The Next Generation Digital Learning Environment

A Report on Research

Malcolm Brown, EDUCAUSE Learning Initiative

Joanne Dehoney, EDUCAUSE

Nancy Millichap, Next Generation Learning Challenges

Abstract

In partnership with the Bill & Melinda Gates Foundation, EDUCAUSE explored the gaps between current learning management tools and a digital learning environment that could meet the changing needs of higher education. Consultations with more than 70 community thought leaders brought into relief the contours of a next generation digital learning environment (NGDLE). Its principal functional domains are interoperability; personalization; analytics, advising, and learning assessment; collaboration; and accessibility and universal design. Since no single application can deliver in all those domains, we recommend a "Lego" approach to realizing the NGDLE, where NGDLE-conforming components are built that allow individuals and institutions the opportunity to construct learning environments tailored to their requirements and goals.

The Next Generation Digital Learning Environment

M. Brown, J, Dehoney, & N. Millichap. (2015). *Next Generation Digital Learning Environment: A Report on Research*. EDUCAUSE.

iLED 연구실 세미나

발표일: 2017. 1. 25.

발표자: 정다은

Introduction

- **배경**
- 2014, 여름
- Bill & Malinda Gates Foundation, EDUCAUSE

- **문제의식**

  gap

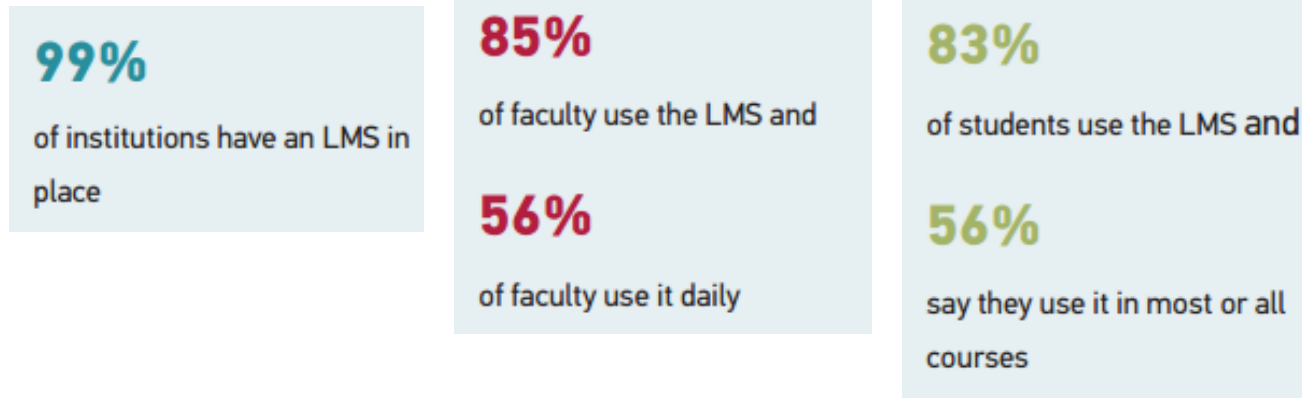 현재의 학습 관리 도구 – 변화하는 요구를 충족시키는 디지털 학습 환경

- **연구방법**

  전문가 → 기존 도구의 한계, 새로운 학습환경 구상의 아이디어

- **연구결과**

  새로운 '학습 생태계(learning ecosystem)' 개발을 위한 주요 원칙 제안

The Learning Management System*

- **Unprecedented adoption rates**

99%
of institutions have an LMS in place

85%
of faculty use the LMS and

56%
of faculty use it daily

83%
of students use the LMS and

56%
say they use it in most or all courses

- **15% of U.S. institutions are planning to replace their LMS within next three years**

* Dahlstrom, E., Brooks, D. C., & Bichsel, J. (2014). *The current ecosystem of learning management systems in higher education: Student, faculty, and IT perspectives* (p. 3). Research report. Louisville, CO: ECAR, September 2014. Available from http://www. educause. edu/ecar. 2014 EDUCAUSE. CC by-nc-nd.

