



Photo: Greg O'Toole, Old Main PSU 2015.

Drupal and the College Classroom

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Artwork by Morgan O'Toole

Why do this talk?

Thesis: We are missing an important opportunity..
the “education” piece of the puzzle to resource seasoned
professionals to mentor young developers.

Based loosely on Dries’ idea of “the assembled Web”, I
thought I’d demo how I use Drupal in the classroom, what I
teach, all in order to get young devs into the community. I
thought doing a talk like this for devs in the community
would then, in turn, give pros a chance to weight in and
make suggestions on what would be best to be teaching
young devs. I think its an area of the community that could
use some work.

So who is this talk for?

- Educators
- Pro Devs, Designers, Etc.
- Drupalists (is that a word?)
- Students
- Anyone in (open source) web tech

23% of employers said recent grads were able to apply learning in a real-world setting during the hiring process.



U.S. Millennials Among Lowest-Skilled Tech Workers in the World

- Despite having a higher rate of educational attainment than any previous generation, U.S. millennials (between 16-34 years of age) ranked lower than most of their international peers in literacy, mathematics and technology problem solving.
- Those born in the U.S. after 1980 tied for last among the 22 participating countries in numeracy and technology skills, and 16th in literacy.
- Top scoring Americans in this cohort ranked lower than their peers in most other countries.
- Bottom-scoring Americans ranked among the lowest in the whole study.



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Penn State online bachelor's programs ranked No. 1 by U.S. News and World Report

Online graduate programs ranked highly

January 7, 2015

UNIVERSITY PARK, Pa. — Penn State is ranked No. 1 for the best online bachelor's programs in the country in U.S. News & World Report's 2015 "Best Online Programs" the highest-ever ranking for the University



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1. **Key Trends** Accelerating Technology Adoption in Higher Education
 2. **Significant Challenges** Impeding Technology Adoption in Higher Education
 3. **Important Developments** in Educational Technology for Higher Education

Rethinking How Institutions Work

Long-Term Impact Trends: Driving Ed Tech adoption in higher education for five or more years

Changes in higher education are upending the traditional notion of the university and transforming the paradigm for how postsecondary learning works. These developments are being fueled by a growing body of research that highlights the disconnect between the demands of the 21st century economy and what college graduates are prepared to do when they leave academia.³⁰ Part of the effort to make students more work-savvy is taking place through new policy initiatives, programs, and curriculum that encourage students to work with peers from different disciplinary backgrounds on innovative solutions to complex problems. Another feature of this trend is the emphasis on exploring alternate methods of delivery and credentialing in order to accommodate a rapidly increasing student population and the diversity of their needs. Emerging models, such as hybrid learning and competency-based education, are revealing the inefficiencies of the traditional system for nontraditional students. These new paradigms are centered on online learning, a method that allows universities to cater to consumer demand, make college credentials more accessible, and design programs that offer a better value proposition for

These factors are leading to the development of programs that realize profound, sustained change through cross-disciplinary activities. Recently, Central European University launched the Intellectual Themes project to join together disparate groups and departments to expand their interdisciplinary offerings. The university is currently accepting proposals from faculty for new courses, conferences, or workshops on four themes: social mind, inequalities and social justice, energy and society, and governance.³⁴ The University of South Carolina has been implementing cross-disciplinary learning since 2011 with the start of their Interprofessional Education (IPE) for the Health Sciences Initiative. The program convenes students from various healthcare fields to explore a range of subjects including nursing, medicine, and pharmacy, in addition to brand new course offerings such as public health and social work. The Dean of Medicine believes that the IPE is a way to produce graduates who are “ready, able, and willing to do interdisciplinary teamwork.”³⁵

Emerging business models, enabled by advancements in online learning, are also creating fundamental changes in higher education. An interesting take on this trend has been described as adopting the “Education-as-a-Service” (EaaS) model, a delivery system that unbundles

