Emerging Technologies, Innovation, and Academic Transformation

A Report on the ELI Focus Session

Veronica Diaz, Associate Director, EDUCAUSE Learning Initiative
Malcolm Brown, Director, EDUCAUSE Learning Initiative

ELI Paper 1: 2013
January 2013

Abstract
On October 2 and 3, 2012, the ELI teaching and learning community gathered for an online focus session on emerging technologies, innovation, and academic transformation. This white paper is a synthesis of the key ideas, themes, and concepts that came out of the focus session. This white paper also includes links to supporting focus session materials, recordings, and resources. It represents a harvesting of the key elements that we, as a teaching and learning community, need to keep in mind as we explore higher education incubator models, various pilot structures and processes, rubrics and methodologies for evaluating pilots, and considerations and tools to scale innovations to varying degrees.
Introduction

On October 2 and 3, 2012, the ELI teaching and learning community gathered for an online focus session on emerging technologies, innovation, and academic transformation. This white paper is a synthesis of the key ideas, themes, and concepts that came out of the focus session. This white paper also includes links to supporting focus session materials, recordings, and resources. It represents a harvesting of the key elements that we, as a teaching and learning community, need to keep in mind as we explore higher education incubator models, various pilot structures and processes, rubrics and methodologies for evaluating pilots, and considerations and tools to scale innovations to varying degrees.

Focus Session Themes

Our theme, broadly described, was academic transformation and innovation—the effort to continuously improve teaching and learning in higher education: identifying promising, emerging technologies and practices; conducting pilots with them; and then elevating the “winners” into production. Taken together, this odyssey of continuous improvement is resulting in the transformation of the way our institutions teach students and the way those students learn.

In a time when new technologies swirl about us in great numbers, the art of managing innovation, experimentation, and piloting seems more crucial than ever. As important as the art of innovation is to our practice, we don’t often have opportunities to study it or to review our own methods and approaches. Of course, we do innovate, but many times we do so in a way that we simply inherited when we arrived at our campus. If our methodologies are correct, if they truly serve us, then those experiences become positive results that help us all move forward.

This focus session was an opportunity to reflect on our current methods and practices, and we divided this broad topic into four subtopics:

- Ideation and Cultivating a Culture of Innovation
- How to Identify the Pilots: Discovery and Experimentation
- How to Effectively Pilot Innovations
- Scaling from the Pilot to Production

Ideation and Cultivating a Culture of Innovation

The Role of Innovation in an Organization

The focus session opened with Alex Castellarnau of IDEO, who helped us consider the role of innovation within our emerging technology portfolios. How does one set up an “innovation” portfolio, how can we think about the proportion of innovation within our work, and what should the role of innovation work be? His session proposed three areas of focus to help us with these questions:

1. Overall, how to think of innovation, especially disruptive innovation
2. Conditions of disruptive innovation
3. Goals of disruptive innovation

In having this discussion, it was useful to classify typical innovative behavior that may currently exist in an organization into a few areas:
1. **Core Innovation**: Incremental innovation, which asks what we can do better for the people we are already serving.

2. **Evolutionary Innovation**: Considers what kind of new experiences we can offer to our existing audiences or customers or what current experiences we can offer to new audiences.

3. **Revolutionary/Disruptive Innovation**: Asks whether we can do something radically new for a radically new audience.

A useful exercise, especially for higher education institutions, is to review our portfolio of innovations or experimental work and attempt to quantify where our activities or efforts reside relative to these areas. What is in each of these three categories now, and how are ideas or experiments generated for these areas of innovation? Even more important, what do our organization’s culture or strategic plans tell us about how our portfolios should look?

Castellarnau recommended we invest a relatively small portion of our resources into innovation. Core innovation should compose 70%, evolutionary innovation should compose 20% (10% in each of the two categories described in this area), and revolutionary/disruptive innovation should compose the remaining 10%.

He shared seven principles or ideas that are useful to have present in an organizational culture to develop the 10% disruptive innovation.

1. Innovation should not be about launching a new idea and carrying it all the way through to implementation. Instead, innovation should be about gathering as much learning as possible through the process of launching an innovation.