The Learning Management System*

- **LMS satisfaction ratings are highest for basic features and lowest for advanced features**
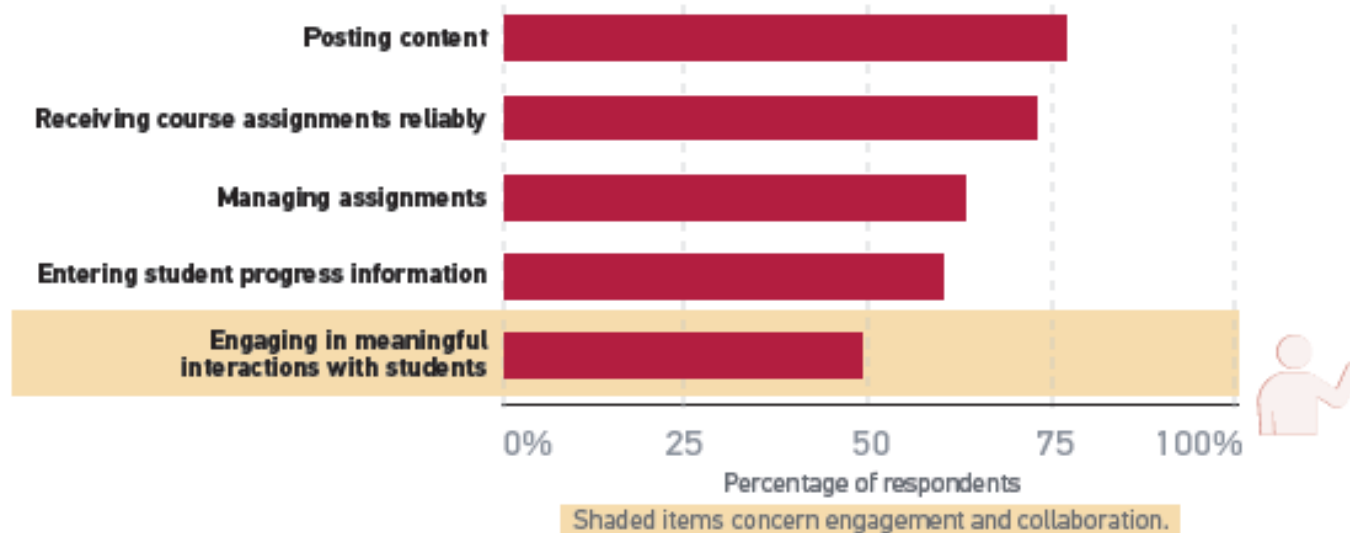

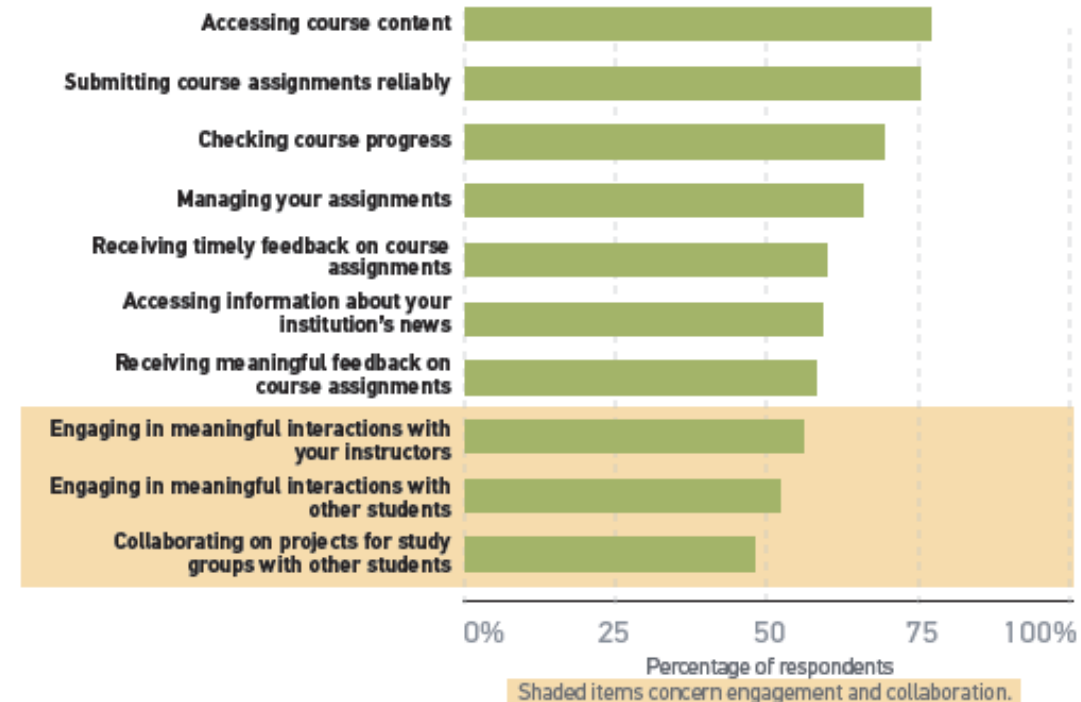Figure 7. Overview of faculty satisfaction with LMS features