Blending Formal and Informal Learning

Solvable Challenge: Those that we understand and know how to solve

As the Internet has brought the ability to learn something about almost anything to the palm of one's hand, there is an increasing interest in the kinds of self-directed, curiosity-based learning that have long been common in museums, science centers, and personal learning networks.¹²² These, along with life experience and other more serendipitous forms of learning, fall under the banner of informal learning, and serve to enhance student engagement by encouraging them to follow their interests. Higher education institutions have not yet been able to incorporate such experiences across their courses and programs at scale, though many experts believe that a blending of formal and informal methods of learning can create an environment that fosters experimentation, curiosity, and above all, creativity.¹²³ In this sense, an overarching goal is to cultivate the pursuit of lifelong learning in all students and faculty. However, methods of formally acknowledging and rewarding skills both instructors and students master outside of the classroom are compounding this challenge.¹²⁴

experiences fit in with course objectives and assessment, students must also better understand what characterizes beneficial informal learning resources. This intersection encompasses a potential solution; universities and colleges are well poised to play a bigger role in helping students discover and maximize credible digital tools and resources as they pursue their curiosities.¹²⁸ Responses to the challenge can be easily mistaken for simply integrating informal opportunities, but the ultimate goal is to combine the two to achieve the best of both worlds. For example, an EDUCAUSE study revealed that even though students and instructors use mobile devices regularly, they still need technical, logistical, and pedagogical support from institutions to understand how to use them for learning purposes.¹²⁹

Solving this challenge requires institutions and employers to view informal learning in a positive light. Ongoing learning is particularly important for working professionals who must continuously gain new skills to advance their careers. Traditionally, this has translated into pursuing graduate degrees. The rise of micro-credentials or "nanodegrees" is disrupting this paradigm

Competing Models of Education

Difficult Challenge: Those that we understand but for which solutions are elusive

New educational models are bringing unprecedented competition to traditional models of higher education in which students typically receive on-campus instruction by faculty or teaching assistants per credit hour over four years. Institutions are increasingly looking for ways to provide high-quality offerings and more diverse learning opportunities at lower costs.¹⁶² While MOOCs were at the forefront of discussions a few years ago, competency-based education, coding boot camps, and general unbundling of products and services are also disrupting existing credit-hour systems and degree programs.¹⁶³ As these new pathways arise, there is a growing need for education leaders to frankly evaluate the models and determine how to best support collaboration, interaction, and assessment at scale. It is clear that simply capitalizing on emerging technology is not enough; the new models must use these tools and services to engage students on a deeper level and ensure academic quality.

that provide both the opportunity to save money and progress more quickly to the workforce. A few years ago, MOOCs surfaced as a high-profile example of a competing model. While MOOCs experienced a meteoric rise followed by a backlash of skepticism, experts believe that recent developments in online learning will be disruptive. Coursera's "Data Science Sequence" course, for example, is priced at \$470 and includes nine four-week online courses and a capstone project taught by Johns Hopkins University. Students receive a certificate and portfolio demonstrating their mastery of the material.¹⁶⁷

Interest in competency-based degree programs, which allow for more flexible and personalized degree options, is also on the rise as a potential solution, but ensuring academic quality remains an obstacle.¹⁶⁸ According to EDUCAUSE, competency-based education (CBE) provides academic credit for mastery of clearly defined competencies, leveraging the potential of online learning by saving students time and money.¹⁶⁹

Redesigning Learning Spaces

Mid-Term Impact Trends: Driving Ed Tech adoption in higher education for three to five years

Some thought leaders believe that new forms of teaching and learning necessitate new classroom configurations. More universities are helping to facilitate emerging pedagogies and strategies, such as the flipped classroom, by rearranging learning environments to accommodate more active learning.⁴⁵ Educational settings are increasingly designed to support project-based interactions with attention to greater mobility, flexibility, and multiple device usage. Institutions are upgrading wireless bandwidth to create “smart rooms” that support web conferencing and other methods of remote, collaborative communication.⁴⁶ Large displays and screens are being installed to enable collaboration on digital projects and informal presentations. As higher education continues to move away from traditional, lecture-based lessons and toward more hands-on scenarios, college and university classrooms are starting to resemble real-world work and social environments that facilitate organic interactions and cross-disciplinary problem-solving.

