have implanted the  
Library of Congress in their  
heads. What are we supposed to  
teach them now?

# 2025 Complaints

MIT has refined an internet implant in the brain. How will that effect ACT and GRE scores?

# 2030 Complaints

How can you tell which students are natural humans and which are enhanced genetically and/or through A.I.?

Bill Gates brother-in-law  
just funded an institute  
dedicated to mapping the  
mind.

[www.brainatlas.org](http://www.brainatlas.org)

The government has  
proposed to fund mind  
mapping to control  
memory and eliminate  
criminal intent.

The mind mapping scientists  
want to monitor and  
understand brain functions.

They want the ability to alter  
the brain to change the nature  
of the individual.

# 2030 Complaints of Students

Teachers can read my mind now!

They even know what I think  
about them! I have to hide the  
latest knowledge uploaded in my  
brain!

Brain technology is, before  
genetics, going to tell us  
things about people that  
they really consider to be  
private.

Paul Root Wolpe, Chief of Bioethics,  
NASA

When will you need  
a firewall for your  
brain?

Man's mind, once  
stretched by a new idea,  
never regains its original  
dimensions.

Oliver Wendell Holmes, Jr.

“Most people believe that there is something intangible or spiritual about the way that minds work that can never be captured in silicon circuitry...The mere mention of machines that are conscious, have feelings, or could have rights usually generates such heat and emotion as to preclude rational debate.”

Thomas Georges

Enhancing neuronal function with microdevices could allow us to explore undiscovered realms of consciousness and perception, including new colors, new emotions and enhanced senses.

William Holmes

Scientists are working on sensors that will enhance each of the five senses. Do you want night vision?

The US Food and Drug Administration approved a brain implant designed to allow paralyzed patients to interact with a PC.

Erika Jonietz, Technology Review, Nov. 2004

Emerging biotechnologies  
will be incorporated into  
our bodies much as  
pharmaceuticals are within  
ten years.

With bioinstrumentation, I can sit  
at my computer, answer the  
phone, type on my computer and  
be connected to my colleague in  
the office next door through brain  
impulses alone.

Paul Root Wolpe, Chief of Bioethics,  
NASA

A permanently-on communications “cloud” would be a vast network connecting millions of different computing devices from mainframes to tiny sensors that will permit us to speak to, share information with or send messages to, anyone around the world without having to log in or out.

London Financial Times, September 27, 2004

How will the  
communications  
“cloud” enhance  
interspecies  
communications? In the  
home, city, country or  
world?

If mind enhancing chips  
become available, the rich  
could afford them and  
possibly widen the gap  
between natural  
intelligence and super  
intelligence!

Scientific Imperative-  
If it can be done, it  
will be done!

Science today  
moves faster than  
our moral  
understanding.

# 2030 Complaints

How can we base our admissions on standardized tests when the majority of the applicants have implants?

As we continue to experiment  
with implants in the human  
and mix animate and  
inanimate, what is the  
proportional mix that will give  
a robot  
personhood/citizenship?

Birds do it, bees do it,  
but could machines do  
it? New computer  
simulations suggest that  
the answer is yes.

# 2040 Complaints

They have given me a mixed class of humans, hybrids and transhumanists. How do I deal with the various learning styles?

# 2040 Complaints

University administration has ruled against discrimination of transhumanists and any beings with AI implants.

If you want to make  
enemies, try to change  
something.

Woodrow Wilson

# 2040

The Supreme Court has ruled we must recognize marriage between robots and humans if the robots have 51% human components.

# 2040 Complaints

I'm now a knowledge facilitator, information technologist and creativity psychologist. There are no longer jobs defined as “classical teachers”! The Smithsonian has a building dedicated to the history of teaching.

The university of  
tomorrow will not  
resemble the university  
of today.

There are two ways to live  
your life. One is as though  
nothing is a miracle. The  
other is as though  
everything is a miracle.

Albert Einstein

“The fixed person for the fixed duties, who in older societies was such a Godsend, in the future will be a public danger.”