2. The longer you reside in a particular organization, the more myopic you become. Those involved in innovation should have nearly complete freedom to create and develop and should have radical autonomy, right from the start of their employment with the organization. They should be solely dedicated to innovating.

3. Allow individuals to be passionate about their interests. Having intense interest in a particular area or areas fosters new ideas and facilitates innovation.

4. You are your own brand. Allow each person to build a path of exploration and expertise in areas of interest.

5. Leadership is a reflection, not a vision. Avoid directing and instead reflect. You’re not an arrow; you’re a mirror. Look at what your employees are doing and identify those experiments that are doing well and can be expanded upon.

6. Don’t predetermine the outcome—instead, focus on the process. Excessive focus on the end point can undermine the process.

7. Create a culture that allows people to question the status quo. Those active in disruptive innovation, the 10%, should be questioning what the organization is about in an effort to discover what it is not.

Interestingly, the success rate of innovations is very low, and we’re often likely to determine success or failure at the end of a pilot or at some point in a full-scale implementation. This is another reason to promote a rapid innovation cycle: to consume as few resources as possible to determine the outcome or to learn.

Castellarnau suggested that 10% of resources be invested in disruptive innovation so the 10% can then inform the 70% core innovation that takes place. This can be done by capturing, documenting,
and sharing everything you’re learning while you’re trying something out. He closed by emphasizing that what we do in our 10% of disruptive innovation will determine the future of the remaining 70%. In the long run, what we learn from the 10% can support the ongoing health of the whole organization. Additionally, this model has some implications for convincing leadership or peers to try new ideas. Instead of trying to convince those around you to “try” something, make the case by convincing them of all that you will learn throughout the process. Implementation or moving ahead with the particular idea can be secondary. You may learn a few things that you can implement in already existing work without launching anything new. The focus on learning will likely make the prospect of innovation less risky and more appealing.

**The Learning Organization**

In their session introducing the learning organization (LO), Colleen Wheeler and David Wedaman emphasized that in order for organizations to be able to respond to changes in their environments, they need to develop into “learning systems” or systems that can produce their own continuing evolution (a concept introduced by Donald Schön in *Beyond the Stable State*). The learning organization continuously grows and develops learning individuals and promotes consistent change. There is a comfort and expectation of change within this type of organization. The presenters identified three characteristics, among 10, of the learning organization model that are evidence of its existence:

1. **Talk**: To learn, people need “psychologically safe” places to be able to say what they think, to discuss, and to disagree. LOs create and encourage these conversations. Individuals need to talk through, process, and test ideas in an open environment.

2. **Play**: Play, experimentation, and construction combine learning, discovery, and fun.

3. **Reflection**: Feedback and reflection are necessary for learning. Most workplaces avoid these activities. Learning organizations promote both and provide feedback as close to the learning as possible.

Other LO characteristics include balance, anxiety, competence, motivation, passion, mindfulness, and ideas.

Wedaman suggested that the LO model can be implemented within a unit or a department as a starting point, maybe even as a pilot. Also, developing staff peer coaching skills can help support the process of conversation and feedback.

Another point raised concerned the kind of learning that takes place in the LO. The kind of instruction and learning that is desirable in an educational setting is the same as the kind of learning that is desirable in the workplace. Identifying the intrinsic motivation of individuals, avoiding lecturing, providing an opportunity for reflection and processing—all these apply to the workplace, not just the classroom. In his session, Castellarnau described one of the principles of innovation: You are your own brand. This idea connects nicely to the LO, where individuals are encouraged to invest in themselves and see themselves as professionals advancing in a field rather than as a single employee in an organization. The regular use of cross-functional teams to learn and innovate—another characteristic of the LO—can further promote learning and innovation.

For most organizations, the LO model is a goal rather than an end point and can serve as the backdrop to a culture of innovation. If these conditions are present in our daily work life, we’re more likely to align with Castellarnau’s vision of innovation and develop a portfolio of products and services containing the right balance of incremental, evolutionary, and disruptive innovation.
Institutional Example: Virginia Tech, InnovationSpace

Virginia Tech’s InnovationSpace (its center for emerging technologies and instructional innovation) is built on a few principles that set the tone for the center’s culture (and day-to-day activities):

- **Enabling:** Getting to “yes” means looking for ways to meet student and faculty member needs, when they need it and with the right tools.