that serves both on-campus and distance learning students. With acoustic panels and ceiling microphones for the capturing of audio without disruption, and mobile furniture for flexible arrangements, their engineering classroom creates a better experience for both types of students.⁵² This integration of physical and virtual learning spaces has introduced a new way of thinking about blended learning. Polysynchronous learning refers to a mix of face-to-face, asynchronous, and synchronous channels of online communication; participation by students in diverse locations is cited as a key benefit. It requires physical classrooms to be designed to enable students to seamlessly communicate with others face-to-face and virtually.⁵³

The Internet and mobile technologies have revolutionized how people find, consume, and interact with content. One manifestation of this trend is the removal of books and serial journals from the shelves of academic and research libraries, which has proven controversial for some academic communities.⁵⁴ Libraries are replacing stacks with new kinds of spaces that offer

Improving Digital Literacy

Solvable Challenge: Those that we understand and know how to solve

With the proliferation of the Internet, mobile devices, and other technologies that are now pervasive in higher education, the traditional view of literacy as the ability to read and write has expanded to encompass understanding digital tools and information.¹³⁸ This

last in digital literacy as compared to other developed nations.¹⁴⁵ Illuminating this problem is the Rasmussen College study “Digital Literacy in 2015,” which reports that one in four millennials want to improve their digital literacy, but 37% find the Internet “scary,” more so than respondents aged 35 and over.¹⁴⁶ The US is not alone;

Bring Your Own Device (BYOD)

Time-to-Adoption Horizon: One Year or Less

BYOD, also referred to as BYOT (Bring Your Own Technology), is the practice of people bringing their own laptops, tablets, smartphones, or other portable devices with them to learning or work environments. As of 2015, millennials became the largest generation represented in the US workforce,²³⁶ and as a group generally accustomed to mobiles being at the center of their lives, there is now an expectation that they can use them for many aspects of their work life.²³⁷ In higher education, the BYOD movement addresses the same reality; many students are entering the classroom with their own devices, which they use to connect to the institutions' networks. While BYOD policies have been shown to reduce overall technology spending, they are gaining traction more so because they reflect the contemporary lifestyle and way of working. According to a 2015 study, at least 42% percent of colleges and universities in the US had implemented a BYOD strategy in 2014.²³⁸ Even in the absence of concrete strategies, campuses across the world are accommodating and even encouraging the use of mobile devices for a wide range of teaching and learning activities.

infrastructures to ensure faculty and students are constantly connected to the network with the ability to download and stream learning content quickly. Brunel University London, for example, recently partnered with Cisco to create a reliable solution that included more access points and controllers dispersed across 70 campus buildings.²⁴¹ For BYOD critics concerned about potential security risks, universities are proactively creating policies that emphasize safety. Lebanon Valley College (LVC) requires students to register their devices with the institution. This allows campus officials to identify the specific devices responsible for hacking incidents. It is also important to accommodate the notion that learning does not just take place in lecture halls; LVC has built a new learning commons to spur more collaboration. The space is equipped with large television monitors so that faculty and students can stream video from their mobile devices.²⁴²

Now that personal technologies are more pervasive at higher education institutions, the definition of BYOD is expanding beyond laptops, smartphones, and tablets. The increased use of mobiles has created an opening for other sorts of devices to enter the classroom. Wearables

