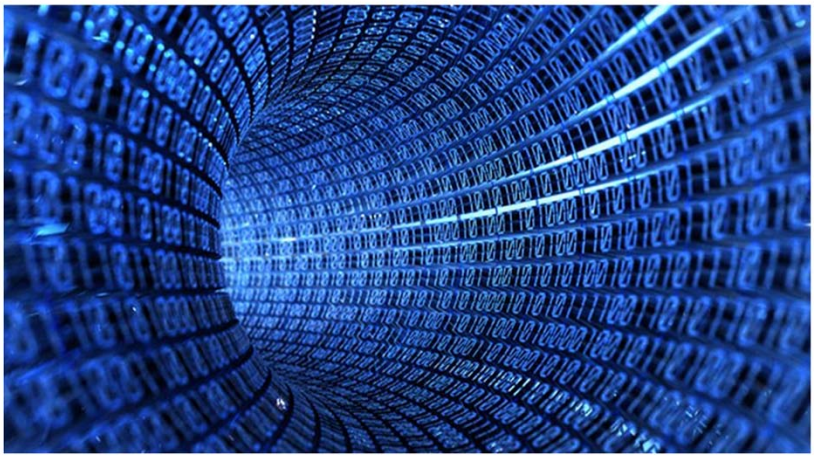
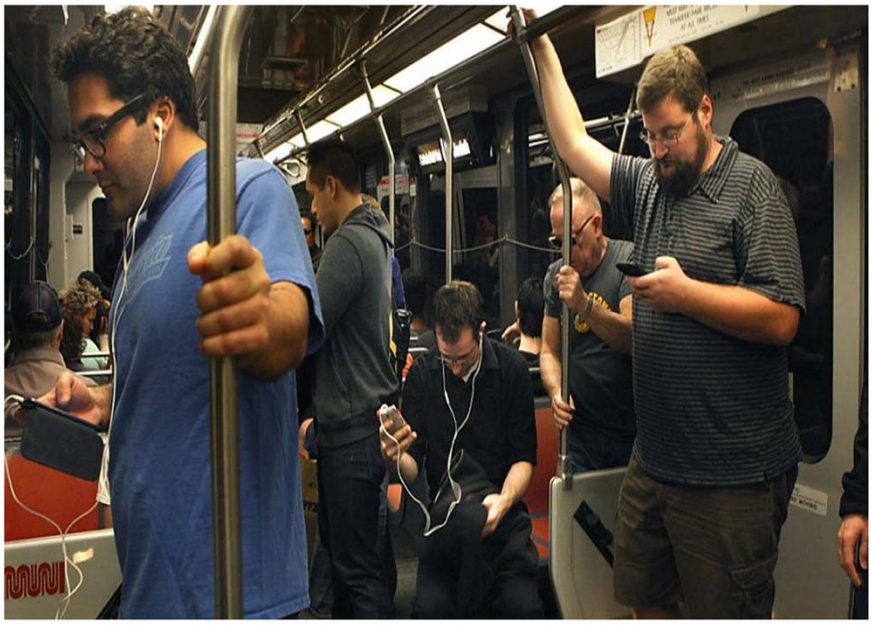


TRENDS in Educational Technology

Mary Ellen Okurowski

August 4, 2015

National Cryptologic School
NSA/CSS Learning



To begin:

- Thanks to conference organizers.
- Eager to hear conference presentations as NCS TD
- Learning experience at National Virtual Translation Center
    - Two eye opening experiences: (1) management of a request and delivery system through information Communication Technology across classified and unclassified systems, leveraging resources working at home, in USG and commercial facilities (2) commute on metro and train with co-passengers all hooked to electronic devices

Digital Native, Digital Immigrant

Our students have changed radically. Today's students are no longer the people our educational system was designed to teach. (Prensky, 2001)

Are you a digital native or a digital Immigrant? These terms were coined by Marc Prensky in 2001 when the discussion first started as to whether students should learn the "old" way or should the digital immigrants learn the new way and discussion continues to swirl as technology advances with new innovations and is ubiquitous. T

Prensky, Marc. Digital natives, digital immigrants. On the Horizon. 9:5. October 2001.

Digital Natives

Digital natives are in and continue to come into learning environments. They are people who have grown up with technology. According to a Pew Research Center (2014) on millennials as digital natives

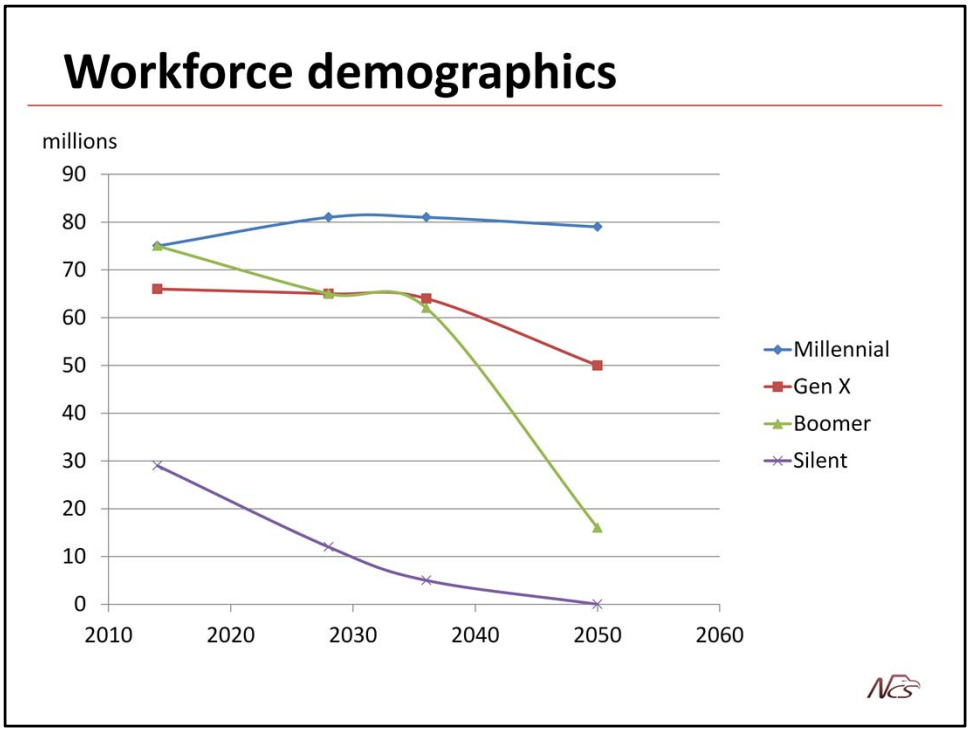
- have not had to adapt to the new platforms of the digital era, -the internet, mobile technology, social media and have taken the lead in constructing personalized networks of friends, colleagues
- Distinctive in that they place themselves in the center of a self-created digital network (with 55% have posted a selfie on social media site.)---6 in to Boomers and a 1/3 of silents (1927-45) know what a "selfie"is even though the term gained enough cachet to be in the Oxford dictionaries in 2013 as the "word of the year."

