Bill Daggett: *Creating Future-Focused Schools*

Part 2
How to Create a Culture

• Start with the Board and Administration
• Share the Need for Change with All Staff
• Go to Parents and Community at a Time and Place that is Convenient for Them
How to Create a Culture

• Start with the Board and Administration
• Share the Need for Change with All Staff
• Go to Parents and Community at a Time and Place that is Convenient for Them
• Share with Students
Successful Practices Network
Supporting Future-Focused Schools

- Connecting to Model Schools
- School Coaches and Virtual Professional Learning
- Model Lessons and Assessments
- Driven by School’s Plans
Emerging Trends
<table>
<thead>
<tr>
<th>Emerging Trends</th>
<th>Federal Role in Education</th>
<th>Demographics</th>
<th>Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Social Media</td>
<td>Work</td>
<td>Higher Education Under Fire</td>
</tr>
</tbody>
</table>
# Emerging Trends

<table>
<thead>
<tr>
<th>Federal Role in Education</th>
<th>Demographics</th>
<th>Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Media</td>
<td>Work</td>
<td>Higher Education Under Fire</td>
</tr>
</tbody>
</table>
Emerging Trends

Federal Role in Education
## Emerging Trends

<table>
<thead>
<tr>
<th>Federal Role in Education</th>
<th>Demographics</th>
</tr>
</thead>
</table>
Support Ratio
Support Ratio

Under 18

23.3%

74.2 M

Sources:
U.S. Census Bureau, New QuickFacts, Jan. 7, 2011
U.S. Bureau of Labor Statistics
Support Ratio

- Under 18: 23.3% (74.2 M)
- Over 65: 14.1% (45 M)

Sources:
- U.S. Census Bureau, New QuickFacts, Jan. 7, 2011
- U.S. Bureau of Labor Statistics
From Pyramid to Rectangle

<table>
<thead>
<tr>
<th>Population Age</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>85+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>80 - 84</td>
<td></td>
<td></td>
</tr>
<tr>
<td>75 - 79</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70 - 74</td>
<td></td>
<td></td>
</tr>
<tr>
<td>65 - 69</td>
<td></td>
<td></td>
</tr>
<tr>
<td>60 - 64</td>
<td></td>
<td></td>
</tr>
<tr>
<td>55 - 59</td>
<td></td>
<td></td>
</tr>
<tr>
<td>50 - 54</td>
<td></td>
<td></td>
</tr>
<tr>
<td>45 - 49</td>
<td></td>
<td></td>
</tr>
<tr>
<td>40 - 44</td>
<td></td>
<td></td>
</tr>
<tr>
<td>35 - 39</td>
<td></td>
<td></td>
</tr>
<tr>
<td>30 - 34</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25 - 29</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20 - 24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 - 19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 - 14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 - 9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 - 4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Percentage of total population

Source: https://www.census.gov/population/international/files/97agewc.pdf
From Pyramid to Rectangle

<table>
<thead>
<tr>
<th>Male</th>
<th>Population Age</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>85+</td>
<td>1</td>
<td>85+</td>
</tr>
<tr>
<td>80 - 84</td>
<td>2</td>
<td>80 - 84</td>
</tr>
<tr>
<td>75 - 79</td>
<td>3</td>
<td>75 - 79</td>
</tr>
<tr>
<td>70 - 74</td>
<td>4</td>
<td>70 - 74</td>
</tr>
<tr>
<td>65 - 69</td>
<td>5</td>
<td>65 - 69</td>
</tr>
<tr>
<td>60 - 64</td>
<td>6</td>
<td>60 - 64</td>
</tr>
<tr>
<td>55 - 59</td>
<td>7</td>
<td>55 - 59</td>
</tr>
<tr>
<td>50 - 54</td>
<td>8</td>
<td>50 - 54</td>
</tr>
<tr>
<td>45 - 49</td>
<td>9</td>
<td>45 - 49</td>
</tr>
<tr>
<td>40 - 44</td>
<td>10</td>
<td>40 - 44</td>
</tr>
<tr>
<td>35 - 39</td>
<td>11</td>
<td>35 - 39</td>
</tr>
<tr>
<td>30 - 34</td>
<td>12</td>
<td>30 - 34</td>
</tr>
<tr>
<td>25 - 29</td>
<td>13</td>
<td>25 - 29</td>
</tr>
<tr>
<td>20 - 24</td>
<td>14</td>
<td>20 - 24</td>
</tr>
<tr>
<td>15 - 19</td>
<td>15</td>
<td>15 - 19</td>
</tr>
<tr>
<td>10 - 14</td>
<td>16</td>
<td>10 - 14</td>
</tr>
<tr>
<td>5 - 9</td>
<td>17</td>
<td>5 - 9</td>
</tr>
<tr>
<td>0 - 4</td>
<td>18</td>
<td>0 - 4</td>
</tr>
</tbody>
</table>

