Frameworks for Planning and Implementation: Structures from a Decade of the Horizon Report

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The Horizon Report
The 2012 Horizon Report

- **Mobile Apps**
  - Time-to-Adoption: One Year or Less

- **Learning Analytics**
  - Time-to-Adoption: Two to Three Years

- **Gesture-Based Computing**
  - Time-to-Adoption: Four to Five Years

- **Tablet Computing**

- **Game-Based Learning**

- **Internet of Things**
Patterns
The 2012 Horizon Report

- **Mobile Apps**: Time-to-Adoption: One Year or Less
- **Learning Analytics**: Time-to-Adoption: Two to Three Years
- **Gesture-Based Computing**: Time-to-Adoption: Four to Five Years
- **Tablet Computing**
- **Game-Based Learning**
- **Internet of Things**
The 2011 Horizon Report

- **Mobiles**: Time-to-Adoption: One Year or Less
- **Augmented Reality**: Time-to-Adoption: Two to Three Years
- **Gesture-Based Computing**: Time-to-Adoption: Four to Five Years
- **Electronic Books**
- **Game-Based Learning**
- **Learning Analytics**
The 2010 Horizon Report

- Mobile Computing: One Year or Less
- Simple Augmented Reality: Two to Three Years
- Gesture-Based Computing: Four to Five Years
- Open Content
- Electronic Books
- Visual Data Analysis
The 2009 Horizon Report

- Mobiles
  - Time-to-Adoption: One Year or Less

- Geo-Everything
  - Time-to-Adoption: Two to Three Years

- Smart Objects
  - Time-to-Adoption: Four to Five Years

- Cloud Computing

- The Personal Web

- Semantic-Aware Applications
Metatrends (Since 2004)

- Evolution of a ubiquitous platform
- Shifting content production to users
- Computing in three dimensions
- Games as pedagogical platforms
- Connecting people through the network
- Communication between humans and machines
- Collective sharing & generation of knowledge
- Shifting content production to users
<table>
<thead>
<tr>
<th>Social</th>
<th>Mobility</th>
<th>Visualization</th>
<th>Storytelling</th>
<th>Gaming</th>
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<tbody>
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<td>8,000 years</td>
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</tbody>
</table>

![Image of ancient artifacts and illustrations](image-url)
The Higher Education Context
Key Trends (2012 Horizon Report)

• People expect to be able to work, learn, and study whenever and wherever they want to.

• The technologies we use are increasingly cloud-based, and our notions of IT support are decentralized.

• The world of work is increasingly collaborative, driving changes in the way student projects are structured.

• The abundance of resources and relationships made easily accessible via the Internet is increasingly challenging us to revisit our roles as educators.

• Education paradigms are shifting to include online learning, hybrid learning and collaborative models.

• There is a new emphasis in the classroom on more challenge-based and active learning.
Significant Challenges (2012 Horizon Report)

- Economic pressures and new models of education are bringing unprecedented competition to the traditional models of higher education.
- Appropriate metrics of evaluation lag the emergence of new scholarly forms of authoring, publishing, and researching.
- Digital media literacy continues its rise in importance as a key skill in every discipline and profession.
- Institutional barriers present formidable challenges to moving forward in a constructive way with emerging technologies.
- New modes of scholarship are presenting significant challenges for libraries and university collections, how scholarship is documented, and the business models to support these activities.
Five Disruptive Forces (Jeff Selingo, Nov. 2012)

- **Completion**
  - Low completion rates
  - More skilled jobs
  - Flat attainment

- **Demographics**
  - More diversity
  - Less prepared
  - The swirl

- **Sea of Red Ink**
  - Institutional debt
  - State role in higher ed
  - Family ability to pay

- **Improved Alternatives**
  - Next generation learner
  - Flipped classroom
  - The great unbundling

- **Value**
  - What am I learning?
  - Will I get a job?
  - Make enough to pay debt?
The Process
The Steps

Adapting the Process

**Select Team**
- Make sure to have a good mix of technologists, faculty, leaders in the group.

**Generate Research Database**
- Ask group members to submit links to materials of interest, with brief commentary.

**Present Research Question(s)**
- e.g. “What technologies should colleges be actively looking for ways to apply?”

**Review Research Materials**
- Ask group to expand database, commentary, with question(s) in mind.

**Generate Answer Set**
- Ask group members to submit answers to question(s).

**First Pass Rankings**
- For a set of N answers: give each member \( \sqrt{N} \) tokens; each distributes tokens between chosen answers.