According to a survey of 3,0444, by Digiday (2014) 60% across 10 countries rely on social media for current affairs and news.

- Largely a visual generation, enjoying Instagram and Snapchat.
- Top 5 mobile apps among millennials: Facebook, YouTube, Pandora Radio, Facebook Messenger, Google Play.

In 2010 study Marc Prensky found: They do not want to be lectured to; They want to create using the tools of their time. They want to work with their peers on group work and projects. They want to connect with their peers and share their opinions, in class and around the world.

Dua, Tanya. Millennial medi-consumption habits explained. Digiday. Oct. 21, 2014.
Pew Research Center. Millennials in Adulthood. March 7, 2014.Barr
Barret, Leslie. Their world, their classroom: innovating to reach digital natives. In-sight. (15).

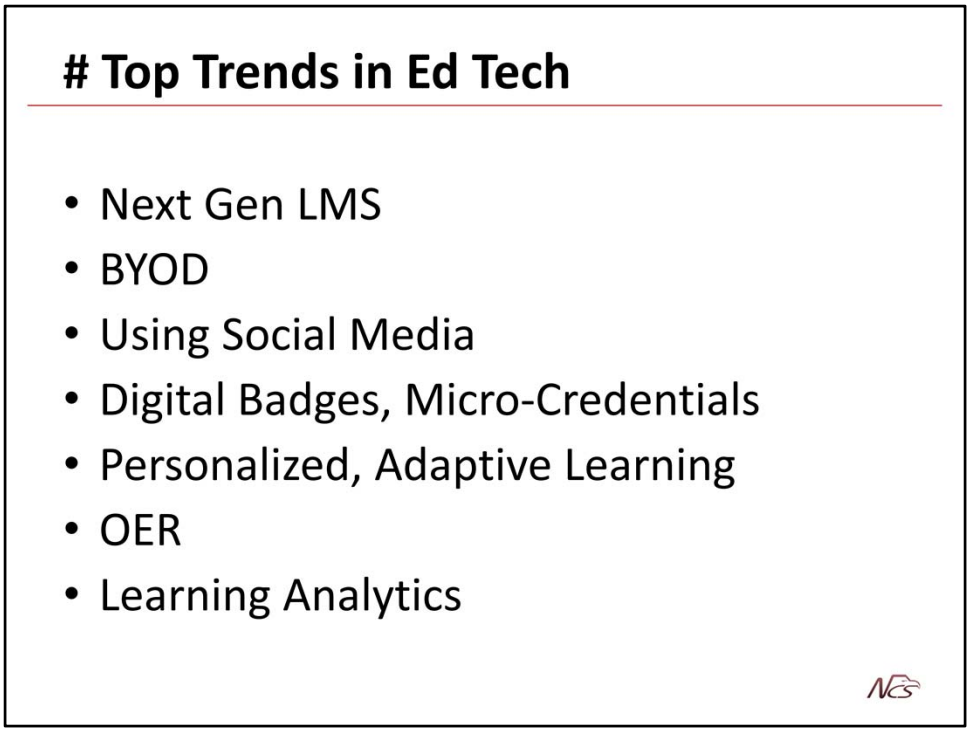


According to the Pew Research Center, millennials (adults age 18 to 34 in 2015) will surpass Generation X to become the largest share of the American workforce and the millennial population is already projected to surpass that of Baby Boomers according to the Census Bureau.

According to the Partnership for Public Service (confirmed by OPM) working-age millennials made up 16 percent of the federal government. (By 2025) predicted to comprise 75% of the nation's workforce (Deloitte) and (The Brookings Institution).