Percentage of total population

1990

Source: https://www.census.gov/population/international/files/97agewc.pdf
From Pyramid to Rectangle

Percentage of total population

2020

Source: https://www.census.gov/population/international/files/97agewc.pdf
45 Million and Growing to 80 Million by 2030
Support Ratio

- **Under 18**: 23.3% (74.2 M)
- **Over 65**: 14.1% (45 M)
- **18 - 65**: 39.7% (127 M)

- Not employed full-time
- More than half receive government assistance

Sources:
- U.S. Census Bureau, New QuickFacts, Jan. 7, 2011
- U.S. Bureau of Labor Statistics
127 Million and Growing
Support Ratio

Subtotal 246.2 M 77.1%

18 - 65
- Not employed full-time
- More than half receive government assistance

127 M

23.3%
74.2 M

20 - 64

14.1%
45 M

Under 18

Over 65

Sources:
U.S. Census Bureau, New QuickFacts, Jan. 7, 2011
U.S. Bureau of Labor Statistics
Support Ratio

- **Under 18**: 23.3% of 74.2 M
- **Over 65**: 14.1% of 45 M
- **18 - 65**: 39.7% of 127 M
- **Public Employment**: 7% of 22.4 M

Subtotal: 246.2 M (77.1%)

Sources: U.S. Census Bureau, New QuickFacts, Jan. 7, 2011
U.S. Bureau of Labor Statistics

18 - 65 Not in FT Employment and over half of whom receive Government assistance
Total
268.6 M
84.1%

Support Ratio

Under 18
23.3%
74.2 M

Over 65
14.1%
45 M

18 - 65
Not in FT Employment
and over half of whom receive Government assistance
39.7%
127 M

Subtotal
246.2 M
77.1%

Public Employment
7%
22.4 M

Sources:
U.S. Census Bureau, New QuickFacts, Jan. 7, 2011
U.S. Bureau of Labor Statistics
Support Ratio

Total 303.6 M 91.0%

- Under 18 23.3% 74.2 M
- Over 65 21.0% 80 M
- 18 - 65 39.7% 127 M

Subtotal 281.2 M 84.0%

Public Employment 7% 22.4 M

Not in FT Employment and over half of whom receive Government assistance

Sources: U.S. Census Bureau, New QuickFacts, Jan. 7, 2011
U.S. Bureau of Labor Statistics
US NATIONAL DEBT

$19,285,595,639,464
U.S. Obligations

National Debt
$19.2 Trillion

Obligations via Social Security, Medicare, Medicaid
$205 Trillion

11 times
The Nation’s GDP
Underfunded State Pension Funds

• $5 Trillion
## Emerging Trends

<table>
<thead>
<tr>
<th>Federal Role in Education</th>
<th>Demographics</th>
<th>Technology</th>
</tr>
</thead>
</table>

---

*International Center for Leadership in Education*
Technology
A Decade of Digital Universe Growth

Source: IDC Digital Universe Study

Storage Capacity (Exabytes)

- 2005: 130 Exabytes
- 2010: 1,227 Exabytes
- 2015: 7,910 Exabytes

Source: IDC Digital Universe Study
10 Years of Future Growth

Storage Capacity (Exabytes)

Year: 2005 - 130 Exabytes
Year: 2010 - 1,227 Exabytes
Year: 2015 - 7,910 Exabytes

2025 - 506,240 Exabytes

Source: IDC Digital Universe Study
Technology/Information Systems will change our lives
Web