**Create Short List**
- Pick top \( \sqrt{N} \) answers with most total tokens – this is the short list.

**Second Pass Rankings**
- If M answers are desired: give each member M tokens; each distributes tokens between chosen short list answers.

**Produce Report**
- Writing team integrates top M answers with research materials to produce report.
A “Homegrown Horizon Report” Example
The Five Questions

• What would you list among the established technologies that learning-focused institutions should all be using broadly today to support or enhance teaching, learning, or creative expression?

• What technologies that have a solid user base in consumer, entertainment, or other industries should learning-focused institutions be actively looking for ways to apply?

• What are the key emerging technologies you see developing to the point that learning-focused institutions should begin to take notice during the next 3 to 5 years? What organizations or companies are the leaders in these technologies?

• What do you see as the key challenge(s) related to teaching, learning, or creative expression that learning-focused institutions will face during the next 5 years?

• What trends do you expect to have a significant impact on the ways in which learning-focused institutions approach our core missions of teaching, research, and service?
The Question Selected by the Group
(12 Participants)

What are the key emerging technologies (with associated companies) you see developing to the point that learning-focused institutions should begin to take notice during the next 3 to 5 years?
First Set of N Replies (N=29)

1. Better management tools for the massive amount of information
2. Cloud computing of everything
3. Completely wireless classrooms with all the technology being delivered at quality comparable to wired technologies. (wireless projection, capturing, etc.) Some wireless delivery is inferior at this point. My A/V guys keep telling me wireless projection isn't as good as wireless, but my CIO wants wireless classrooms.
4. Demands of ubiquitous mobility
5. Digital technology open access
6. Easier and cheaper ways to interact from a distance
7. Educational gaming
8. Eye control of technologies
9. Eye glass retina displays replacing tiny mobile screens.
11. High quality video contents online
12. Learning objects marketplace with micro payments to faculty authors.
13. Merging of assessment management systems, course management systems, enterprise management systems
14. Mind control of technologies
15. Mobile Learning with Augmented Reality Applications
16. Mobile apps for instruction and the educational enterprise
17. No more lecture halls, or at least hybrid learning that increases capacity of existing learning spaces.
18. Robotics everywhere
19. Seamless collaborative tools
20. Simulation of all type: devices for medical procedures, virtual sims a la 2nd Life.
21. Social learning that is engaging enough to push Facebook etc aside.
22. Storm of iPad-like devices of all kinds of size, type, materials, durability, disposability, etc
23. Tools that promote critical thinking
24. Ubiquitous hand held internet capable device
25. Use of e-Portfolio
26. Use of video (lite)
27. Video recording and assessment of skills training in the field.
28. 3-projection
29. 4G
6 Replies Remaining After the First Poll
(Sqrt[29]≈6 Tokens Per Voter)

- Better management tools for the massive amount of information
- Cloud computing of everything
- Demands of ubiquitous mobility
- Merging of assessment management systems, course management systems, enterprise management systems
- Mobile Learning with Augmented Reality Applications
- Mobile apps for instruction and the educational enterprise
Top Three Replies Selected in Second Poll (3 Tokens Per Voter)

1. Better management tools for the massive amount of information.

2. Cloud computing of everything.

3. Mobile apps for instruction and the educational enterprise.
Bibliography

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• Horizon Report Wiki:
  • All editions since 2006 online at:
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• Horizon Report Metatrends:
  • Online at:
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• Ruben R. Puentedura, *Technology In Education – The First 200,000 Years*:
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• Jeff Selingo, *The Five Disruptive Forces That Will Change Higher Education Forever*:
  • Online at:
    http://blip.tv/downes/the-five-disruptive-forces-that-will-change-higher-education-forever-6395884
Photo Credits