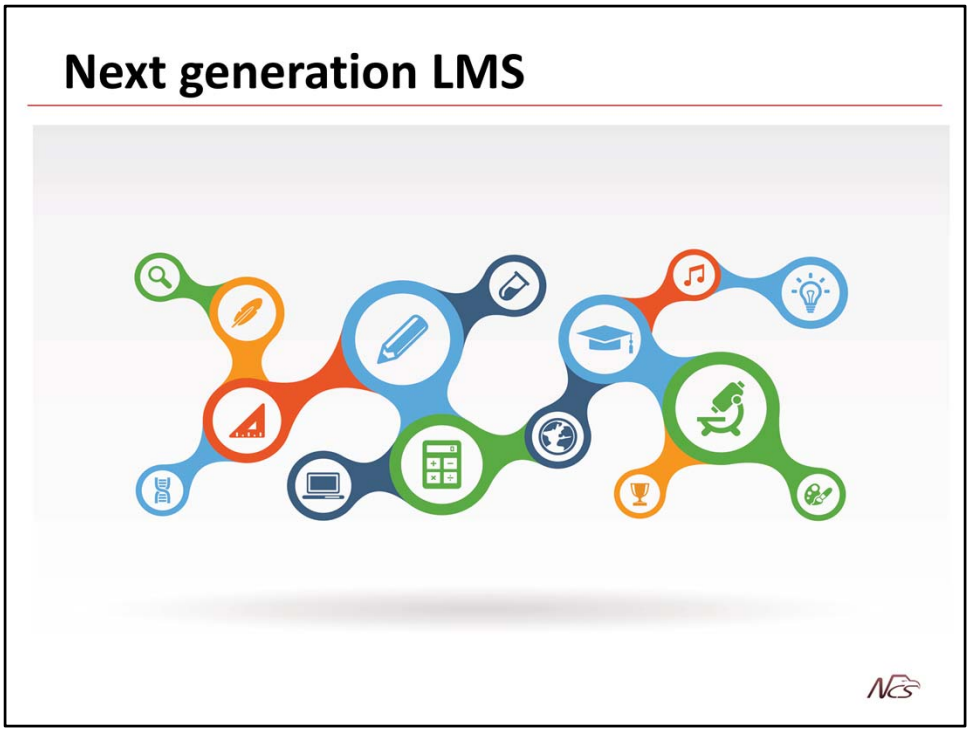
Fry, Richard. (2015). Millennials surpass GenXers as the Largest Generation in U.S. Labor Force. Retrieved from http://www.pewresearch.org/fact-tank/2015/05/11/millennials-surpass-gen-xers-as-the-largest-generation-in-u-s-labor-force/.

Mitchell, . (July 11, 2014). Surge of STEM-educated Hires Paints Optimistic Picture for Federal IT. Fedscoop. Retrieved from http://fedscoop.com/federal-hiring/.



Taking into account that learners will increasingly be digital natives, millennials, and the advances in technology in the world of cyber—a culture of computers, information technology and virtual reality, I would like to focus on the trends in Educational Technology. I am adopting a "Big Picture" approach for these trends because they will likely impact language learning.

An important resource is Educause a nonprofit association whose mission is to advance higher education through the use of information technology. Membership includes institutions of higher learning, corporations serving the higher education information technology market, and other related associations and organizations.



According to the Eduacause Learning Initiative, estimates of 99% of higher education institutions use a learning management system. (85% of faculty use with 56% using it on a daily basis and 74% say it is a useful tool to enhance teaching. Students: 83% use an LMS and 56% say they use it in almost all courses.

- 15% of institutions plan to replace LMS within 3 years
- 41% of faculty using LMS to promote interaction outside of classroom
- Essentially enabling the administration of learning

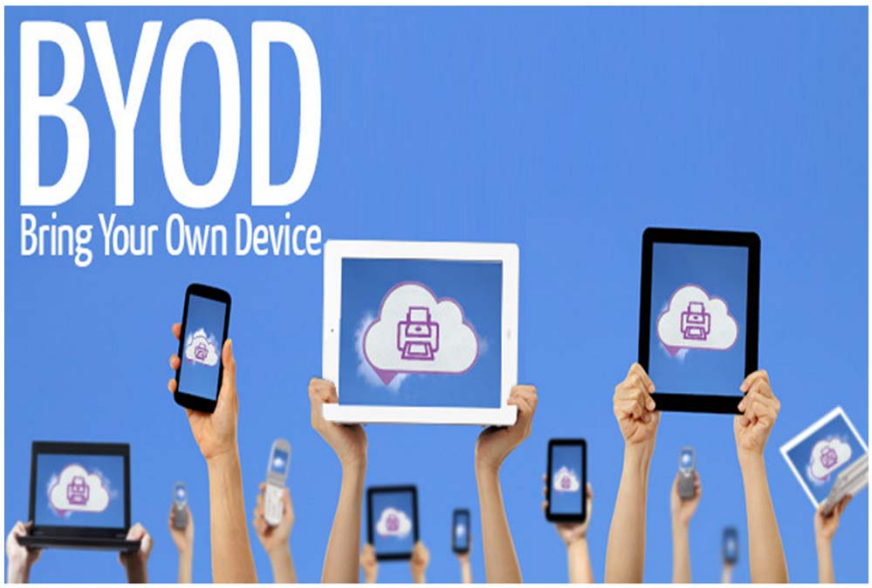
If education moves away from traditional emphasis on the instructor to one on the learning and learning, then LMS designed to be instructor-centric, one-size-fits all will change (not incremental but build from scratch).

Replace LMS with the digital learning environment:

- Informed by new learning-centered model
- Must be digital since digital technology
- Must be an environment or ecosystem a dynamic inter-connected community of learners, instructors, tools and content
- A confederation of IT systems (content repositories, analytics engines, applications –interoperable.

Move to active learning, personalization, hybrid course designs, and new directions for measuring progress.

Brown, M. Dehoney, J. Millichap, N. 2015. The Next Generation Digital Learning Environment. Educause.



Bring your own device (BYOD) or consumerization of It has been spreadly rapidly and refers to allowing employees to access organizations computer network via their own devices/technology. In higher education, for at least a decade students and teachers have been bringing their laptops, smart phones, and tablets as a resource to enhance their learning experience.