1.0 – Informational
Web

1.0 – Informational
  • Google
Web

1.0 – Informational
2.0 – Relational
Web

1.0 – Informational
2.0 – Relational
3.0 – Anticipatory
Web

1.0 – Informational
2.0 – Relational
3.0 – Anticipatory
• Artificial Intelligence
Web

1.0 – Informational
2.0 – Relational
3.0 – Anticipatory

- Artificial Intelligence
- Deep Data Mining
Web

1.0 – Informational
2.0 – Relational
3.0 – Anticipatory

• Artificial Intelligence
• Deep Data Mining
• Google > Ads
Web

1.0 – Informational
2.0 – Relational
3.0 – Anticipatory

• Artificial Intelligence
• Deep Data Mining
• Google > Ads
• Gmail > Ads
Web

1.0 – Informational
2.0 – Relational
3.0 – Anticipatory
Teacher's anti-cheat technique
ALL THIS TECHNOLOGY IS MAKING US ANTISOCIAL!
## Emerging Trends

<table>
<thead>
<tr>
<th>Federal Role in Education</th>
<th>Demographics</th>
<th>Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Media</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Social Media
NEW THIS MORNING

THE DANGERS OF ONLINE GAMING

ARE YOUR KIDS AT RISK WHILE PLAYING ONLINE?
Policy Guidelines
Consequences to Schools

- How others communicate about schools
  - Opt-out
- How we should communicate within our system and with parents/community
Instructional Implications
Social Issues

- Sex Education
- Drug Addiction
- Social Media Education
Consequences to Schools

• How others communicate about schools
  • Opt-out

• How we should communicate within our system and with parents/community

• Curriculum implications
  • Consequences
  • Evaluate sources
  • Balanced perspective
  • Tools

• Professional Development needs
Emerging Trends

<table>
<thead>
<tr>
<th>Federal Role in Education</th>
<th>Demographics</th>
<th>Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Media</td>
<td>Work</td>
<td></td>
</tr>
</tbody>
</table>
College Ready is Not Ready Enough
Job Shares by Skill Group
1980 - 2040

Source: NY Fed Calculations, U.S. Census Bureau
Our Changing World

Auto Tech
Our Changing World

Prevention vs. Intervention

Auto Tech
40% of manufactured products now have embedded sensors that collect and generate data.

Intervention to Prevention
Our Changing World

Health Care

Auto Tech
Medicine as Prototype
Intervention to Prevention
Population Health Management

High-Risk Patients

Medium-Risk Patients

Low-Risk Patients
Shift from Intervention to Prevention

Affordable Care Act requires Medicare

Medicaid

Private Insurance

# Health Care Cost

<table>
<thead>
<tr>
<th>RISK GROUP</th>
<th>% of Population</th>
<th>% of Total Health Care Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low-Risk</td>
<td>50%</td>
<td>3%</td>
</tr>
<tr>
<td>Medium-Risk</td>
<td>45%</td>
<td>47%</td>
</tr>
<tr>
<td>High-Risk</td>
<td>5%</td>
<td>50%</td>
</tr>
</tbody>
</table>
From Fitbit® to Chip
FollowMyHealth™
Our Changing World

Health Care

Auto Tech

Financial Investments

(Robo-Advising)
Our Changing World

- Auto Tech
- Health Care
- Financial Investments
- Supermarkets / Drug Stores
Our Changing World

- Auto Tech
- Health Care
- Financial Investments
- Supermarkets / Drug Stores
- Manufacturing
Impact of Automation
Impact of Automation

5% of jobs can be automated

Source: McKinsey Quarterly 2016 Number 1
Impact of Automation

5% of jobs can be automated

30% of tasks in 60% of jobs will be automated

Source: McKinsey Quarterly 2016 Number 1
Lost Jobs
Lost Jobs

Telemarketers

99%
Lost Jobs

- Telemarketers: 99%
- Secretarial / Administrative Assistants: 96%

Source: McKinsey Quarterly 2016 Number 1
Lost Jobs

- Telemarketers: 99%
- Secretarial / Administrative Assistants: 96%
- Accountants / Auditors: 94%

Source: McKinsey Quarterly 2016 Number 1
Lost Jobs

- Telemarketers: 99%
- Secretarial / Administrative Assistants: 96%
- Accountants / Auditors: 94%
- Technical Writers: 89%