- **Relationships:** Building relationships is about being visible, being welcome, talking to as many people as possible about what is possible, and articulating how technology can help them in a way that is personal to them and their needs. Staff are encouraged to tell a story about what they do, to be enthusiastic, and to follow through on what they say they’re going to do. The philosophy is to make every encounter count because every person that comes through the door is a potential partner in innovation.

- **Quick Response Time:** Providing rapid support is about getting a solution to faculty when it is important to them. This requires having the right hardware/software, a sandbox environment, and the right support ready to go at any moment.

- **Pedagogy:** Emphasizing this principle means always starting with the pedagogy—the learning. The need to support student learning drives innovation.

In addition to these four elements, other components support the service model. The first ingredient in the model that promotes innovation is the right people, with solid interpersonal skills, proactive support, and high-level skills. Modeling, teaching, and discussing good service are all principles pervasive in what the team does. The second ingredient is having sufficient time for creativity and has three components: time for faculty to experiment with technologies, time for staff to learn new techniques and new technologies, and time for sharing ideas on what is working and what is possible. The third ingredient is the right space. InnovationSpace has three facets: a welcoming reception area, a flexible learning space with technology, and a multimedia lab. Innovation needs a space that is not solely dedicated to work projects. The fourth and final component is the right tools, with appropriate (timely) access to those tools.

This institutional example highlights the way one organization was structured to support a culture of innovation. We can reflect on our own organizational culture to see if these elements, or ones like them, are present. We can consider how we can structure our work life to ensure “innovation” time is not superseded by other demands.

One other piece to this model is communicating both successes and the ways these innovation principles look in action. How do you communicate the results or success of a pilot? How do you define success, given that success means different things for different people and has different measures? Finding ways to tell those qualitative success stories can go a long way to supporting an innovative culture.
How to Identify the Pilots: Discovery and Experimentation

Innovative cultures have the benefit of experimenting with a variety of ideas about tools or techniques at any given time. Because institutions have limited budgets and staff available to support all those ideas, there needs to be a process, preferably a transparent one, to vet suggested innovations. Penn State has developed a process called Hot Teams. Hot Teams are rapid investigations of a new technology or pedagogical approach. This process has two goals: (1) at a minimum, produce a summary document that can be used to explain a particular technology (such as the iPad) or innovative instructional approach (flipping the classroom, for instance) to a layperson, and (2) quickly develop understanding and capacity within a small group. From an institutional perspective, the Hot Team process of collecting and making this information available allows for a decision to be made about what to do with a certain technology or approach. Should we implement? And, if so, at what level and to what extent?

The Hot Teams include four or five people from diverse backgrounds, as well as an instructional designer, technologist, librarian, faculty member, student, media developer, or writer, depending on the focus of the team and the intended user of the tool or instructional approach under examination. A diverse group ensures that the technology has been considered from many angles (e.g., security concerns, faculty workflow, interface design). If faculty members are involved, it’s recommended to interview them once about the topic instead of involving them in the whole process, which can be time-consuming. Part of the process also includes scanning the organization to determine whether anyone is currently using the tool so that person’s experience can be taken into consideration and he or she can serve as a sort of subject-matter expert.

Most Hot Teams are tasked with answering the “7 Things” questions (see http://www.educause.edu/research-and-publications/7-things-you-should-know-about/7-things-you-should-know-about-learning-technology-topics) about the tool or approach to assist in developing/determining local capacity and to focus on localized educational issues. The entire process typically takes four weeks or less, which is long enough to experiment and short enough to be manageable. When the process takes longer than four weeks, teams tend to lose focus and sometimes the topic loses relevance. The short duration also makes it easier for busy people to participate. Other formats have been used as well, including a one-week “sprint.”
Emerging Technologies

Hot Team Timeline:

- **Week 1**: Team meets and shares what they know about the topic and identifies knowledge gaps (benefits, applications).
- **Week 2**: Team uses the tool or technique, documents their experience, explores what they don’t know, and seeks expert/practitioner input (downsides, limitations).
- **Week 3**: Team discusses their findings, answers any remaining questions, and completes a draft of the final document.
- **Week 4**: Team finalizes the document, and sometimes a video of the tool/technique in action, to be displayed on the Hot Teams website (http://ltt.its.psu.edu/hot-team).

