

Preprint: To appear in ECAR Research Bulletin
Dunlap, J. C., & Lowenthal, P. R. (2011). Situational qualities
Exhibited by exceptional presenters. *ECAR Research
Bulletin*. Boulder, CO: EDUCAUSE Center for Applied
Research.

Situational Qualities Exhibited by Exceptional Presenters

Joanna C. Dunlap, University of Colorado Denver

Patrick R. Lowenthal, University of Colorado Denver

ECAR Research Bulletin X, 2011

Overview

Bad presentations are common place. A great deal has been written about “bad” presentations. But rather than focus on what is wrong with bad presentations or , we are interested in what makes an exceptional presentation. In addition to teaching, we support faculty day-to-day. While “lecturing” with PowerPoint is often looked down upon, we find ourselves regularly working with faculty who need tips on how to improve their presentation skills—whether to improve how they lecture, to land that new job, to help secure funding for a new project, or to coherently describe the results of their research at an upcoming conference. Therefore, we set forth to identify common strategies—both in terms of presentation design and platform speaking—that exceptional presenters use.

Theoretical Framework

To describe exceptional presentations, we turned to recent work on the aesthetic qualities of learning experiences by Parrish and others.¹ In this work, aesthetic learning experiences are described as those that involve learners in the right level of challenge (just beyond what learners perceive as easily achievable) and heightened engagement (such as what is achieved in a well-executed film, novel, or symphony). Aesthetic learning experiences are memorable and often transformative, leaving learners with enhanced confidence and capabilities; for us, this is the very definition of exceptional.

Aesthetic learning experiences are influenced by both the qualities of individual learners (e.g., intent, trust, presence) and situational qualities. Situational qualities are those that presenters can affect by making appropriate design and delivery decisions. The qualities are:

- **Immediacy:** To establish immediacy, a presenter needs to involve learners directly and instantly with the content in order to create a sense of urgency or excitement. Storytelling, for example, is one way to establish immediacy because it captures the emotional authenticity of the situation. A presentation’s structure and layout can also support immediacy. If a presentation is coherent and well structured, and if the layout supports the instructional message with relevant text and images, then it is easier for learners to become directly and instantly involved.
- **Malleability:** To be malleable, a learning experience needs enough pliability so that the learners can influence the experience and outcomes. Malleability allows learners to determine personal meaning and relevance, and to be co-owners / co-creators of the experience. A presenter can establish malleability by encouraging audience participation, and then embracing and acting on the audience’s contributions in ways that adjust and enhance the experience to better fit the audience’s needs and disposition.
- **Compellingness:** A compelling learning experience is one that is so powerfully irresistible that it evokes learners’ interest, attention, and admiration. One way of being compelling during a presentation is to share a provocative or novel idea or problem; by extension, engaging learners in problem solving is another way of evoking learners’ interest and attention.

Often during a presentation, a single image, phrase, or word can be used quite effectively to represent a provocative or novel idea or problem.

- **Resonance:** When referring to sound, resonance is about reverberation. Similarly, when referring to a learning experience, we also want reverberation (i.e., lasting relevant effects). When a learning experience is resonant, it kindles images, emotions, and memories. A resonant learning experience is—at its core—about connection: connecting past, present, and future; connecting existing and new ideas and perspectives; connecting theory and content with practice; and connecting presenter with learners.
- **Coherence:** When applied to presentations, coherence refers to the logic, clarity, and consistency of the presentation. A coherent presentation is one that shares a complete and well-formed message; without coherence, a presentation can be disjointed and negatively affect the learner's ability to engage and derive meaning. Storytelling, problem solving, and case studies are a few ways in which presenters can achieve rewarding coherence during presentations.

We contend that by attending to the situational qualities of aesthetic learning experiences, presenters are more likely to create exceptional presentations that establish relevance and engagement—and, therefore, have a better chance at achieving specific learning objectives and outcomes.

While Parrish and others work was not developed specifically to guide design and delivery decisions of presenters, we find the aesthetic learning experience framework (even if one is not presenting in a traditional learning environment) much more useful than traditional public speaking guidelines or presentation software rules of thumb that seem to focus on the bare minimum needed to deliver a presentation. Further, we have found that the situational qualities of an aesthetic learning experience are very similar to guidelines like the following.