- A survey by Bradford Networks of educational institutes found that personal devices are used as much for educational purposes as for private purposes—wide spread acceptance of BYOD in education.
- With the internet as a major source of information, BYOD students can access information from anywhere easily. Teachers can share knowledge easily in or out of the classroom.
- What are advantages to BYOD: access online learning tools and resources, build a network to access instead of routine supply and upgrade, eliminates cognitive load of learning device capabilities,
- What are the Challenges or disadvantages: Development of security policies; guidance and institutional support on how best adapt and leverage personal computing environments, strain on wireless network, incompatibilty of devices or app, incorporate student devices into learning, changing teaching practices
- Also think of this as Bring your Own Everything

Afreen, Rahat. 2014. Bring your own device (BYOD) in higher education: opportunities and challenges. International Journal of Emerging Trends & Technology in Computer

Science. 3:1 Jan-Feb 2014.
Dahlstrom, E and diFilip, S. The Consumerization of Technology and the Bring-Your-Own Everything (BYOE) Era of Higher Education. March 2013.

Using Social Media

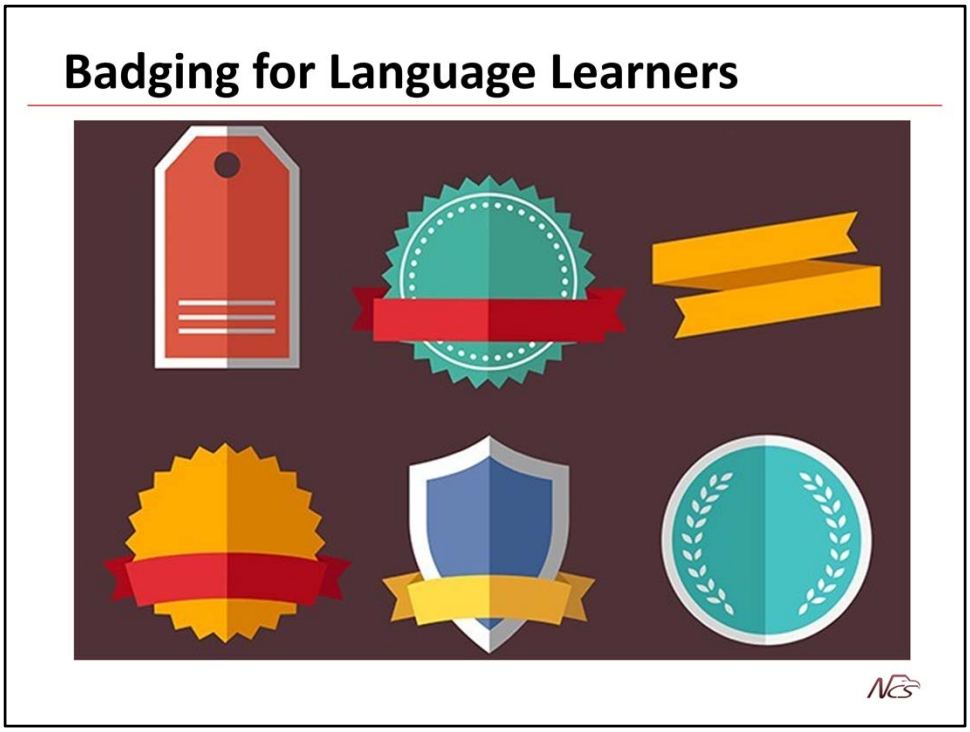
Using Mobile Devices is one area where the language learning community is very active and creative in the researching and sharing, in particular in the ESL or EFL communities.

Examples include:

- How to combine f-2-f learning with smartphones (testing, surveys, audio and video links, mini-presentations, student teacher dialogue) Brown, I. (June 2015) Blended Learning with Student Smartphones. Faces of English Conference. Hong Kong University.
- Using class blogging in an EFL classroom. Milliner, B. (June 2015) Class Blogging in the EFL Classroom. Frontiers of Language and Teaching.
- Using questionnaire technology for language teaching and empirical research. Milliner, B. (May 2015). From Technology for Language Teachers: How do you like Your Monkey?. The Language Teacher.
- Using smartphones and free messaging apps form text-messaging, group-chat taks and even more simultaneous interpretation and translation on WhatsApp. Pollard, A. (2015) Increasing Awareness and Talk Time through Free Messaging Apps. English Teaching Forum.
- Using adventure video games (Game-based learning) on IPADs. Whittaker, S. (2013). Educational Use of Video Games in the ESL Classroom. UAE Journal of