Augmented and Virtual Reality

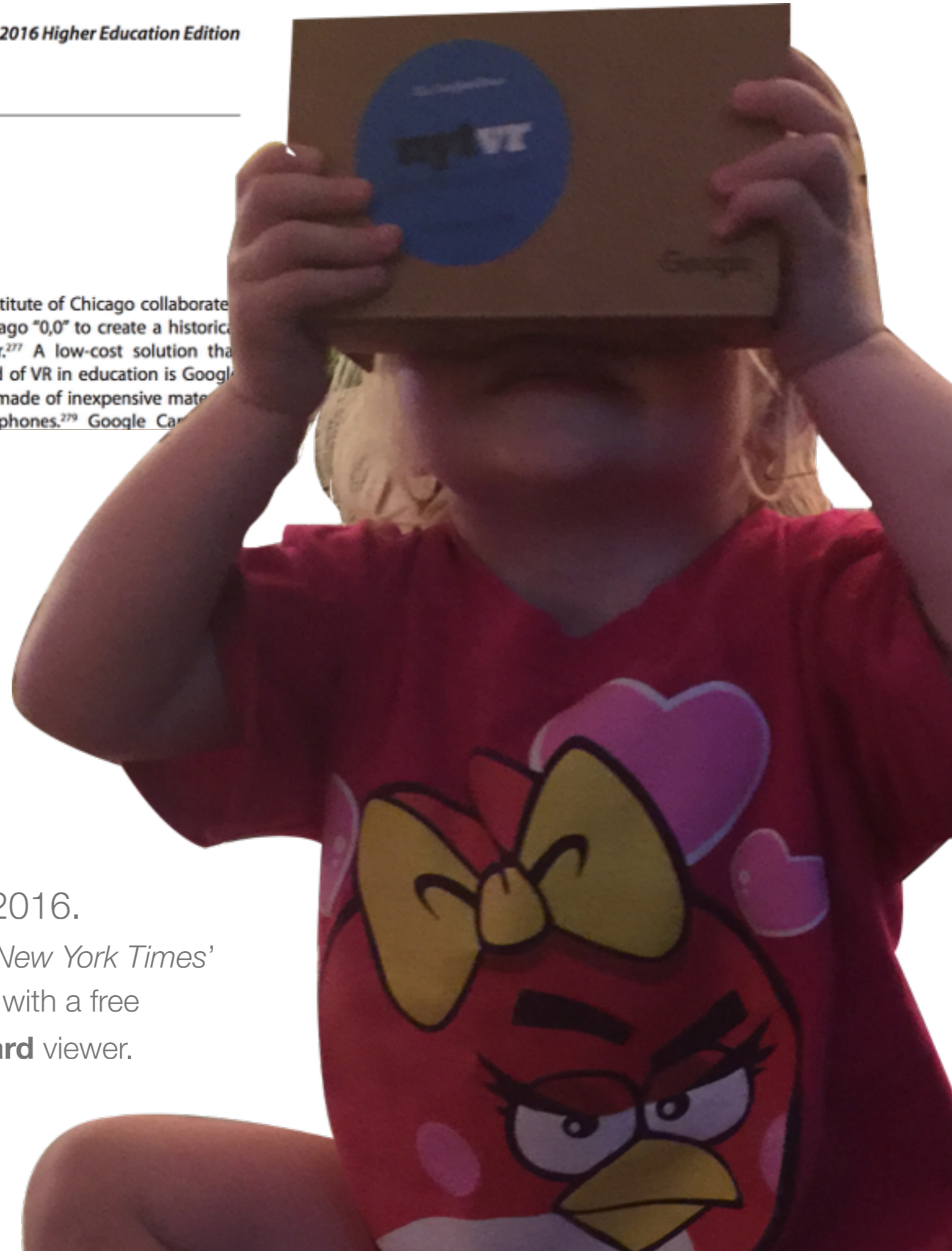
Time-to-Adoption Horizon: Two to Three Years

Augmented reality (AR), the layering of data over 3D spaces to produce a new experience of the world, sometimes referred to as “blended reality,” amplifies access to information, bringing new opportunities for learning. Virtual reality (VR) describes computer-generated

the School of the Art Institute of Chicago collaborate on the free AR app Chicago “0,0” to create a historical downtown walking tour.²⁷⁷ A low-cost solution that has facilitated the spread of VR in education is Google Cardboard,²⁷⁸ a headset made of inexpensive materials that connects to smartphones.²⁷⁹ Google Card

2 years old in 2016.

Experiencing the *New York Times*’ virtual reality films with a free **Google Cardboard** viewer.



My Class Structure

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- model after new employee training:
- full set of tried, tested, continuous revisioned onboarding/training materials
- faculty is available to vet questions as the come in.
- bad orgs have neither. good companies have both. Both are necessary in tech classroom.