For example, Heath and Heath in *Made to Stick: Why some ideas survive and others die* identified six principles one can use to make ideas stick:

1. Simple
2. Unexpected
3. Concrete
4. Credible
5. Emotional
6. Stories

Reynolds in *The Naked Presenter* focuses on the following:

1. First things first: Preparation
2. Connect with punch, presence, and projection
3. Engage with passion, proximity, and play
4. Sustain with pace and participation
5. End with a powerful finish

Duarte in *slide:ology* identified the five theses of the power of a presentation:

1. Treat your audience as king

2. Spread ideas and move people
3. Help them see what you are saying
4. Practice design, not decoration
5. Cultivate healthy relationships

And finally, ASTD recently published a book titled *10 Steps to Successful Presentations*. In this book, they list the following 10 steps:

1. Know your audience and purpose: The five W's and more
2. Develop and structure your presentation
3. Create appropriate visual aids
4. Make it memorable—Add pizzazz to the presentation
5. Make sue the venue and environment work in your favor
6. Stop—Review basic communication techniques
7. Build in facilitation techniques to engage your audience
8. Practice, practice, practice
9. Pause and refresh—Relax, you will do fine
10. Deliver a flawless presentation—No matter what happens

Methods and Data Sources

To examine the characteristics of exceptional presentations, using Parrish et al.'s work on aesthetic learning experiences² as our lens, we turned to a renowned source of exceptional presentations, TED (Technology, Entertainment, Design). TED's mission is to seek out "the world's most interesting speakers, no matter what their field of expertise." They record and archive these talks on their website. Thus, their website gives people free access to hundreds of high-quality presentations, covering a myriad of topics.

In addition to TED's avowed goal/mission to find the world's most interesting speakers and a growing reputation of selecting exceptional presenters, their website provides a mechanism in which people can rate the presentations based on their own perception of quality. Their website also keeps track of the total number of times a presentation has been viewed.

We identified the most viewed presentations on the TED website as the sample for this study. We created a matrix based on the situational qualities of aesthetic learning experiences previously mentioned. For purposes of further examining the situational qualities of the presentation experiences created by "most viewed" TED presenters and to consider the robustness of Parrish et al.'s framework for aesthetic learning experiences, we analyzed the top six "most viewed" presentations (as of July 15, 2011).

PRESENTATION	INFO.
--------------	-------

Jill Bolte Taylor's "Stroke of Insight"



Views: 6,356,758
Length: 18:42
Filmed: Feb. 2008
Posted: Mar. 2008
Rated: Inspiring

http://www.ted.com/talks/jill_bolte_taylor_s_powerful_stroke_of_insight.html

Focus: This presentation addresses the topic of brain functionality during and after a massive stroke by a brain researcher.

David Gallo's "Underwater Astonishments"



Views: 6,146,742
Length: 5:25
Filmed: Mar. 2007
Posted: Jan. 2008
Rated: Fascinating

http://www.ted.com/talks/david_gallo_shows_underwater_astonishments.html

Focus: This presentation focuses on some amazing sea creatures found in the ocean.

Ken Robinson's "School Kill Creativity"



Views: 6,082,528
Length: 19:29
Filmed: Feb. 2006
Posted: June 2006
Rated: Funny

http://www.ted.com/talks/ken_robinson_says_schools_kill_creativity.html

Focus: This presentation focuses on how schools need to focus more on fostering and nurturing creativity than eliminating it.



Pranav Mistry's "The Thrilling Potential of SixthSense Technology"



Views: 6,038,843
Length: 13:51
Filmed: Nov. 2009
Posted: Nov. 2009
Rated: Jaw-dropping

http://www.ted.com/talks/pranav_mistry_the_thrilling_potential_of_sixthsense_technology.html

Focus: This presentation tells the story about what led an inventor to develop SixthSense technology and how this new technology works.