At the end of the process, the team should be able to answer seven questions: What is it? How does it work? Who’s doing it? Why is it significant? What are the downsides? Where is it going? What are the implications for teaching and learning?

**Institutional Example: University of Mary Washington, a Domain of One’s Own**

A few years ago, the University of Mary Washington embarked on a project that provided its students with their own web space to use as they wished: a domain of their own. A Domain of One’s Own (http://umwdomains.com/) is a pilot project in collaboration with the Division of Teaching and Learning Technologies and the Office of Information Technology Services to provide domains and web hosting to 400 students and faculty. The goals were to invest in people/students rather than in technology by providing a way for students (of all technology backgrounds) and faculty to express themselves freely. The project has also set goals relating to digital literacy, writing, and self-expression—all designed to support students in defining their own digital identity.

Another project, DS106 (http://ds106.us/), is an open, online computer science digital storytelling class (set up as a MOOC) that takes place at various times throughout the year.

**Institutional Example: University of Michigan’s Edupreneurship, Engaging Students in Mobile Learning**

University of Michigan’s Edupreneurship initiative is based on the idea that if faculty members and students have opportunities to create the tools they need to teach and learn in their courses, they will be more successful in meeting their learning goals. This idea is in contrast to the approach of having tools developed or selected and then handed down by those not on the teaching and learning front lines. At the University of Michigan, this question is focused on classroom mobile tools: Who is better qualified to envision and design mobile tools for learning than those who use mobile tools for everyday life?

Lecture Tools (http://www.lecturetools.com/) emerged as a way to address this question and was developed and continues to evolve in collaboration with instructor and student input. Development of this particular mobile innovation came about from a few steps: determining need, conducting research, assessing the tool, and evaluating sustainability of the tool. Lecture Tools enables a variety of functionality, as illustrated in Figure 1. In connection with the instructor’s slides, students can
indicate they are confused, ask questions, take notes, bookmark slides—all to promote student engagement and understanding between the instructor and students. The tool is especially effective in very large lecture classes, where students often feel isolated and have difficulty communicating with the instructor in real time.

Another convenient feature of the tool is that at the end of each class, the instructor receives a report that includes all the questions that were asked, the slides students found most confusing, a summary of activities with results, and engagement rates. The tool measures behavior along engagement, learning, and attentiveness on a class-by-class basis. Students have responded positively to the efforts made to engage and track their responses, and the tool continues to evolve to meet teaching and learning needs.

Edupreneurship (http://edupreneurship.weebly.com/about.html), Michigan’s model for innovation, in effect removes the middleman by encouraging and supporting the learner and the instructor to become involved in creating an environment, a tool, or an approach that meets their needs. Lecture Tools is only one of the products that emerged from this approach.

Focus Session Resources

- “Hot Teams: Rapid Investigations of Emerging Technologies,” Allan Gyorke, Director, Education Technology Services, The Pennsylvania State University
- “The Long Tail of Innovation,” James Groom, Instructional Technology Specialist, Division of Teaching and Learning Technologies, Tim Owens, Instructional Technology Specialist, Martha Burtis, Special Projects Coordinator, and Andrew Rush, New Media Specialist, University of Mary Washington
- “Edupreneurship: Engaging Students in Mobile Learning,” Perry Samson, Professor, Department of Atmospheric, Oceanic & Space Sciences, University of Michigan. For additional information, go to http://www.sageonstage.com and http://www.lecturetools.com
- Presentation slides and resources for all sessions can be found at http://www.educause.edu/eli/events/eli-fall-focus-session/resources/participant-resources/recordings
How to Effectively Pilot Innovations

Institutional Example: University of Minnesota’s Faculty Fellowship Program

It is one thing to innovate when the scale of innovation is incremental, but it is quite another when the goal of innovation is transformation. In their presentation, Brad Cohen and Lauren Marsh of the University of Minnesota shared a video of one of their faculty fellows, associate professor Jodi Sandfort of the Humphrey School of Public Affairs, who characterized our current situation as transformational. At such moments, the need to change is clear, but neither the problem nor the solution is well understood. What is clear is that simple reinvention will not suffice.