Alfred North Whitehead

How many of our university  
curriculums (or professors) focus  
on an idealized **past...**  
that may be eroding in the  
**present** as we speak...  
and may not even exist in the  
near **future...**

?

Can society afford for the core curriculum at most universities to change as little in the next 30 years as it has in the last 30 years?

Will any curriculums in  
any university in the top  
ten in the US in 2020  
even resemble the  
curriculums of today's  
top ten universities?

Will any top ten  
university in the US  
today still be in the top  
ten by 2020?

The leading universities of the world in 2020 may be global consortiums that bear little resemblance to the universities of today.

Does the present  
education system retard  
the ability for students  
to create knowledge for  
the future?

“The quality of our  
thinking will determine  
the quality of our  
future.”

Edward DeBono

# 2030

The top tier universities  
must emphasize future  
theory and planning as part  
of their core curriculum!

The future belongs to  
people who see  
possibilities before they  
become obvious.

Ted Levitt

My interest is in the  
future since I'm going to  
spend the rest of my life  
there.

Charles Kettering

# 2030

Top tier universities must  
emphasize critical thinking and  
creativity at the core of  
education!

Innovation is critical to survive  
the future!

You will see more new  
knowledge and inventions  
created in your lifetime than  
all the discoveries from the  
beginning of recorded history  
to the present.

*“Curiosity about the future  
will lead to commitment and  
the sense of possibility will  
expand into the excitement of  
creation.”*

**Sumantra Ghoshal**

Is the fundamental role of  
education to prepare the young  
for the future, or to connect them  
with the past?

Society must make hard choices about what children must know and what is merely useful or interesting to know. Youngsters who fail to acquire critical thinking skills needed to create knowledge risk becoming lifelong failures.

# Innovation vs. education

We are taught how to handle problems and new phenomena with fixed mental attitudes based on what past thinkers thought, predetermining our response to problems or situations.

Michael Michalko

# Innovation vs. Education

“We are taught what to think  
instead of how to think.

Consequently, we tend to process  
information the same way over  
and over again instead of  
searching for alternatives.”

Michael Michalko

In 1913, Henry Ford developed the production line to maximize factory efficiency and schools eagerly adopted the model to train students who would someday work on those lines.

John Lundt

“The industrial age assembly-line model for education has shaped our schools more than we can imagine producing generations of ‘knowers’, not lifelong-learners, people beautifully prepared for a world that no longer exists.”

Peter Senge

Curriculum writers of the  
early 1900s referred to  
students as the raw  
material and educated  
adults as the final product.

John Lundt

# Education Mantra

The students are empty  
vessels waiting to be  
filled with knowledge.

The mind is not a  
vessel to be filled but  
a fire to be kindled!

Plutarch

“Despite constantly  
accelerating social and  
technological change, the  
paradigm for education has  
remained essentially  
static.”

John Lundt

Age based educational programming will disappear once the factory model of education is abandoned. Students will progress at their own capabilities!

“We need to ensure that we have strong federal investment in the knowledge enablers of the future. The only way the U.S. can maintain its standard of living and quality of life, and then ultimately, our security, is through productivity growth-and that depends on innovation capacity.”-

Deborah Wince-Smith Technology Review,  
April, 2004

“Learn to think  
anew in order to act  
anew.”

Abraham Lincoln

“Creativity is the defining feature of economic life. Our lives and society have begun to resonate with a creative ethos. An ethos is defined as the fundamental spirit or character of a culture.”

Richard Florida

“Creativity is the driving  
fundamental source of  
economic growth and is  
resulting in the rise of the  
new Creative Class.”

Richard Florida

“We now have an economy  
powered by human  
creativity. The winners in  
the long run are those who  
can create and keep  
creating.”

Richard Florida

“The Creative Class is dominant in terms of wealth and income, with its members earning nearly twice as much on average as members of the other two classes.”

Richard Florida

“The Information Age is about knowledge creation. It’s not about having the answers; it’s about being open enough with yourself to keep asking questions.”

R. Lengel- Executive MBA Program

“I can’t understand why people are frightened of new ideas. I’m frightened of the old ones.”