<p>Pattie Maes and Pranav Mistry demo “SixthSense”</p>  <p>http://www.ted.com/talks/pattie_maes_demos_the_sixth_sense.html</p> <p>Focus: This presentation, similar to Pranav’s “The Thrilling Potential...”, focuses on the work that Pranav Mistry has been doing at the MIT media lab with SixthSense technology.</p>	<p>Views: 5,599,935 Length: 8:46 Filmed: Feb. 2009 Posted: Mar. 2009 Rated: Jaw-dropping</p>
<p>Arthur Benjamin does “Mathemagic”</p>  <p>http://www.ted.com/talks/arthur_benjamin_does_mathemagic.html</p> <p>Focus: This presentation shows Benjamin’s love of math and magic by involving the audience and demonstrating some fascinating ways to use math and magic.</p>	<p>Views: 3,216,998 Length: 15:18 Filmed: Feb. 2005 Posted: Dec. 2007 Rated: Jaw-dropping</p>

Highlights

Below, we use these six “most viewed” presentations as mini case studies to describe how the situational qualities that comprise an aesthetic learning experience manifest in these exceptional presentations.

Immediacy

To be characterized as having *immediacy*, a presenter must involve the audience directly and instantly with the content, creating a sense of urgency or excitement. All six of the “most viewed” presentations exhibit an immediacy quality, achieved in various ways. For example,

- Bolte Taylor establishes immediacy at the 1:55 minute mark when she shares that on December 10, 1996, she had a brain hemorrhage. From that moment on the audience experiences a sense of urgency, drawing them into the content of the presentation and holding their attention.
- Gallo uses video effectively throughout his presentation to involve the audience more directly with the content. Gallo also uses his enthusiasm for the topic to create a sense of immediacy.
- Robinson establishes immediacy primarily through humor and storytelling. Around the 1:26 minute mark, he establishes immediacy with a joke that gets the crowd listening and laughing, and he uses jokes and stories throughout his presentation.
- During Benjamin’s presentation, the audience experiences a sense of urgency because he is working so quickly. The audience is trying to keep up and figure out how he is completing the calculations in his head so quickly and accurately.

Malleability

A *malleable* presentation allows an audience to determine personal meaning and relevance, and to be co-owners / co-creators of the experience. A presenter accomplishes this by encouraging audience participation, and acting on the audience’s contributions in ways that adjust and enhance the experience to better fit the audience’s needs and disposition. TED presentations are timed (long presentations may be no longer than 20 minutes, short presentations no longer than 6 minutes). As a result, presenters may feel there is no time to involve the audience in participatory activities and still present their content adequately.

TED presentations are also delivered to large audiences in a platform/stage setting that physically separates the presenter from the audience making it difficult to interact directly with more than the first few rows of people. Despite these constraints, we still found the following examples of malleability:

- Taylor explains relatively complex concepts in an accessible, easy-to-understand way. Her approach to explaining the functionality and separateness of the two hemispheres of the brain uses an actual human brain (see the 2:25 minute mark of the presentation). Although not technically audience participation, making advanced content more accessible to a lay audience is a form of malleability.
- A number of presenters (e.g., Gallo and Benjamin) use humor to encourage audience interaction and physical response.
- Robinson also invites the audience into the presentation and the experience by asking the audience questions. While he does not physically move around as much as some presenters, he constantly makes eye contact with his audience. He also relates to the audience by talking about the previous

speakers and shared experiences. He helps the audience see why this matters to them by explaining why it matters to him (often in story form).

Compellingness

A presentation exhibits the *compelling* situational quality when the presenter shares a provocative or novel – or even jaw-dropping (think TED) -- idea or problem and engages the audience in problem solving. The following are some examples of compellingness we identified in our sample:

- Robinson's idea that school is not just failing to develop creative people but is actually killing creativity is a provocative problem that engages his audience.
- Mistry's and Paes' and Mistry's presentations focus on Mistry's research into and development of SixthSense technology—a way of manipulating everyday objects virtually while moving through the world as opposed to in a laboratory. Even though Mistry has a calm demeanor during his presentation, the audience is clearly engaged, clapping and cheering at various times as he shares video clips of his work in action.
- As Bolte Taylor's talk proceeds, it begins to establish compellingness by talking about the differences between the right and left brain and the way these differences make us interact in the world. She concludes with a compelling idea that if we connect more with the right side of our brain we can find more peace.
- Gallo's presentation exhibits some compellingness by beginning with the idea that there is so much of the sea that we have yet to explore, but then transitions to the idea that we do not have to go into the deep dark sea to find fascinating things. In other words, we do not have to look far to be amazed with the beauty and wonder that already surrounds us all.