• *Day 5 – Apple Store*: Karin Beil

• *Lazy day reading with the new Kindle*: Shane Lin

• *Social network in a course*: Hans Põldoja

• *Q2L Slide Show*: Quest to Learn

• *Dancing With Swarming Particles*: Rodrigo Carvalho

• *Piggy Bank – Internet of Things*: Alex Weber
Informing Decision Making: the Delphi Method
Wanted: the Relevant Information Space
Stage 1: Bringing In the Experts
Stage 1: Bringing In the Experts

- Expert A
- Expert B

Venn diagram showing intersection of Expert A and Expert B.
Stage 1: Bringing In the Experts
Stage 2: Aggregating the Replies
Stage 3: Informing the Process
Stage 4: Selecting the Relevant Information Space
Stage 4: Selecting the Relevant Information Space
Things to Keep In Mind

• Change some, but not all, of your expert panel members each year:
  • Too much change leads to unstable recommendations, too little change leads to groupthink-like phenomena.

• Make sure you have a broad range of expertise and backgrounds in your expert panel:
  • Not everyone should be a technologist, or a teacher, or an administrator.

• Make sure your panel has innovators, opinion leaders, and early majority members (cf. Rogers) on it:
  • Panels that only feature innovators tend to produce recommendations that are not representative of the needs of the institution as a whole.
Additional Toolkits
How Innovations Spread
(Everett M. Rogers, *Diffusion of Innovations*)

The Gartner Hype Cycle

- Peak of Inflated Expectations
- Trough of Disillusionment
- Plateau of Productivity
- Slope of Enlightenment

<table>
<thead>
<tr>
<th>Type A Adoption</th>
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<th>Type C Adoption</th>
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Source: GartnerGroup
The Gartner Hype Cycle: Phases and Adoption Types

- **Five Phases:**
  - *Technology Trigger*: a new technology generates significant press and industry interest;
  - *Peak of Inflated Expectations*: a flurry of well-publicized activity results in some successes, but more failures;
  - *Trough of Disillusionment*: the technology becomes unfashionable, and the press abandons the topic;
  - *Slope of Enlightenment*: focused experimentation and solid hard work lead to a true understanding of the technology’s applicability, risks, and benefits;
  - *Plateau of Productivity*: the real-world benefits of the technology are demonstrated and accepted.

- **Three Adoption Types:**
  - *Type A*: technologically aggressive organizations.
  - *Type B*: technologically low risk organizations, focused on maintaining competitiveness.
  - *Type C*: technologically cautious organizations, focused on cost reduction.
The SAMR Model (Puenteedura, 2003)

- **Redefinition**: Tech allows for the creation of new tasks, previously inconceivable
- **Modification**: Tech allows for significant task redesign
- **Augmentation**: Tech acts as a direct tool substitute, with functional improvement
- **Substitution**: Tech acts as a direct tool substitute, with no functional change
Bibliography

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• Diffusion of Innovations:

• The Gartner Hype Cycle:

• The SAMR Model:
  • Ruben R. Puentedura. *As We May Teach: Educational Technology, From Theory Into Practice*. Online at: https://itunes.apple.com/itunes-u/as-we-may-teach-educational/id380294705?mt=10
Qualitative Analysis and the Horizon Report
Automating the Analysis: Wordle
Textual Network Analysis: SNAPP
Coding and Analysis: TAMS Analyzer

R: (school>trouble) Well, my high school was known as a trouble school. (aspirations) We weren’t going anywhere. (violence) There were a lot of fights (violence), and (truancy) kids, uhm wandering around (truancy), and (aspirations) most of us worked in factories on the city’s east side (aspirations). (gratification>delayed) Most of us partyed rather than worked (gratification>delayed) (school>trouble)
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• **TAMS Analyzer:**
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