Cohen and Marsh described Minnesota’s faculty fellow program as a way of encouraging institutional transformation by fostering a groundswell of innovation. Faculty apply for an 18-month fellowship, during which time they work with a support team on their curricular innovations. Part of the application is a letter of support from a dean or department chair indicating broader institutional support for the project. In addition to exploring innovation and good practices in technology-rich environments, faculty are also expected to produce scholarship in this area. More details on Minnesota’s fellowship program are available in the session recording.

The result of the fellowship is that it is transformative for the faculty member, who redesigns and reconceptualizes his teaching. The direct benefit to students is clear. It is also transformative for the institution, since increasing the number of faculty innovations contributes to the diffusion of innovative approaches more broadly across campus.

A Framework for Measuring Innovation

Frameworks are powerful tools. They provide powerful methods for analysis, evaluation, and organization. What kind of framework might help analyze and organize innovations on campus? How might we compare one project with another with respect to its innovative value and potential? The next session reported on an effort to construct such a framework for innovation.

This project came out of the learning technologies group associated with the Committee on Institutional Cooperation (CIC). The assignment was to develop a way to measure innovation; seven institutions participated. The goals for the framework were for it to be well-defined but also general enough for wide application; to use a common, understandable vocabulary; to be fungible to encourage cross-institutional adoption; and to be flexible so that it can be used in a variety of contexts.

The final version contained six dimensions. This list follows a roster developed by Allan Gyorke at Penn State:

1. **Utility**: What problems are being solved? Which are being created?
2. **Creativity**: How is this a new approach? How might it create future trends?
3. **Resistance**: Who could be upset by this? How do we reduce backlash?
4. **Efficacy**: What evidence is there that this will work? How will we verify impact and inform others?
5. **Feasibility**: Can we afford this project and support it? Can it scale to an appropriate level?
6. **Risks**: What could go wrong? How can we mitigate the risks?

The presentation described several ways this framework was used at three campuses:
Emerging Technologies

- **Penn State**: Allan Gyorke reported on using the tool to help evaluate the potential of a project to equip faculty with iPads to allow them to circulate in a classroom while presenting material, providing a kind of chalkboard on the move.

- **University of Minnesota**: Chris Brooks described a rubric to score the innovativeness of a proposal for the faculty fellowship program. He also described a careful and thorough quantitative analysis he did to verify the reliability of his rubric. This rubric was piloted in the assessment of the latest round of faculty fellowship applicants.

- **University of Wisconsin–Madison**: Josh Morrill described a matrix he devised to assess the potential of a project to balance risk and reward factors.

All three of these reports utilized the foundational work done by the CIC team and presented very promising and useful ideas on ways to apply the framework in a variety of contexts.

**Engaging Stakeholders**

The role of the stakeholder is an obvious key consideration in any pilot project. Pilot evaluation is a challenging undertaking; as Yvonne Belanger put it, it’s like taking a blurred snapshot of a moving target, or like building the airplane while you’re flying it. The entire pilot program can be helped or hindered by the role that stakeholders play; hence, this aspect is key to conducting pilots effectively.

Belanger advocated a participatory approach. A stakeholder is anyone who has a vested interest in the outcome or would be directly impacted by the implementation of the innovation. Stakeholders build value in the evaluation by bringing diverse perspectives, campus influence, resources, and expertise. Most important, stakeholders who participate in the development of an innovation become invested and interested in the outcomes, and later they are more savvy as consumers of the innovation. Stakeholders can be involved throughout the evaluation, from beginning to end (see Figure 2). They can be instrumental in helping attenuate the political ebbs and flows across campus.