Resonance

To exhibit *resonance*, a presenter helps the audience see connections between and among the past, present, and future; existing and new ideas and perspectives; theory and practice; and each other. Resonance may also help the audience understand the relationship between the content presented and their own lives, establishing personal relevance and meaningfulness. Resonance can be established through storytelling in which the presenter shares a personal journey that leads to insight and change, and that emotional sharing draws an audience in. The following are some examples of resonance we observed:

- Robinson begins by connecting his talk to the themes of the conference and past presenters, then builds his presentation by talking about the present and then the future. He does this primarily through story and humor. He also tells stories about the past to illustrate why creativity is important in the past, just as it is in the present, and will be in the future.
- The way Mistry establishes resonance is by connecting everyday gestures and activities (e.g., using a mouse, posting a sticky note, dialing a

telephone, taking a photograph) to SixthSense-enhanced experiences (see the 1:30 and 5:30 minute marks for examples).

- Bolte Taylor creates resonant connections for the audience by helping them understand the differences between a healthy and an ailing brain; between the left and right hemispheres of the brain; and between her life before, during, and after her stroke. She shares the story of her own journey with unabashed emotion, allowing the audience to vicariously live her experience and share her feelings.

Coherence

To be *coherent*, a presentation must deliver a complete and well-formed message. To this end, the message must be logical, clear, and consistent. Presenters can support the goal of coherence by narrowing the subject of their presentation to one clear message; clearly establishing the purpose of the presentation early on in the presentation; using narration, visuals, and props to help clarify audience understanding; and summarizing key points and lessons learned at the end of the presentation. All six of the example presentations were coherent, although they achieved coherence in different ways. The following are a few examples:

- Gallo achieves coherence in several ways. First, his topic is narrow—the astonishing behaviors of cephalopods—as a way of reinforcing the need to continue to explore the more shallow parts of the ocean. Second, he uses repetition to drive home his specific points, showing video clips more than once and in reverse to make sure the audience follows the point that these underwater creatures are truly amazing—a message that would lack coherence otherwise.
- Robinson uses humor and story but remains on topic. Everything he shares—stories, quotes, etc.—illustrate the point in different ways while also repeating key points. Finally he does a good job of summarizing his points at the end to help his audience follow his entire message.
- In the Mistry's and Paes' and Mistry's presentations, coherence is established because the topic is well narrowed, there are clear introductions and conclusions, and the use of visual and video clips reinforces the audience's understanding of SixthSense technology; in fact, these presentations would fail to be coherent without the visuals and video clips.

Situational Qualities of Exceptional Presentations

As illustrated by the examples shared above, our findings suggest that exceptional presenters exhibit all situational qualities to some extent in order to create aesthetic learning experiences for their audiences.

To address the *immediacy* quality of aesthetic learning environments each of these presenters in their own way established relevance of the content to ensure the audience cares about the message. These presenters addressed the *coherence* quality by attending to what they showed as well as what they said during their presentation. At the same time, they each addressed the *compellingness* quality by sharing personal experiences, allowing the audience in on the secret of their personal journeys and explorations while also structuring their presentations using

stories. Structuring presentations around stories creates an organic and emotional cadence to what they shared which also addressed the *resonance* quality. They each also used a conversational tone making eye contact and being as close to the audience as possible. This first-person language invites the audience into the dialogue and addresses the *malleability* quality of aesthetic learning environments. They then designed any slides, visuals or props they used in service of their message thus addressing the *coherence* quality. Finally, when possible, they each embraced the emotional content of their presentation, exposing the audience to the humor, sadness, desperation, triumph, and/or anger inherent in and warranted by the message while addressing the *resonance* and *immediacy* qualities of aesthetic learning environments.

Technology

In addition to the five situational qualities defined by Parrish et al., we specifically considered the role technology played in these six “most viewed” presentations. For some of the presenters—specifically Gallo, Mistry, and Paes and Mistry—the visuals were essential in delivering their aesthetic learning experiences to the audience. These three presentations are essentially demonstrations of activities in the world that cannot easily be demonstrated live in a presentation space. Therefore, without the videos demonstrating the unique behaviors of sealife or the functionality of SixthSense technology, the audience would fail to engage in the content, and would miss the message of each presentation entirely. Bolte Taylor’s presentation, although enhanced by her minimal slides and use of a prop (i.e., human brain), did not require technology support to be effective. Finally, Robinson’s presentation did not use or require technology enhancement at all; his message did not suffer from the lack of technology in the least.