John Cage

Business of the Future is to  
PRODUCE KNOWLEDGE,  
NOT REPRODUCE  
KNOWLEDGE!!!

In the 21st Century, you will be competing with the world for any information that can be reproduced.

The person that cannot create and produce knowledge in the 21st Century will be destined to live with the equivalency of a 20th century minimum wage.

Bruce LaDuke

Creativity is the ability to imagine the world as it is not-to make conceptual leaps and refine the raw data of experience into abstract ideas, meaning, and insight.

The faster and more  
frequent innovation-the  
faster and more frequent  
Obsolescence.

With Accelerating Change,  
developing the creative  
potential in students will be  
a priority for them to  
survive the future!

The person that cannot understand and accept the possibility that their discipline or domain might come to a sudden end will not fare well in the 21st century.

“The man who is too  
set to change is dead  
already. The funeral is  
a mere detail.”

Henry Ford

Do not go where the  
path may lead, go  
instead where there is no  
path and leave a trail.

Ralph Waldo Emerson

Obsolescence forces  
people to be  
creative!

There's nothing  
permanent except  
change!

The University is  
dedicated to  
memorized  
knowledge;  
not thinking skills!

“Knowledge is something that is true or false. Thinking skills can create knowledge.”

Paul Tinari

Faculty are professional  
knowers!

“Knowledge is the  
horsepower of a car.  
Creativity is the skill of  
driving the car.”

Paul Tinari

“The University is full  
of knowledgeable  
faculty with little  
driving skills!”

Paul Tinari

“What a professor knows is not as important as how they facilitate creative thinking and driving skills in their students.”

Paul Tinari

We are always taught the  
known. We are rarely  
taught about what's not  
known or about the  
unknowable.

(or how to produce  
knowledge)

What would happen if major corporations funded their own school system for employees' children based on producing and advancing knowledge?

They could hire the best teachers,  
create an atmosphere of  
enthusiasm for generating  
knowledge and build a whole  
curriculum around knowledge  
creation!

Companies could be  
totally free of Federal  
and State Educational  
Bureaucracy!

Companies could recruit new employees with the promise that their children would receive a cutting edge education that would prepare them for a **century of continuous learning & developing intellectual property.**

What sustainable competitive advantage would this type of education system give the companies for retaining employees?

Who could this type  
of educational  
entrepreneurial  
system put out of  
business?

“The members of the Creative Class exhibit a strong preference for individuality and self-statement. They do not want to conform to organizational or institutional directives and resist traditional group-oriented norms.”

Richard Florida

US professionals must prove their worth by moving up the intellectual-property value ladder. Instead of just completing assignments that are handed to them, employees need to be more inventive and more original in their thinking—often by finding new problems to tackle in the first place.

Nathan Myhrvold, *Technology Review*, Oct. 2004

Creativity abounds on  
campuses. In most cases,  
creativity flourishes in  
spite of university policies.

Steven Tepper, Chronicle of Higher Education

Creative outbursts throughout history, like the renaissance in Florence, have clustered in those places where artistic, scientific, and technological advancements thrive side by side.

Dean Keith Simonton, author of *Genius, Creativity and Leadership*

# Creativity

- Creative people feed off the energy of others; they excel when challenged and forced to confront and incorporate other perspectives and approaches.
- Creativity flourishes in diverse environments where there are adequate opportunities for cross-cultural exchange.

# Creativity

- Creativity is stimulated by interdisciplinary exchange. Many of the most important scientific discoveries in the modern era happened at the borders between disciplines.
- Creativity requires an environment that tolerates and even encourages failure.
- Stephen Tepper, Chronicle of Higher Education

The University of Phoenix is  
taking charge of information that  
can be reproduced!

Who is taking charge of  
producing knowledge?

Mantra:

“Change or  
Die!”

John Sperling, founder of University of Phoenix

With the development of  
Phrasealator, students will  
be able to take distance  
educations courses  
anywhere in the world with  
its instant translation.