![Stakeholders play different roles](image)

*Categories adapted from Duarte’s “Resonate,” p. 43*

**Figure 2. Stakeholder Roles**
One example at Duke University that Belanger cited was the introduction of WordPress blogs. This program started with a pilot in fall 2009 and went on to full implementation in fall 2011. Use of WordPress grew quickly, from 43 sites and 161 users in fall 2009 to 3,000 sites and 9,000 users in spring 2012. Stakeholder roles included reviewing the data, drafting findings, recommending critical next steps, and reacting to draft reports. Stakeholders helped capture a wider range of use cases and ensure that the report would resonate with key decision makers. Faculty and student experiences with their blogs turned out to be important, as they acted as triggers to increased adoption.

In summary, the key roles that stakeholders can play in a piloting effort include: (1) help with some aspects of conducting the pilot, (2) supply resources, (3) influence campus perceptions, and (4) contribute innovative ideas.

Session Poll. What’s your biggest concern about involving stakeholders in evaluations of pilots?

- Leadership buy-in: 6%
- Lack of time and resources: 67%
- Not convinced it would add value: 9%
- Unsure if stakeholders would be interested: 12%
- Other: 6%

**Piloting at the Institutional Level**

Typically, pilots are small-scale, individual projects with specific objectives. But what if you wanted to conduct a pilot at the institutional level? What if you were interested in exploring sets of technologies, looking to plan the institution’s broader curricular landscape? The next session, by Stacy Morrone from Indiana University (IU), described an effort to do just that.

IU has embarked on a two-year project that will examine and assess different kinds of learning technologies. This project was informed by the need to undertake proactive planning on future directions for learning technology at IU. The overall goal is to be able to make significant decisions about learning technology at IU at the end of a two-year period. To organize this ambitious undertaking, IU grouped candidate technologies into five categories:

- Learning and teaching activity management (e.g., LMS)
- Assessment, portfolio, and analytics (e.g., learning analytics)
- Communication, collaboration, and social networking (e.g., Course Networking)
- E-texts, open content, and repositories (e.g., current e-text pilot)
- Content creation, sharing, and reuse

The project is piloting an alternative LMS (Canvas) and a new course social media tool called Course Networking. IU committed to continuing to run its current LMS (OnCourse) for another four years while looking at alternatives. The idea was to enable a considered and objective review process without pressuring anyone to quickly find something new. Once it had embarked on this process, IU needed to:

- Determine the types of technologies to be considered
- Develop a process for technical review
- Develop a process for functional review
- Develop an evaluation plan
The session provided a wealth of information and detail on each of these four areas. The technical review includes categories such as interoperability, standards compliance, scalability, usability, and accessibility. The functional review process will include faculty interviews, which will focus on pedagogical uses of the candidate technology. The Center for Evaluation and Education Policy (CEEP) at the Bloomington campus is conducting the formal evaluation of the pilots.

Concerning staff time to do this pilot project, IU is planning to redirect cycles that in the past had been devoted to supporting OnCourse. The logic is that because OnCourse is a mature technology, most faculty and students are familiar with it and so will have relatively few questions and support needs.

Focus Session Resources

- “Piloting Innovation through Faculty Development Programs,” Brad Cohen, Associate CIO for Academic Technology, and Lauren Marsh, Service Owner, Educational Technology Services, University of Minnesota
- “Developing and Testing a Framework for Analyzing Innovation,” D. Christopher Brooks, Research Fellow, University of Minnesota; Allan Gyorke, Director, Education Technology Services, The Pennsylvania State University; Josh Morrill, University of Wisconsin–Madison
- “Engaging Stakeholders in Pilot Evaluations,” Yvonne Belanger, Head, Assessment and Planning, Center for Instructional Technology, Duke University
- “What’s Next for Emerging Technologies That Support Teaching and Learning?” Stacy Morrone, Associate Vice President, Learning Technologies, Indiana University-Purdue University Indianapolis
- Further information on the University of Minnesota’s faculty fellowship program: http://www.oit.umn.edu/faculty-programs/faculty-fellowship/index.htm
- Jodi Sandfort’s video on transformative innovation: http://mediamill.cla.umn.edu/mediamill/display/79108
- Learning technologies project site at Indiana University: http://www.next.iu.edu
- Presentation slides and resources for all sessions can be found at http://www.educause.edu/eli/events/eli-fall-focus-session/resources/participant-resources/recordings

Scaling from the Pilot to Production

When Less Is More

Kyle Bowen suggested that “we live in science fiction” in that things once imagined as being science fiction are coming true. One aspect of our fast-paced times is that we need to adopt a different attitude to our technology. Today we pay more for coffee than we do for our mobile applications. And as IT professionals, we accept that our products will be more ephemeral, having shorter shelf lives in the face of rapidly changing circumstances.