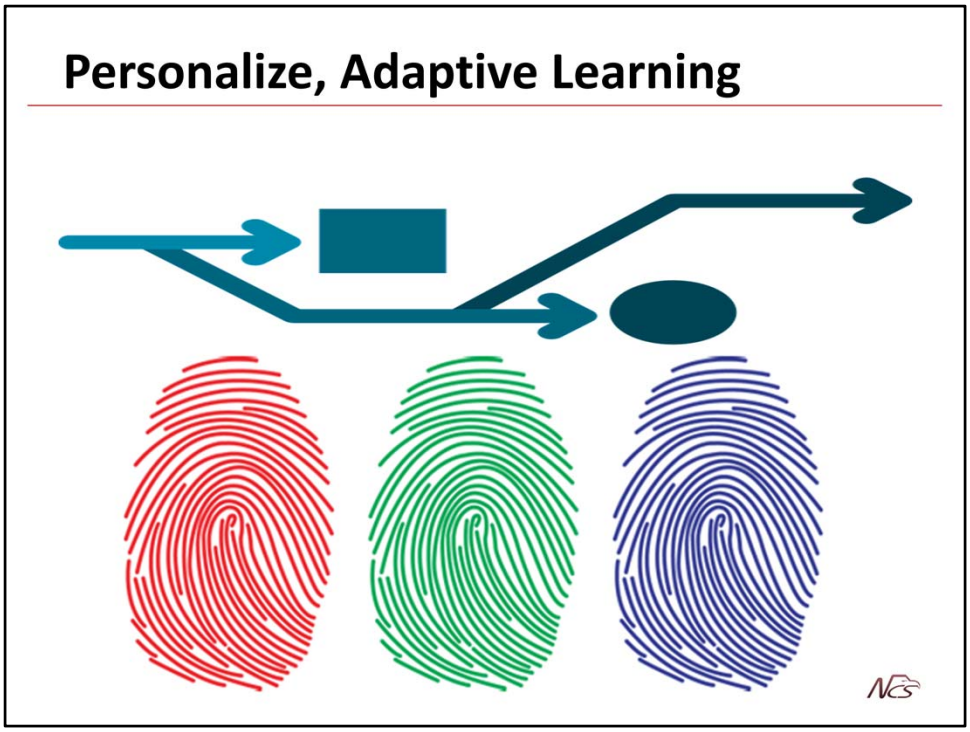
Educational Technology and elearning

Micro-Credentials



So how would badges relate to foreign language courses is under discussion. For example could Middlebury's interactive courses which align to the ACTFL standards align with badges or with Common European Framework for Reference of Languages is debatable? Could a student earn badges about their language mastery that could show how multiple standard-specific pathways leads to mastery. Would a Middlebury endorsed badge have the same credence to the learner as a completion of a Middlebury interactive course.
Are there just too many pitfalls with privacy or longevity of the badges?

Zammit, Julia. (2014, October 8). The Pros and Cons of Digital Badging. [Web Log Post]. Retrieved from http://www.middleburyinteractive.com/blogs/post/the-pros-and-cons-of-digital-badging/.



Differences between learning:

- Differentiated learning: cases where there are different pathways students can take within a learning environment, typically organized as pre-set categories
- Personalized learning- different pathways for each individual student, often implemented in a rules-based method with a decision tree where a diagnostic test on the first day has fed into a rules engine to lay out that indivdual's path and content
- Adaptive learning: data-driven and continually taking data from students and adapts their learning pathway to change and improve over time for each student

"Teaching, Learning and research resources that reside in the public domain or have been released under an intellectual property license that permits their use and re-purposing by others"

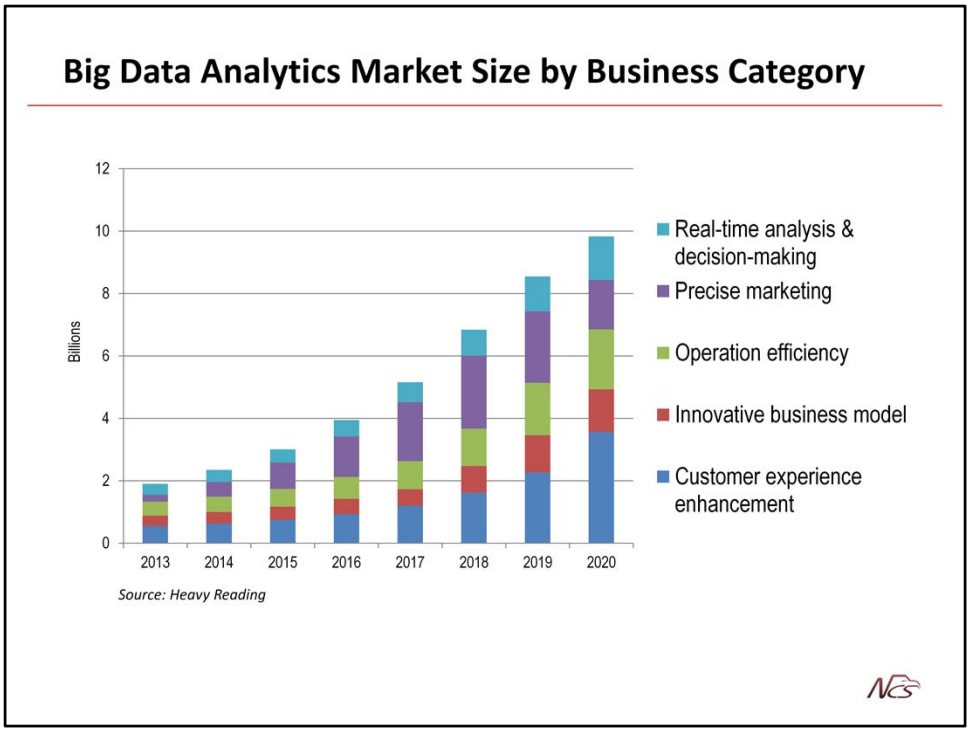
- MIT founded OpenCourseWare 2001 with instruction materials for over 2, 2000 of its course available on line, CMU and Harvard have followed.
- Increasing interest in higher education 2014 study by Babson Survey Research Group found that faculty are not aware of OER 2/3rd in the study)and that the most significant barrier to wide adoption of OER is the time and effort to find and evaluate it. Likely for future use 30%, 46.6% might.
- Challenge to identify resources for open educational resources and language learning like those at the university of texas COERLL—find open textbooks (digital/ print-on-demand, open courseware (power point audio or video lectures), classroom activities, lesson plans, assessment, homework, authentic content.
- Explain open content, licensing, resources that are openly-licensed videos,
- Resources like Merlot, OER, connexcions.

- Parr, Chris. 6 key trends accelerating technology adoption in higher education. IELTS. Feb 23, 2015.
- http://www.slideshare.net/coerll/finding-open-educational-resources-for-language-learning

What is the best way to optimize foreign language learning?

Big Data-large complex datasets collected from digital and conventional sources (not easily managed by traditional applications, continue to transform business industries affecting all organizations and individuals.