Source: McKinsey Quarterly 2016 Number 1
Lost Jobs

- Telemarketers: 99%
- Secretarial / Administrative Assistants: 96%
- Accountants / Auditors: 94%
- Technical Writers: 89%
- Machinists: 65%

Source: McKinsey Quarterly 2016 Number 1
Lost Jobs

- Telemarketers: 99%
- Secretarial / Administrative Assistants: 96%
- Accountants / Auditors: 94%
- Technical Writers: 89%
- Machinists: 65%
- Economists: 43%

Source: McKinsey Quarterly 2016 Number 1
Lost Jobs

- Telemarketers: 99%
- Secretarial / Administrative Assistants: 96%
- Accountants / Auditors: 94%
- Technical Writers: 89%
- Machinists: 65%
- Economists: 43%
- Health Technologists: 40%

Source: McKinsey Quarterly 2016 Number 1
Emerging Trends

<table>
<thead>
<tr>
<th>Federal Role in Education</th>
<th>Demographics</th>
<th>Technology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Social Media</td>
<td>Work</td>
<td>Higher Education Under Fire</td>
</tr>
</tbody>
</table>
Average Graduation Rate 2015
1983 - 2015

36.6%
Four-Year Colleges in 5 years

29.1%
Two-Year Colleges in 3 years

Increased Cost Since 1985

Medical 286%

Higher Education 538%

College Costs Surge 500% in U.S. Since 1985, Michelle Jamrisko and Ilan Kolet
Student Loans

7 Million have defaulted

$1.2 Trillion outstanding

Is college worth the investment?

Answer: It depends
Your Major Matters
A LOT
Bachelor’s Degrees

1. Business
2. General Studies
3. Social Science and History
4. Psychology
5. Health Professions
6. Education
7. Visual and Performing Arts
8. Engineering and Technology
9. Communications and Journalism
10. Computer and Information Science

Source: National Center for Education Statistics
Bachelor’s Degrees

1. Business
2. General Studies
3. Social Science and History
4. Psychology
5. Health Professions
6. Education
7. Visual and Performing Arts
8. Engineering and Technology
9. Communications and Journalism
10. Computer and Information Science

Source: National Center for Education Statistics
## 2-Year College Graduates

<table>
<thead>
<tr>
<th>OCCUPATION</th>
<th>STARTING</th>
<th>AVERAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management Info Systems</td>
<td>$45,100</td>
<td>$72,100</td>
</tr>
<tr>
<td>Electrical and Chemical Engineers</td>
<td>$45,100</td>
<td>$69,800</td>
</tr>
<tr>
<td>Occ. Health and Safety</td>
<td>$50,300</td>
<td>$68,200</td>
</tr>
<tr>
<td>Diagnostic Medical Specialist</td>
<td>$50,200</td>
<td>$66,800</td>
</tr>
<tr>
<td>Computer Programmer</td>
<td>$42,300</td>
<td>$65,300</td>
</tr>
</tbody>
</table>

Payscale.com
## 4-Year College Graduates

<table>
<thead>
<tr>
<th>OCCUPATION</th>
<th>STARTING</th>
<th>AVERAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human Development</td>
<td>$35,900</td>
<td>$48,000</td>
</tr>
<tr>
<td>Athletic Trainer</td>
<td>$34,800</td>
<td>$46,900</td>
</tr>
<tr>
<td>Social Worker</td>
<td>$33,000</td>
<td>$46,600</td>
</tr>
<tr>
<td>Recreation and Leisure</td>
<td>$32,200</td>
<td>$45,300</td>
</tr>
<tr>
<td>Child and Family Studies</td>
<td>$30,300</td>
<td>$37,200</td>
</tr>
</tbody>
</table>