“Learning should be taken  
out of the hands of  
antiquated school systems  
and put into the hands of  
learners.”

John Lundt

The illiterate of the  
future will not be the  
person who cannot read.  
It will be the person  
who does not know how  
to learn.

Alvin Toffler

The communications and instructional technologies necessary to make education an anytime anywhere activity rather than a place-bound schoolhouse event have been rapidly evolving for several years.

John Lundt

K-12 students can take courses online that may not be available in their school districts.

John Lundt

The emergence of the Internet and the development of distance-learning technology represent a new and effective means of replacing the antiquated school system with a highly efficient and effective means of educating people.

John Lundt

Only one education system in America qualifies for public support, and it is failing. If you choose to pay for education other than the public schools, you are still taxed to support the system you seek to avoid.

The present public  
education system is a  
monopoly.

A market driven world of educational opportunities will give learners an unlimited number of educational options that will spark competition and improve performance of learning providers.

John Lundt

Competitive learning enterprises will be forced to perform and be judged on the value of its product. The main benchmark will be the long-term success of the institution's graduates and their ability to be knowledge creators.

Online learning is a 24/7 activity that can be conducted from any location with an Internet connection. Institutions will abandon the agrarian school calendar and serve the needs of their learners all year long.

John Lundt

Knowledge has been doubling every ten years since 1950. It is now moving into a mode of accelerating change.

**“No Child  
Left Behind!”**

What does that mean  
when we envision the  
Singularity?

**Every Child Left  
Behind?**

What could education  
do to prepare the  
youth for the  
Singularity?

What can you do to  
facilitate education for  
an accelerating  
future?

When I examine myself and my methods of thought, I come to the conclusion that the gift of fantasy has meant more to me than my talent for absorbing positive knowledge.

Albert Einstein

The institutions that do not nurture knowledge creators will become lower tier universities.

The institutions that do not empower their students to participate in creating the future will become lower tier universities.

Institutions that are  
fixated on rigid  
curriculums will  
become lower tier  
universities.

It is better to fail in  
originality than to  
succeed in imitation.

Herman Melville

Most education institutions  
don't understand that two  
thirds of all the new jobs  
available in the world by  
2020 have not been  
invented yet!

Technology is accelerating at an exponential rate and the nations without the creative mind capital to produce new knowledge will be left behind.

The number of a countries' population engaged in knowledge creation will determine the future economic health of a country.

School systems will will  
have to reverse the  
existing pedagogy of  
rote memory to  
questioning and  
discovering knowledge.

New curriculums must  
be developed to achieve  
optimum behavior in  
mind capital and  
knowledge creation.

If by 2020, two thirds of the jobs available in the world haven't been invented yet, how will young learners cope with change? How will school systems justify their present pedagogy?

The “do nothing”  
university will not  
survive!

There is no doubt that creativity is the most important human resource of all. Without creativity, there would be no progress, and we would be forever repeating the same patterns.

Edward DeBono

What combination of degree plans will prepare a student to create the future of the built environment with on site nano-factories?

Educators are training students with past and present knowledge. Will our students be able to create the future?

While the majority of  
universities proudly reproduce  
knowledge workers,  
future progress in the  
world will depend on the  
knowledge creators.

The top tier universities  
today are ranked on how  
well they train  
knowledge workers.



*Charles Barsotti*

"Wilson, what exactly is a 'knowledge worker,' and do we have any on staff?"

The rankings of universities or consortiums in the world by 2020 will be based on the numbers and quality of knowledge creators they graduate!

In the 21st Century, the  
**knowledge worker** is only one  
aspect of business and is not the  
most important. The role of  
**knowledge creator** has not yet  
been realized or mastered.