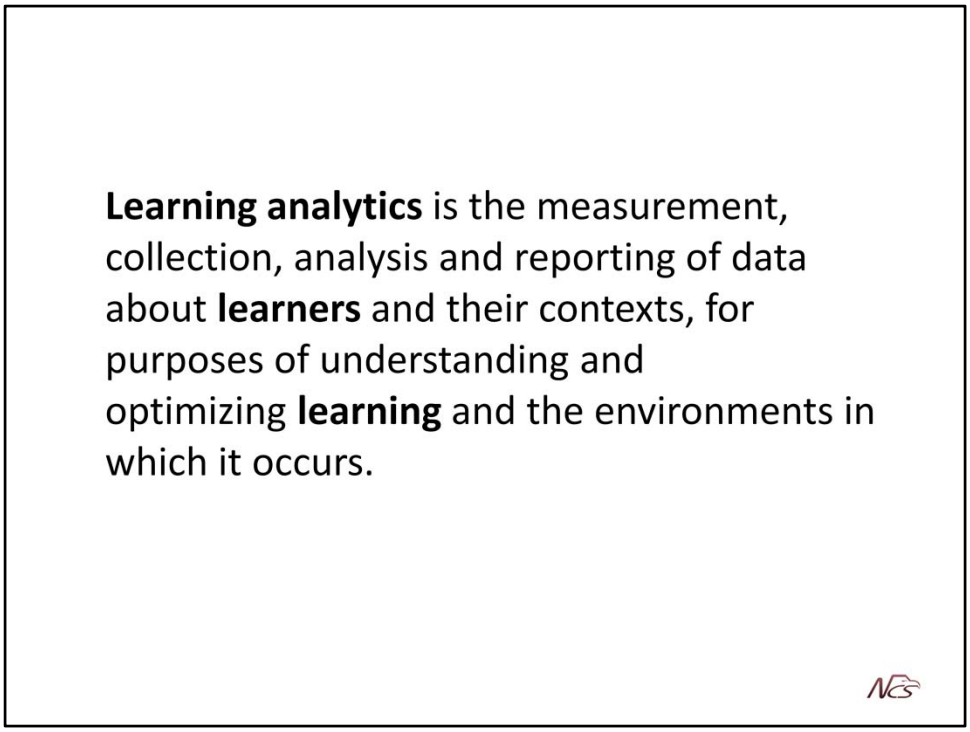
Massive amounts of data are being generated and collected in cyber, most of which is unstructured, approximately 90%. Across all sectors, big data from the web and cloud present opportunities to make decisions and new challenges, involving complexity, security and risks to privacy (Kim 2014).



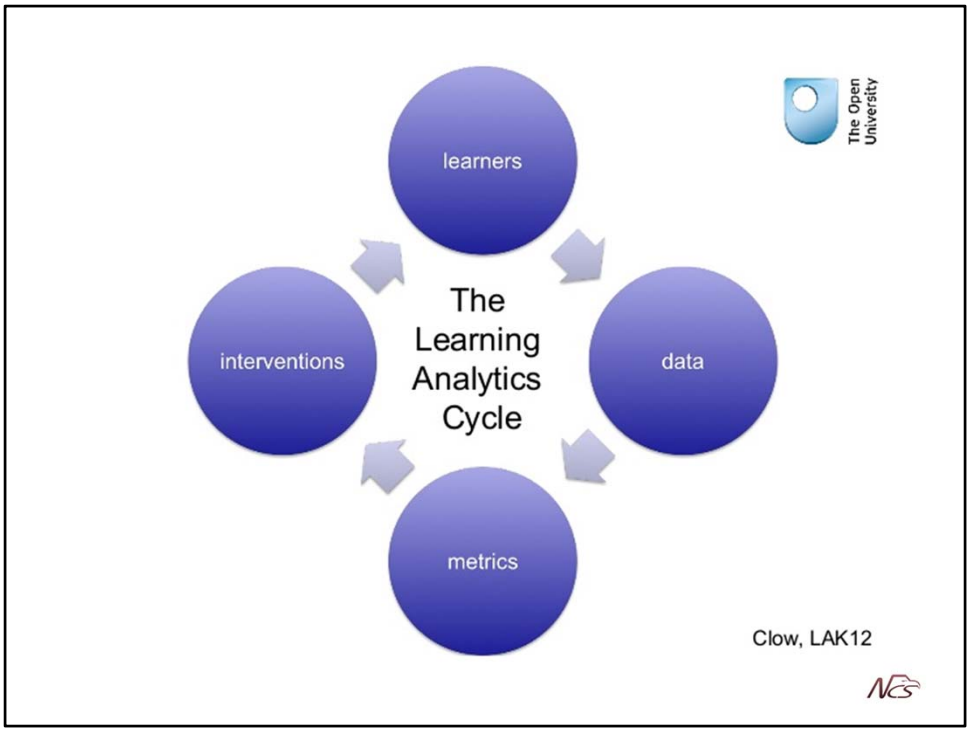
Sources alike New York Stock Exchange, Facebook and Ancestry.com all are predicting consumer behavior, improving product and services and making better business decisions (Reyes, 2015)

An example Hurricane Frances which shows how people applied data analysis to uncover patterns that were useful in dealing with an unexpected new situation. "As Hurricane Frances was threatening a direct hit on Florida's Atlantic coast, Walmart executives were trying to predict what kinds of merchandise they should stock in their stores in the affected areas based on analysis of past purchases in other Walmart stores under similar conditions. Their experts mined the data and found that the stores would need certain products beyond the usual flashlights, batteries and bottles of water. As Walmart's then CIO noted: "We didn't know in the past that strawberry Pop-Tarts increase in sales, like seven times their normal sales rate, ahead of a hurricane, . . . And the pre-hurricane top-selling item was beer." By "predicting what's going to happen, instead of waiting for it to happen," as she put it, "trucks filled with toaster pastries and six-packs were soon speeding down Interstate 95 toward Walmarts in the path of Frances. Most of the products that were stocked for the storm sold quickly, the company said. **" (Data-Driven Decision Making: Promises and Limits**Irving Wladawsky-Berger **blog September 30, 2013)**

Public sector organizations are also using big data to drive decision making. Let's look to education and the relevance to all of us….