When to make that decision to move to production? Bowen suggests—somewhat counterintuitively—that the first day of the project is the right time, not on the last day of the pilot. We need to lay groundwork from the very first day. He suggested a four-part cycle that describes the path from conception to implementation (see Figure 3).
1. **Story**: A story costs nothing to create and share but is essential to introduce an idea and to begin to develop buy-in. It is most effective as an elevator pitch: short, clearly and succinctly describing what it is and the intended outcome.

2. **Create**: The process of creating an app or technology-based service needs information in order to be on target.

3. **Implement**: Bowen suggests the “no sale” implementation. Making a sale means making a promise about what the technology is going to do and that the user will experience pure success. We can’t make such assurances. It is better to work constructively with pioneering and well as cautious faculty as partners in mutual exploration.

4. **Measure**: In the absence of data, Bowen suggests, all apps are “Schrödinger’s apps.” That is, in the absence of data, an app is both alive and dead, both successful and unsuccessful. The key thing to measure, based on Bowen’s experience at Purdue, is impact, which includes factors such as social presence, course outcomes, and learning outcomes.

Bowen also suggested that project teams are more effective when smaller in size. He suggests the “two pizza” rule: you should be able to feed the project team with just two pizzas. He also stressed the importance of “minimum viable functionality.” Instead of burdening an application with excessive functionality, identify the minimum of what is required to perform its task. Excessive functionality makes the project more burdensome in every respect: harder to program and harder for users to learn and use effectively.
Scaling Up: More Than Meets the Eye

**Depth:** What are the sources of the innovation’s effectiveness? This is evidence that the innovation is effective, why it is effective, and what makes it work.

**Sustainability:** How can I modify the innovation so that it functions in both optimal and suboptimal conditions? This is a measure of the innovation’s usefulness in less-than-ideal circumstances. If it is robust enough to hold up under such conditions, its chances of scaling are increased.

**Spread:** How can I modify the innovation to retain effectiveness while reducing resources and expertise required? As Dede phrased it, “How much is the overall power of the innovation affected by reducing its cost or the knowledge required to implement?” If a “light” version will work, it enhances the chances of scaling up. Scaling up requires that an innovation work in areas where support resources are reduced.

**Shift:** How can I move beyond “brand” to support users as co-evaluators, co-designers, and co-scalers? When users become partners, they acquire a stake in the program or project. One must be willing to abandon “brand” and individual recognition to gain collaborators and partnerships.

**Evolution:** How can I unlearn my beliefs, values, and assumptions about the innovation? Innovative programs can almost never be exported as-is to contexts apart from the place where they originated; some degree of localization is critical.

These five dimensions do not constitute a linear progression; instead, they are interdependent, creating a kind of ecosystem. If only two or three of the dimensions are achieved, it is likely that the innovation will survive a few years but then will fall into disuse.
Focus Session Resources

- “Simple Works: Why Technology Innovation Means More of Less,” Kyle Bowen, Director of Informatics, Purdue University
- Website for Purdue’s academic development projects: http://www.itap.purdue.edu/studio/
- Summary of Chris Dede’s Process of Scaling: http://www.peecworks.org/PEEC/PEEC_Reports/01795CA8-001D0211.38/The%2520Process%2520of%2520Scaling%2520Up.pdf
- Presentation slides and resources for all sessions can be found at http://www.educause.edu/eli/events/eli-fall-focus-session/resources/participant-resources/recordings

Emerging Technologies, Innovation, and Academic Transformation: Activities

Working as a Learning Organization

The focus session used two activities to further engage participants in the content. The first was centered on the learning organization presentation (http://www.educause.edu/eli/events/eli-fall-focus-session/2012/learning-organizations-and-you) and asked participants to think about and develop a list of the key characteristics of the LO. Our goal with this section of the activity was to have participants reflect on what they heard in the presentation and consider what they need to learn and innovate—individually and as a unit. The Wordle below shows their responses.