This reinforced our belief that technology use during a presentation should be warranted or the message will suffer when shared with an audience. If the message does not require technology enhancement, then allowing the message to stand on its own through narration allows the audience to focus on what is important and not be distracted by unnecessary layers of content (what Tufte refers to as phluff).³ However, it is important to note that some subjects often require some type of visuals or use of technology—whether high-technology simulations or simply low-technology handouts—to get the message across. Sometimes the narrative alone cannot carry the message.

Personal Narrative

Another aspect of the presentations that stood out to us was the value of personal narrative sharing. Clearly, Bolte Taylor shared a personal experience, but some of the other presenters shared personal journeys as well:

- Mistry shares his problem-solving journey to the creation of SixthSense technology;
- Robinson shares personal anecdotes throughout his presentation to illustrate points and clarify understanding of the issues;
- Benjamin offers a think-aloud of his calculation process, helping the audience connect with his unique, personal skills; and

- Gallo shares his unwavering enthusiasm for sealife through personal humor and facial/physical expressions (e.g., laughing, smiling, giddy vocal inflections).

We see personal narrative and emotional connections as consistent characteristics of aesthetic learning experiences, foundational to the five situational qualities defined by Parrish et al.

Strategies to Create Aesthetic Learning Experiences

While we strongly believe that there is not a magic formula that all presenters can use at all times to create aesthetic learning experiences and deliver exceptional presentations, we have found through our analysis and years of working on presentations that exceptional presenters do the following:

Narrow the Topic	Narrow the topic so you have one clear message. Make sure the audience can track the message throughout, and summarize the presentation and reiterate the message during your conclusion. Great presentations are often short and to the point.
Structure Presentation as a Story	Structure your presentation as one story that has a clear beginning, middle, and end as well as an organic and emotional cadence to keep the audience interested.
Establish Relevance	Establishing relevance helps your audience care about the message and helps them see what is in it for them.
Use Appropriate Slides, Visuals & Props	A picture is not always worth a 1,000 words. Slides, visuals and props are not needed for all presentations. Only use them to support audience engagement and understanding. Exceptional presentations can be given without slides, visuals or props.
Tell 1 st Person Narratives	Stories are powerful presentation tools but first-person stories can be even more powerful. Tell your story and/or use personal anecdotes to personalize your message.
Use Humor	Humor is a powerful tool for a presenter. While not everyone can pull it off, exceptional presenters find ways to make their audience laugh which in turn makes the audience feel good and like their presenter.
Be Enthusiastic	Enthusiasm is contagious. Exceptional presenters get the audience excited about the content by being excited by the content themselves. Enthusiasm comes across to an audience when presenters exhibit and speak with high energy, smile, and make eye contact with the audience.
Embrace Emotions	Embrace the emotional content of their

	presentation, exposing the audience to the humor, sadness, desperation, triumph, and/or anger inherent in and warranted by the message.
Use a Conversational Tone	When writing and delivering your presentation, use a conversational tone and body language to help connect with your audience.
Practice the Presentation	Finally, practice the presentation. Exceptional presenters appear so comfortable with their presentation that they do not need slides or notes to remember what to say or when to say it.

What It Means to Higher Education

All higher education faculty, staff, and administrators have to present information in one way or another. Some chose to use presentation software to do this, while others do not. Whether you are giving an informal presentation to colleagues, lecturing to a class, delivering a commencement address, talking to the legislature, or presenting to possible donors, presentations skills are crucial for all university personnel. While we have focused on how exceptional presentations result in aesthetic learning experiences, we believe these same principles can help lead to exceptional presentations for nearly any situation.

Articles and books are continually written about improving presentations but they tend to focus on the very basics (e.g., practice your presentation, do not read your slides, and use a specific font size).⁴ We are interested in identifying what presenters do when they deliver exceptional presentations. In this first exploration of the question, “What makes an exceptional presentation?”, we have derived specific recommendations by examining a set of exceptional presentations delivered during TED conferences. Going way beyond the default information-delivery transaction, these exceptional presentations engage their audience in relevant, memorable experiences that can lead to change and even transformation. As a result of our exploration, we posit that attending to specific design recommendations that accentuate the situational qualities of aesthetic learning experiences is one way of significantly enhancing the instructional effectiveness of presentations. Since presentations are a staple of the K-12 and postsecondary classroom, corporate trainings, and professional meetings and conferences, this work potentially has widespread application and value.