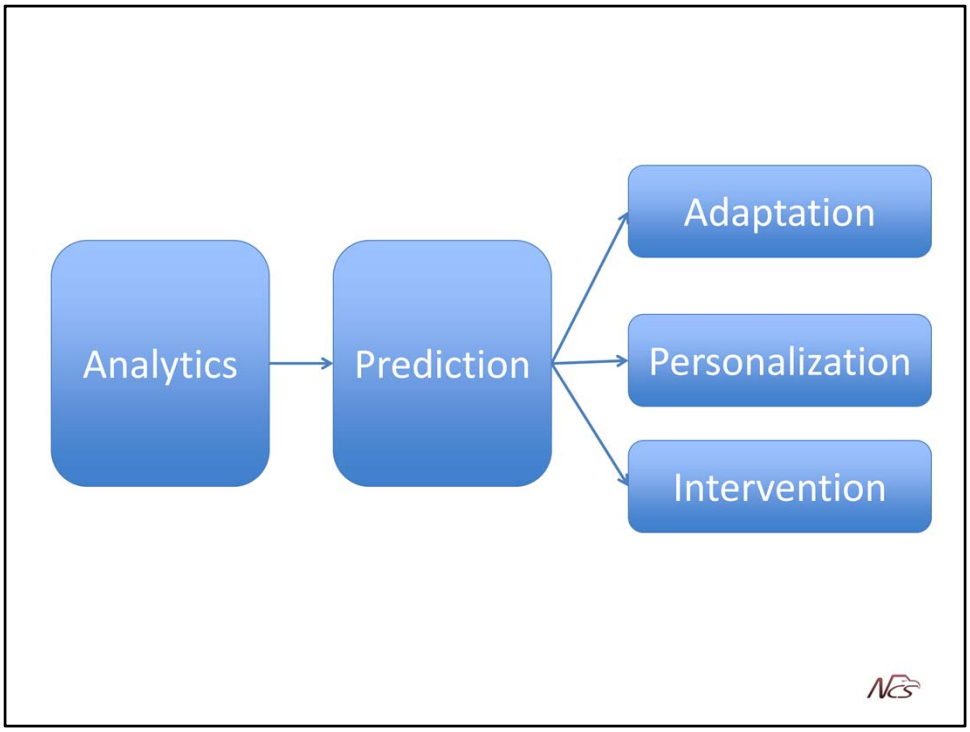


With the shifts to blended and online learning and the use of learning management systems (Moodle, Blackboard) big data is now being applied in educational settings. And in this arena, we talk about learning analytics: the process of gathering, analyzing and reporting educational big data to provide teachers, students, and other stakeholders insights into the learning process. (Webster)
As learners interact in online environments, libraries, labs, and use web tools (SNAP performs social network analysis), user leave bread crumbs that contribute to datasets. All of these datasets hold potential as sources of learning analytics. Growth and development of new techniques for practitioners to access and contribute data on single platforms. Visualization of data is made available through tools and dashboards.



The idea is to understand how students using content, interacting and participating in a course. Instructors can learn where intervention is needed, how to change the design of the course or modify teaching strategies.

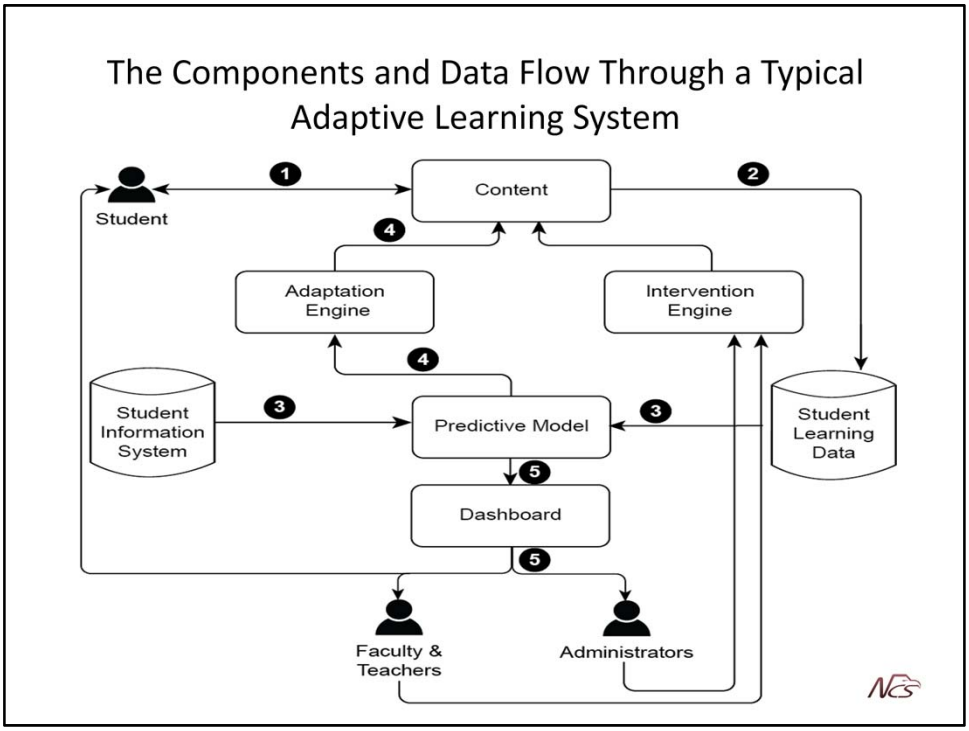
Let's look at that step where the data is being used—here labelled "intervention."