Payscale.com
# 4-Year College Graduates

<table>
<thead>
<tr>
<th>OCCUPATION</th>
<th>STARTING</th>
<th>AVERAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Petroleum Engineer</td>
<td>$103,000</td>
<td>$160,000</td>
</tr>
<tr>
<td>Actuarial Math</td>
<td>$58,700</td>
<td>$120,000</td>
</tr>
<tr>
<td>Nuclear Engineer</td>
<td>$67,600</td>
<td>$117,000</td>
</tr>
<tr>
<td>Chemical Engineer</td>
<td>$68,200</td>
<td>$117,000</td>
</tr>
<tr>
<td>Aerospace Engineer</td>
<td>$62,800</td>
<td>$109,000</td>
</tr>
<tr>
<td>Year</td>
<td>4-Year Private</td>
<td>4-Year Public</td>
</tr>
<tr>
<td>------------</td>
<td>----------------</td>
<td>---------------</td>
</tr>
<tr>
<td>1980-81</td>
<td>$10,438</td>
<td>$2,320</td>
</tr>
<tr>
<td>1992-93</td>
<td>$32,405</td>
<td>$9,410</td>
</tr>
<tr>
<td>2001-02</td>
<td>$10,000</td>
<td>$3,435</td>
</tr>
<tr>
<td>2011-12</td>
<td>$15,000</td>
<td>$-</td>
</tr>
<tr>
<td>2015-16</td>
<td>$20,000</td>
<td>$-</td>
</tr>
</tbody>
</table>

Source: Annual Survey of College, College Board
Average College Cost

<table>
<thead>
<tr>
<th></th>
<th>Private 4-Year</th>
<th>Public 4-Year</th>
<th>Public 2-Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuition/Fees</td>
<td>$32,405</td>
<td>$9,410</td>
<td>$3,435</td>
</tr>
<tr>
<td>Room/Board</td>
<td>$11,516</td>
<td>$10,138</td>
<td>$10,138</td>
</tr>
<tr>
<td>Books</td>
<td>$1,298</td>
<td>$1,298</td>
<td>$1,298</td>
</tr>
<tr>
<td>Personal/Travel</td>
<td>$3,215</td>
<td>$2,661</td>
<td>$2,661</td>
</tr>
</tbody>
</table>

Source: 1st Financial Bank
Bottom 25% of 4-year college graduates earn no more than the median high school graduate
How to Create a Culture

• Start with the Board and Administration
How to Create a Culture

• Start with the Board and Administration
• Share the Need for Change with All Staff
How to Create a Culture

• Start with the Board and Administration
• Share the Need for Change with All Staff
• Go to Parents and Community at a Time and Place that is Convenient for Them
How to Create a Culture

• Start with the Board and Administration
• Share the Need for Change with All Staff
• Go to Parents and Community at a Time and Place that is Convenient for Them
• Share with Students
How to Create a Culture

• Start with the Board and Administration
• Share the Need for Change with All Staff
• Go to Parents and Community at a Time and Place that is Convenient for Them
• Share with Students
• Work with Media
Discussion Questions

- Culture Trumps Strategy. Therefore, how can we create an understanding of WHY changes are need in what our students need to know and be able to do?
WHAT
Discussion Questions

• Culture Trumps Strategy. Therefore, how can we create an understanding of WHY changes are need in what our students need to know and be able to do?

• WHAT do our students need to know and be able to do that is different than students needed in the past?
Record your opinions
What has changed?

Our Students
What has changed?

Our Students
- Digital Natives
What has changed?

Our Students
- Digital Natives
- Majority Minority
What has changed?

Our Students
- Digital Natives
- Majority Minority
- Poverty
What has changed?

Our Students

How they communicate and interact
What has changed?

Our Students
How they communicate and interact
The workplace
What has changed?

The system has become increasingly politicized
What has changed?

But …
Schools are Functioning in a Box

- 5½ hours per day
- 180 days per year
Seven Interrelated Fundamental Shifts
Seven Interrelated Fundamental Shifts

From A/C to B/D
Rigor/Relevance Framework
A and C were Needed Pre-Internet
B and D are Required in the Internet Age

Relevance

Rigor

1 2 3 4 5

6 5 4 3 2 1
Regulated, Certified, Tenured and Contracted

![Diagram with labels for rigor and relevance, indicating categories A, B, C, and D.]
From A/C to B/D

• Schools were organized for the Pre-Internet age

• Requires integration between disciplines
Seven Interrelated Fundamental Shifts

1. From A/C to B/D

2. Reading and Writing
Reading Study Summary

Interquartile Ranges Shown (25% - 75%)