Key Questions to Ask

- What are the strategic benefits to our institution of improving the presentation skills of our faculty, administrators, and students?
- How does our institution support, acknowledge, and motivate/reward faculty and staff in learning to deliver exceptional presentations?
- To what degree are presentation skills considered as part of measuring instructor effectiveness?
- To what degree are excellent presentation skills measured as part of the assessment of student learning?

- What mechanisms are in place to help faculty present in large lecture halls?
- Where do we assess university personnel's presentation skills?

Where to Learn More

- Duarte, Nancy. *slide:ology: The art and science of creating great presentations*. Sebastopol, CA: O'Reilly, 2008.
- Duarte, Nancy. *Resonate: Present visual stories that transform audiences*. Sebastopol, CA: O'Reilly, 2010.
- Parrish, Patrick. "Aesthetic principles for instructional design." *Educational Technology Research & Development* 57, no. 5 (2009): 511-528.
- Parrish, Patrick, Brent Wilson, and Joanna Dunlap. "Learning experience as transaction: A framework for instructional design." *Educational Technology*, (March/April 2011): 15-22.
- Reynolds, Garr. *Presentation zen: Simple ideas on presentation design and delivery*. Berkeley, CA: New Riders, 2008.
- Reynolds, Garr. *The naked presenter: Developing powerful presentations with or without slides*. Berkeley, CA: New Riders, 2010.

Endnotes

1. Patrick Parrish, "Aesthetic principles for instructional design." *Educational Technology Research & Development* 57, no. 5 (2009): 511-528.; Patrick Parrish. "Aesthetic decisions of teachers and instructional designers," in *Transformative Learning and Online Education: Aesthetics, Dimensions and Concepts*, edited by T. Volkan Yuzer and Gulsun Kurubacak (Hershey, PA: IGI Global, 2010), 201-218.; Patrick Parrish and Brent Wilson, "Learning experience as transaction: An alternative perspective for instructional design" (paper presented at the annual meeting for the American Educational Research Association, Denver, Colorado, 2010).; and Patrick Parrish, Brent Wilson, and Joanna Dunlap. "Learning experience as transaction: A framework for instructional design." *Educational Technology*, (March/April 2011): 15-22.
2. Patrick Parrish, "Aesthetic principles for instructional design." *Educational Technology Research & Development* 57, no. 5 (2009): 511-528.; Patrick Parrish. "Aesthetic decisions of teachers and instructional designers," in *Transformative Learning and Online Education: Aesthetics, Dimensions and Concepts*, edited by T. Volkan Yuzer and Gulsun Kurubacak (Hershey, PA: IGI Global, 2010), 201-218.; Patrick Parrish and Brent Wilson, "Learning experience as transaction: An alternative perspective for instructional design" (paper presented at the annual meeting for the American Educational Research Association, Denver, Colorado, 2010).; and Patrick Parrish, Brent Wilson, and Joanna Dunlap. "Learning experience as transaction: A framework for instructional design." *Educational Technology*, (March/April 2011): 15-22.
3. Edward Tufte. *The Cognitive Style of PowerPoint* (Cheshire, CT: Graphics Press, 2003). Also see Patrick R. Lowenthal and John W. White, review of *The Cognitive Style of PowerPoint*, by Edward Tufte, *Education Review*, January 2008. <http://www.edrev.info/brief/jan08.html#7>
4. Dusti D. Howel, "Four Key Keys to Powerful Presentations in PowerPoint: Take Your Presentations to the Next Level," *TechTrends* 52, no. 6 (2008): 44-46.

About the Author(s)

Joanna C. Dunlap (joni.dunlap@ucdenver.edu) is an associate professor and the Assistant Director for Teaching Effectiveness at the University of Colorado Denver. Patrick R. Lowenthal (patrick.lowenthal@ucdenver.edu) is Academic Technology Coordinator at the University of Colorado Denver.

Citation for This Work

Dunlap, Joanna C., and Patrick R. Lowenthal. "Situational Qualities Exhibited by Exceptional Presenters" (Research Bulletin X, 2011). Boulder, CO: EDUCAUSE Center for Applied Research, 2011, available from <http://www.educause.edu/ecar>.

Copyright

Copyright 2011 EDUCAUSE. CC by-nc-nd and [Joanna C. Dunlap](#) and [Patrick R. Lowenthal](#)