Figure 8. Overview of student satisfaction with LMS features

* Dahlstrom, E., Brooks, D. C., & Bichsel, J. (2014). *The current ecosystem of learning management systems in higher education: Student, faculty, and IT perspectives* (p. 3). Research report. Louisville, CO: ECAR, September 2014. Available from http://www. educause. edu/ecar. 2014 EDUCAUSE. CC by-nc-nd.

The Learning Management System

- 학습의 관리(*administration* of learning)

- 학습 그 자체(learning itself)?

- 초기 LMS의 설계
  Course-and instructor-centric view of teaching and learning (1990s)

The Next Generation Digital Learning Environment

- 정의

- **N**ext **G**eneration: "what should come after the LMS era"

- **D**igital: "of course be digital, given that digital technology has become a component of virtually all teaching and learning practice"

- **L**earning: "be about learning, since learning ties together learner and instructor"

- **E**nvironment (or ecosystem): "a dynamic, interconnected, ever-evolving community of learners, instructors, tools, and content"

The Next Generation Digital Learning Environment

- **Dimensions of the NGDLE**

    1. Interoperability and Integration

    2. Personalization

    3. Analytics, Advising, and Learning Assessment

    4. Collaboration

    5. Accessibility and Universal Design

1. Interoperability and Integration

- **What is the difference between compatibility and interoperability?**

- **Interoperability standards**

Common Cartridge, LTI, EDUPUB, Access for All, QTI(Question and Test Interoperability), Learning Information Services, and Caliper Analytics

- **Four primary dimensions**

    1) Content

    2) Tool

    > **EduAppCenter**
    > https://www.eduappcenter.com/
    > **Canvas**
    > https://seoul-national-university.acme.instructure.com/login/canvas

    3) Environment

    4) New interoperability standard

2. Personalization

- **Encompasses two aspects**
  - 학습환경의 구성
  - 적응적 학습(adaptive learning)

- **Top 10 functions of NGDLE pertain to personalization** (2014 EDUCAUSE Annual Conference)

  - Integration for discipline-specific apps (#1 vote getter)

  - Easy to configure or adapt to teaching styles and disciplines (#2)

  - Clear, customized, self-paced learning/degree pathways (#9)

3. Analytics, Advising, and Learning Assessment

- **Learning analytics**
  1) 학습분석 데이터의 범위 더 넓게 설정(학습자 데이터의 세 가지 종류)
  2) 플랫폼, 도구, 데이터 통합
  3) 모든 이해관계자를 위한 학습분석

- **Integrated planning and advising systems (IPAS)**
  강좌 수준을 넘어 overall 학습자의 성공, 특히 학위 수료에 초점

- **Assessment**
  학습을 평가하기 위한 단일한 접근에서 벗어나, 다양한 방법의 통합 지원

- **Competency-based education (CBE)**
  강좌>>>> 보다 작은 학습의 단위

> **Canvas Mastery gradebook**
> https://seoul-national-university.acme.instructure.com/login/canvas

4. Collaboration

- **다층적 수준의 협력 지원**
- SNS의 발달
- 강좌 내 학습자 간 협력, 기관 간 협력, 컨텐츠 검색, 묵스 등 학습 공동체 참여

- **사적인 디지털 공간과 공적인 디지털 공간 사이의 이동을 쉽게**
- "Walled-garden" problem
- 이분법적 선택 x

5. Accessibility and Universal Design

- "**Universal Design** is the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design**"** – *Ron Mace*

- Accessibility is addressed **in the initial design** of all NGDLE components, as opposed to being integrated

Moving Forward: NGDLE Lego Sets

- "How could any application address all of that and do it well?"

no single application can

Moving Forward: NGDLE Lego Sets

- **"Lego approach"**

– **mash-up**: a web page or application that "uses content from more than one source to create a single new service displayed in a single graphical interface"

☞ a toolbox of applications, content, and platform that could be assembled in custom ways

- **Two key advantages of the Lego approach**

- 선택과 집중 (단, standard!)

- personalization at a variety of levels

Q & A