Bruce LaDuke

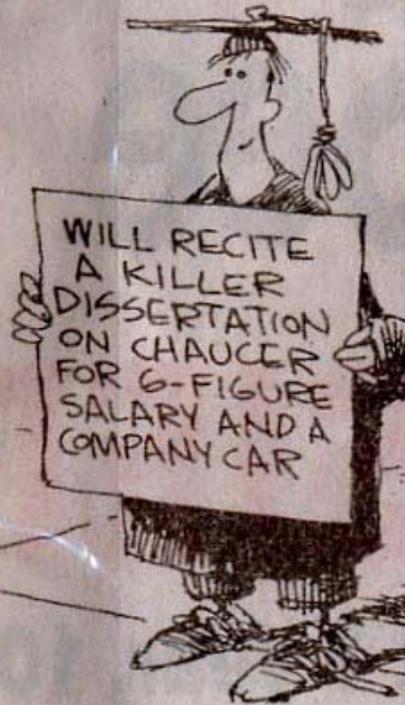
Knowledge workers will  
comprise the majority of  
US jobs. This may be  
compared to the **assembly  
line workers** of the  
Industrial Revolution.

Bruce LaDuke

# NON SEQUITOR

By Wiley Miller

THE REAL  
BEGINNING  
of BARRY'S  
EDUCATION...



“While the  
knowledge worker works  
with existing knowledge,  
the  
knowledge creator works  
with knowledge that does  
not yet exist.”

Bruce LaDuke

The **knowledge**  
**creator** deals with the  
science of generating  
ideas!

Bruce LaDuke

Interdisciplinary  
knowledge creators can  
help to make this single  
structure seamless by  
answering questions  
common to one or more  
knowledge domains.

Bruce LaDuke

MITs Technology Review lists the movers and shakers under age 35 every year. A large percentage of them have dual degrees. Genetics and Computer Science, Engineering and biology, etc...

The merging of domains is  
creating the new domains, fields,  
hybrids and jobs!

Are our universities  
helping to cross pollinate  
and create the future?

Creativity involves the  
ability to synthesize.

Einstein captured it  
nicely when he called  
his own work

“combinatory play.”

Richard Florida

It is important to use  
your creative thinking  
skills to build upon the  
knowledge of others.

Top tier universities  
will be ranked on how  
well they facilitate  
combinatory play  
between domains!

The US has gone from  
farm to factory to  
knowledge work and now  
from knowledge work to  
knowledge creation!

“In times of drastic change, it is the learners who inherit the future. The learners usually find themselves equipped to live in a world that no longer exists.”

Eric Hoffer

Creativity is the  
Global Currency of  
the new millennium!

Intellectual Property  
is the Coin of the  
Realm of the  
Knowledge Age!

When do you think the first  
class action law suit  
against a school system  
might be launched for not  
preparing the student for  
the future?

It is estimated that *all* the  
knowledge that is known today  
will comprise only 1% of all the  
knowledge available by the year  
2030!

Pearlman

# “No Child Left Behind!”

What does that mean  
when we envision the  
present education  
system and the future?

When do you think the first class action suit will be filed against a school district, university or state for not providing an education that promotes life long skills for producing knowledge?

Will universities of the future have a built-in distance program that constantly updates their graduates for a lifetime of continuous learning?

A degree from a top tier university in the future will include free continuing education courses for a lifetime of knowledge creation.

“Sacred Cows make  
the best hamburgers!”

Abbie Hoffman

“It was not a 100 times I failed,  
but I learned a 100 ways  
something didn’t work.”

Thomas Jefferson

Check out

[www.kevinwarwick.org](http://www.kevinwarwick.org)

He is designing implants to move  
closer to the concept of Cyborgs!

Check out [www.imminst.org](http://www.imminst.org)

If you are interested in the subject of immortality and the future. Chat room available!

[www.extropy.org](http://www.extropy.org)

Extropy Institute sees enormous potential in advanced decision making and strategic thinking, coupled with emerging sciences and technologies, to quicken humanity's resolution of these fundamental problems. We will gradually but firmly change the rules of the game called "being human."

[www.transhumanism.org](http://www.transhumanism.org)

Wonder what the future holds for  
you? Check out this site.

Check out Carl Sagan's Cosmic  
Calendar!

[http://home.pacific.net.hk/~paulchui/  
cosmic.html](http://home.pacific.net.hk/~paulchui/cosmic.html)