An example of an adaptive learning system is Cerego" iKnow an online learning system for vocabulary acquisition. University of Hawaii researchers conducted a series of studies to evaluate the effectiveness of a multimedia approach that adapts to specific needs of the learner and found the approach to superior to conventional computer-based approaches. (City University of New York 2012)

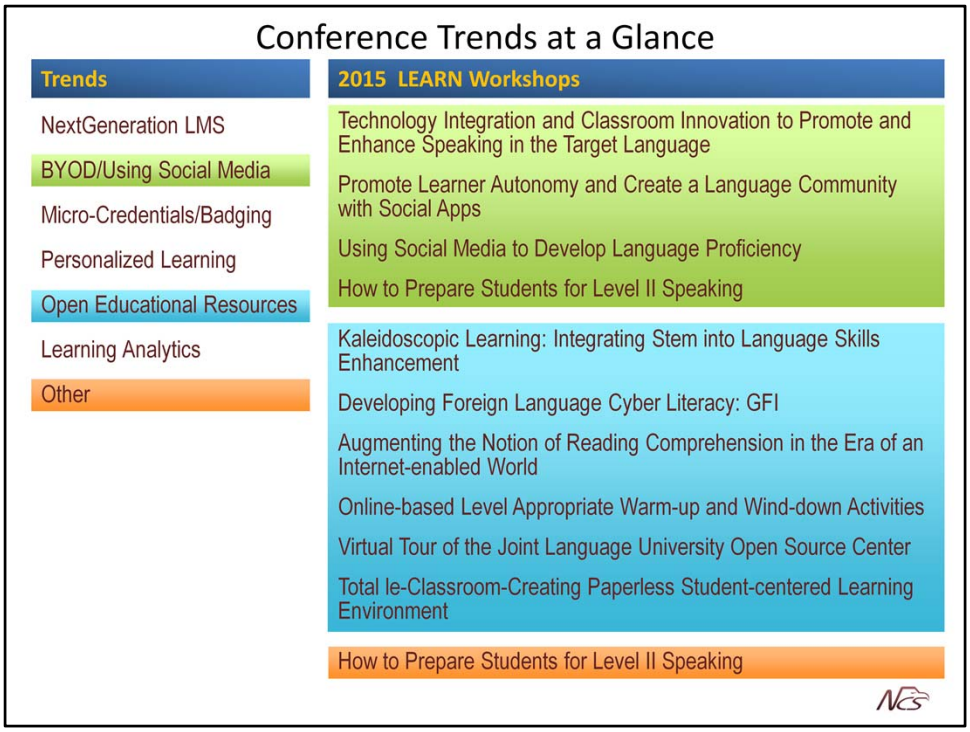
Example of Intervention: Purdue University used predictive analytics to improve retention rate using Signals software, looking for early warning signs and deliver an intervention. To identify students at risk, Signals used performance data in the course, prior academic history (academic preparation, high school GPA, standardized test scores) to predict retention. To date 23,00 students across 100 courses with 140 instructors. 2007-2009 students who participated in at least one course are retained at a higher rate. If two courses, retained at rates higher than one or none. (Intervention: posting a traffic signal on student LMS home page, email and text messages, referral for academic advising, face-to-face meeting (Arnold and Pisletti 2012)

Personalized learning that is paced to learner's needs, tailored to learner's preference, and tailored to the specific interests of different learners. (The Learning Analytics Workgroup, Stanford 2014)



The numbers in Exhibit 1 signify the data flow that creates feedback loops between the users and the adaptive learning system. The data flow starts with Step 1, students generating inputs when interacting with the content delivery component. (In the future, a student may have a portable learning record that contains information from all past interactions with online learning systems.) The inputs are time-stamped and cleaned as necessary and stored in the student learning database according to predefined structure (Step 2). At certain times (not synchronized with student learning activities), the predictive model fetches data for analysis from both the student learning database and the SIS (Step 3). At this stage, different data mining and analytics tools and models might be applied depending on the purpose of the analysis. Once the analysis is completed, the results are used by the adaptation engine (Step 4) to adjust what should be done for a particular student. The content delivery component presents these adjusted computer tutoring and teachingstrategies (Step 4) to the student. The findings also may flow to the dashboard (Step 5), and, in the last step in the data flow, various users of the system examine the reports for feedback and respond (using the intervention engine) in ways appropriate for their role.

Bienkowski, M., Feng, M., and Means, B. (2012). Enhancing Teaching and Learning through Educational Data Mining and Learning Analytics: An Issue Brief. U.S. Department of Education. Office of Educational Technology.


Conference Trends at a Glance
Trends
NextGeneration LMS
BYOD/Using Social Media
Micro-Credentials/Badging
Personalized Learning
Open Educational Resources
Learning Analytics
Other
2015 LEARN Workshops
Technology Integration and Classroom Innovation to Promote and Enhance Speaking in the Target Language
Promote Learner Autonomy and Create a Language Community with Social Apps
Using Social Media to Develop Language Proficiency
How to Prepare Students for Level II Speaking
Kaleidoscopic Learning: Integrating Stem into Language Skills Enhancement
Developing Foreign Language Cyber Literacy: GFI
Augmenting the Notion of Reading Comprehension in the Era of an Internet-enabled World
Online-based Level Appropriate Warm-up and Wind-down Activities
Virtual Tour of the Joint Language University Open Source Center
Total le-Classroom-Creating Paperless Student-centered Learning Environment
How to Prepare Students for Level II Speaking