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a drupal 7 classroom

openwebby

modules used

themes used

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canvas classroom

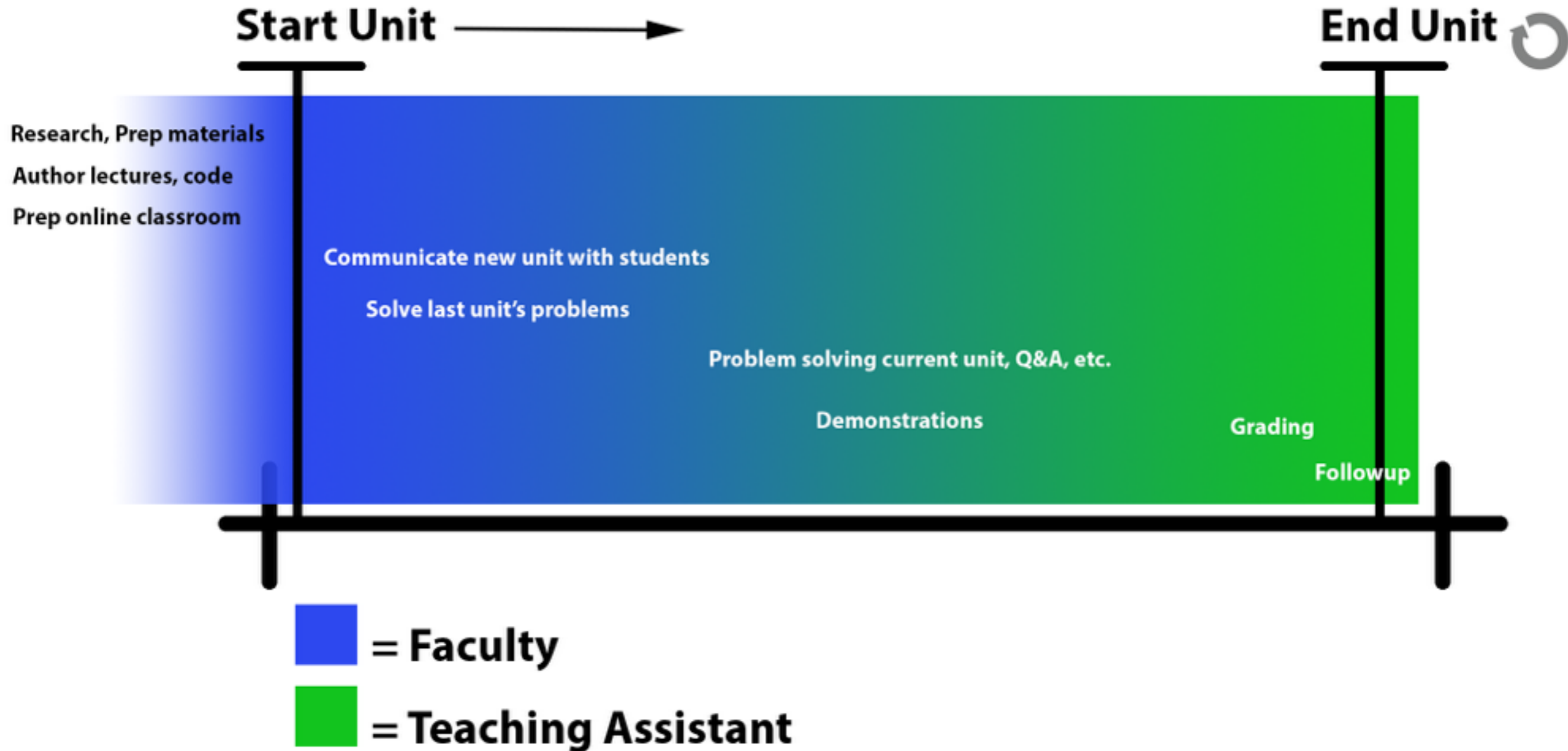
with Drupal lessons

3rd Party *morgan art*

- codecademy
- codeschool
- lynda
- text books
- my lecture videos (screen flow)
- youtube

Workflow and distribution of labor in the online/hybrid classroom: A cyclical model by learning unit.

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Focus:

- see teaching chapter from last year: youtube
- self reliance and critical approaches
- How to think/learn
- How to build

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Focus:

in USA we have a culture that doesn't pay attention to the gap between pros and beginners in IT. companies like Codecademy etc are addressing this area of need.