<table>
<thead>
<tr>
<th>Text Lexile Measure (L)</th>
<th>High School Literature</th>
<th>College Literature</th>
<th>High School Textbooks</th>
<th>College Textbooks</th>
<th>Military</th>
<th>Personal Use</th>
<th>Entry-Level Occupations</th>
<th>SAT 1, ACT, AP*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>700</td>
<td>700</td>
<td>800</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
<td>1000</td>
</tr>
<tr>
<td></td>
<td>900</td>
<td>900</td>
<td>1000</td>
<td>1200</td>
<td>1200</td>
<td>1200</td>
<td>1200</td>
<td>1200</td>
</tr>
<tr>
<td></td>
<td>1100</td>
<td>1100</td>
<td>1200</td>
<td>1400</td>
<td>1400</td>
<td>1400</td>
<td>1400</td>
<td>1400</td>
</tr>
<tr>
<td></td>
<td>1300</td>
<td>1300</td>
<td>1400</td>
<td>1600</td>
<td>1600</td>
<td>1600</td>
<td>1600</td>
<td>1600</td>
</tr>
</tbody>
</table>

Source: National Test Data, MetaMetrics

International Center for Leadership in Education

HMH
Seven Interrelated Fundamental Shifts

1. From A/C to B/D
2. Reading and Writing
3. Data Analytics
Web

1.0 – Informational
2.0 – Relational
3.0 – Anticipatory

- Artificial Intelligence
- Deep Data Mining
10 Years of Future Growth

Source: IDC Digital Universe Study

Storage Capacity (Exabytes)

- 2005: [VALUE]
- 2010: 1,227 Exabytes
- 2015: 7,910 Exabytes
- 2020: [VALUE]
- 2025: 506,240 Exabytes

Source: IDC Digital Universe Study
Data analytics involves examining large data sets from multiple sources to find patterns, correlations and trends.
Data analytics requires you to reduce, refine and manage information.
Impact of Data Analytics

1. Understanding and Identifying Target Customers (Marketing)
Impact of Data Analytics

1. Understanding and Identifying Target Customers (Marketing)
2. Elections (Obama 2012 Election)
Impact of Data Analytics

1. Understanding and Identifying Target Customers (Marketing)
2. Elections (Obama 2012 Election)
3. Business Processes (Stocks)
Impact of Data Analytics

1. Understanding and Identifying Target Customers (Marketing)
2. Elections (Obama 2012 Election)
3. Business Processes (Stocks)
4. Personal Performance (Fitbit, Jawbones and Dating Services)
Impact of Data Analytics

1. Understanding and Identifying Target Customers (Marketing)
2. Elections (Obama 2012 Election)
3. Business Processes (Stocks)
4. Personal Performance (Fitbit, Jawbones and Dating Services)
5. Healthcare (DNA Relationship to Drugs, Diet, Exercise to Diseases)
Impact of Data Analytics

6. Science and Research
Impact of Data Analytics

6. Science and Research
7. Optimize Machines and Device Performance
Impact of Data Analytics

6. Science and Research
7. Optimize Machines and Device Performance
8. Security and Law Enforcement
Impact of Data Analytics

6. Science and Research
7. Optimize Machines and Device Performance
8. Security and Law Enforcement
9. Financial Trading
Impact of Data Analytics

6. Science and Research
7. Optimize Machines and Device Performance
8. Security and Law Enforcement
9. Financial Trading
10. Self-driving Cars
Impact of Data Analytics

6. Science and Research
7. Optimize Machines and Device Performance
8. Security and Law Enforcement
9. Financial Trading
10. Self-driving Cars
11. Learning (Interests, Learning Styles and Aptitudes)
Like a Microscope: Examine smaller details than we can quickly observe (your personal shopping habits).

AND

Like a Telescope: See things in large scale showing connections not recognized before (people who buy one product and then buy another).
Data Analytics

Tables

Charts

Graphs
Clustered Column-Line on Secondary Axis

![Graph showing annual rates and numbers for 2011 to 2015.](image)
Box-and-Whisker Plot

Figure 1

Text Measure (L)

Group 1  Group 2  Group 3  Group 4  Group 5  Group 6
Big Data

A graphic visualization of the mobile industry.

Is that reading?
Is that statistics?
Is that logic?
Is that probability?
Is that measurement systems?
Is that writing?