In the image above, the size of the word reflects the number of times it was used by participants. We can see that an environment that encourages learning is tolerant of failure, makes time for learning, encourages play, offers feedback, and is supportive.
The second half of the first activity asked participants to consider how their team, unit, or organization could evolve to become more aligned with a learning organization model. Several interesting approaches were proposed:

- Create an anonymous submission pool; provide feedback on suggestions received and that have been accepted, even if partially.
- Make time for innovation/reflection/feedback a priority, not just something that people guiltily squeeze in when they can find a few minutes.
- Teach everyone peer coaching skills (and have them practice those skills).
- Create an online forum for sharing and voting on projects, like Kickstarter (http://www.kickstarter.com/) or DonorsChoose.org (http://www.donorschoose.org/).
  Everyone on campus would be given “$5” to distribute among projects. The proposals would not only give people a chance to contribute to campus and be recognized but would also indicate what people value and need on campus.

By identifying the delta between key characteristics of a learning organization and characteristics of their own institutions or units, participants were able to more clearly see where effort or change was needed.

**Scaling Innovations**

The decision to take a project from pilot to production is one of the most important ones we make. Key to that decision is the yardstick or rubric used to evaluate the pilot. The second activity session of the focus session addressed the criteria needed to be included in such a rubric.

Participants were asked to review the rubrics at http://tinyurl.com/goodpilot. We then asked that they (1) identify the criteria from these rubrics that are most useful; (2) discuss how they might modify or reorganize them to best suit their campus context; and (3) share what requirements they have for making the decision to go beyond the pilot into production.

Here are some of the highlights of the comments that were shared from participants:

- “Right now we have no formal requirements. Pilots have been a case-by-case basis, based on some formal data and needs feedback. We NEED a formal evaluation strategy.”
- “All the rubrics are applicable at different phases of a pilot/project. With some massaging of the details of the questions to be applicable locally, they would all be very valuable.”
- “I’m not necessarily in the camp that says that you must have overwhelming amounts of positive feedback, but there must be some demonstrable impact. This is where marketing comes in—lack of advertising might account for a pilot’s seeming failure (along with lots of other factors, of course).”
- “Does it work as advertised? Does it meet the goals? Does it have unplanned benefits that people would use? Is it supportable in the current technical environment? What are the user support implications? Costs versus benefits (reach/usage)? Alignment with the strategic objectives of the institution? Stakeholder commitment to use the product? Does it integrate well with other campus systems (particularly identity management)? Are there no other good alternatives? Implications for future sustainability of the product, viz., can we continue to support the product, and will the product continue to be supported by the vendor?”
- “We use an organic approach currently, evaluating aspects including: scalability; supportability; accessibility; usability; applicability (wide or narrow—does this affect all learners, or a subset); speed and ease of implementation; overall cost.”
Focus Session Content and Related Resources

ELI focus sessions (http://www.educause.edu/eli/events) generate a significant amount of content around their themes. We encourage the reuse of this content, which often includes discussion questions, thematic scenarios, speaker recordings, and readings to conduct and facilitate campus events.

Focus Session Content

Content for the 2012 Online Fall Focus Session, “Emerging Technologies, Innovation, and Academic Transformation,” can be found at http://www.educause.edu/eli/events/eli-fall-focus-session. Below are additional resources, including a reading list and discussion guides.

- Emerging Technologies, Innovation, and Academic Transformation resource list, which includes websites, reports, articles, and research: http://tinyurl.com/goodpilot
- Emerging Technologies, Innovation, and Academic Transformation, Discussion Questions and Activity Workbook, Day 1 and 2: http://www.educause.edu/eli/events/eli-fall-focus-session/resources
- Presentation slides and resources for all sessions: http://www.educause.edu/eli/events/eli-fall-focus-session/resources/participant-resources/recordings
- Focus Session Learning Commons (for all ELI focus sessions): http://elifocus.ning.com/