Focus:

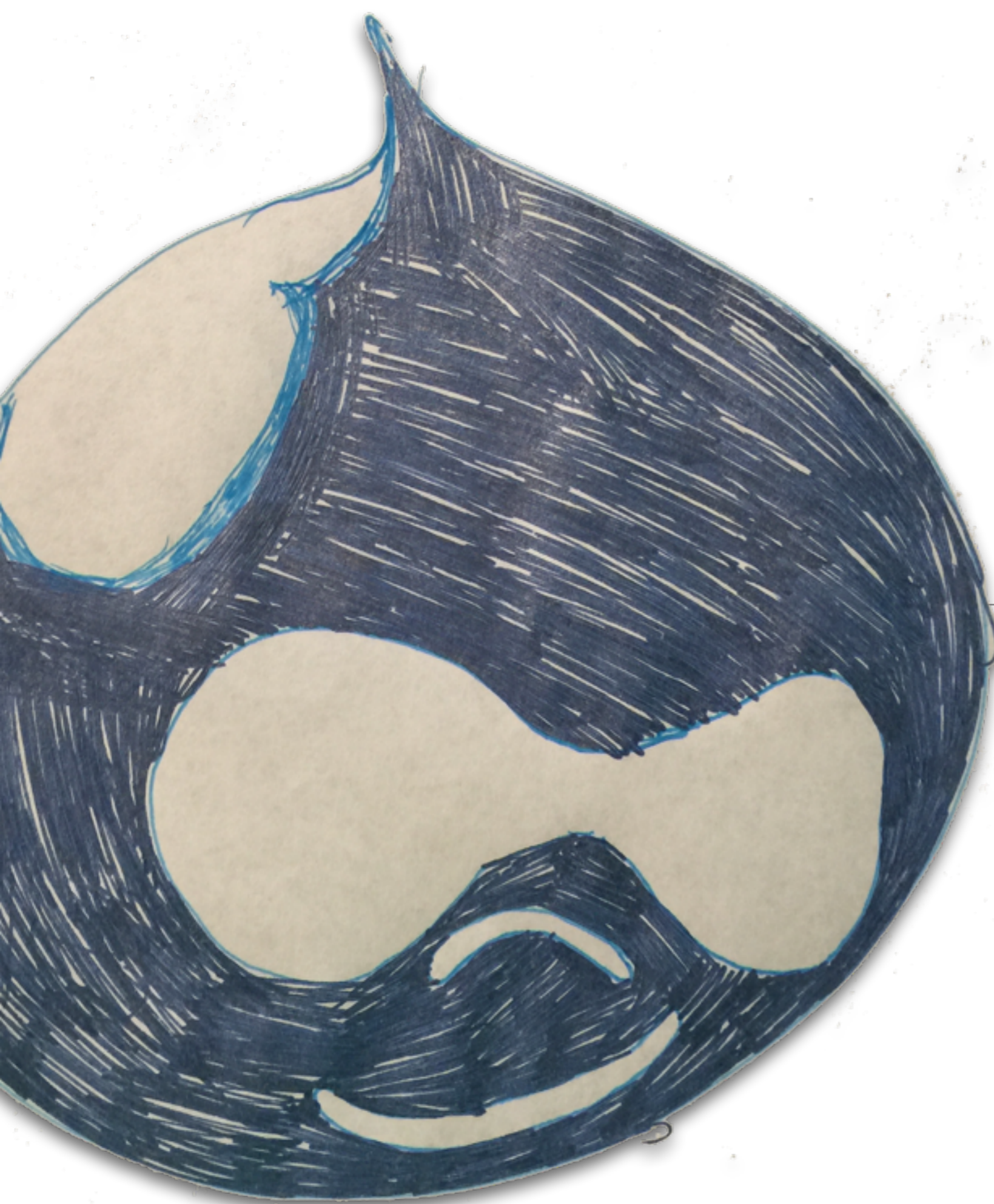
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- Research Questions:
- When do devs come into the community? What age? What stage in career? Why?
- How does above dovetail with college students? Do college students use or know about Drupal?

Results: student analytics

- awesome participation
- awesome grades
- awesome srtes
- students getting jobs

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Questions.
Comments.
Keep in touch.

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