Using Evidence-based Learning Design and Evaluation to Improve Outcomes in Online Higher Education

The Growing Adoption and Acceptance of Online Learning

One of the fastest growing trends in higher education today is online learning, a now integral aspect of all types of mainstream education across the United States. Increasingly, students who need a flexible path to earning a degree are looking to online learning programs to access quality, affordable higher education. Therefore, it is not surprising that online learning continues to grow in adoption and acceptance. Thirty-two percent of students are taking at least one course online, and 77 percent of academic leaders rate the learning outcomes in online education as the same or superior to those in face-to-face classes, according to Babson Survey Research Group’s 2012 Survey of Online Learning.

77% of academic leaders surveyed reported online learning outcomes to be the same, somewhat superior, or superior to face-to-face in 2012.

The Importance of Evidence-based Learning Design and Evaluation

With less face-to-face interaction happening between students and teachers in an online course, good learning design becomes even more of an imperative to ensure the experience is engaging, efficacious, and matches students’ digital expectations. Drawing on research from fields such as informatics, human factors, cognitive psychology, and human computer interaction, the learning sciences are interdisciplinary and explore how learning is manifested, demonstrated and measured.

One aspect of learning science is learner experience design, which is both rooted in and relies upon evidence. Evidence-based learning design is the application of research and evaluation to the design of online learning experiences. The best designs are driven by multiple forms of research and evaluation and benefit from ongoing iteration, in order to produce and maintain effective learning outcomes. There are many benefits of effective course designs, including improved achievement, persistence and learner engagement.

Distinct Components of Learning Design and Evaluation

There are four distinct components that are important to consider when designing any learning experience. These components are necessary to deliver intended learning outcomes, thereby placing efficacy at the center of the course design and evaluation process.

Educational Policy
This refers to the policies, held by the federal government, state governments, accrediting bodies and institutions that shape educational practices. Quality learning design meets these policy requirements in any number of ways, for instance, by supporting credit hour regulations; supporting accessibility recommendations; and supporting outcomes-based or mastery-based courses, such as those designed to be competency-based; and by providing transparent assessment and rigorous evidence of learning. Thus, courseware that is designed taking policy requirements into consideration is more likely to help instructors and institutional leaders ensure that they meet these requirements with relative ease.

Academic Research
This refers to the growing body of published, scholarly research around learning, from fields such as instructional design, educational psychology, and human computer interaction. Three important areas of applied research are instructional systems design, motivation and multimedia learning.

Instructional Systems Design: This research ensures that products are engaging, intuitive, and match users’ expectations. User-centered design begins with the desired learning outcomes. Outcomes are broken down into objectives by the subject matter experts and instructional designers who can then collaborate on the most effective strategy to obtain said outcomes. The end result of this approach includes properly aligned assessments, practice, and instructional content (Wiggins & McTighe, 1998).

Motivation: The ARCS (Attention, Relevance, Confidence and Satisfaction) theory is a methodology to foster learner motivation in instruction (Keller & Suzuki, 2004). First, motivating instruction should gain and then sustain the learners’ attention. Once the instruction has gained the attention or interest, learners must feel or believe that it has relevance to their lives. When learners feel the instruction is relevant, they then need to build confidence in their mastery of the content. Finally, the learners need to generate satisfaction from their mastery. If the learners are lacking motivation in any of the four areas addressed in the ARCS theory, motivational design is used to improve motivation where lacking. Motivated learners are more likely to be successful learners. The ARCS model allows instructors to create an effective motivational strategy in their courses. Therefore, user-centered design courses should reflect the ARCS theory, in order to avoid issues that inhibit motivation in learners.

Multimedia Learning: The cognitive theory of multimedia learning is a research-based approach to helping students learn through the use of media components integrated into the course material. The theory has evolved with the understanding that effectively combining visuals, text and audio in programs for learning is complex, and requires deep and sophisticated examinations of how humans process information (Mayer, 2005).
Learner-centered Design

Learner-centered Design is an outgrowth of user-centered design or participatory design, in which the learner is placed at the center of the design process. This begins by creating learner personas, then evolves to conducting design labs that involve actual learners, and culminate in increasingly sophisticated design reviews, design tests, usability tests, focus groups and survey research. The goal is to produce educational experiences that are intuitive, engaging, and consistent with learners’ expectations.

Multiple types of testing methods and associated technologies are leveraged throughout the learning design and evaluation process to collect extensive data that provides a better understanding of what occurs when students learn online. This information consists of “tasks successfully completed” during the process of taking a course, while measuring how and why the task was successfully completed (or not). Participants involved in testing exercises also complete surveys and participate in focus groups to provide more detail and context to the data they generated during the process of taking a course online.

Typically, there are three primary types of testing, including design testing, usability testing, and engagement testing. Each of these tests is measured using eye tracking software, two-way mirrors, screen recording technologies, usability software, and neurosignal headsets.

Third-party Evaluation

This refers to the measures taken to ensure that a product or service meets rigorous quality standards devised by external experts and researchers.

Endorsements: These include certifications, recommendations, and awards. Endorsements are provided by external reviewers, such as the American Council on Education (ACE), Quality Matters, and the Software & Information Industry Association (SIIA) CODiE Awards.

Qualitative and Quantitative Studies:

These include formalized case studies with both qualitative and data-driven outcomes, often conducted by institutions, third-party vendors, and external partners.

Extensive evaluation is integral to making data-driven decisions. Evaluations provide stakeholders with detailed and reliable analysis of their product, processes, and future initiatives (Russ-Eft, Preskill, 2001). By committing to regular formative evaluation, including those conducted by respected third-party reviewers, institutions can continue to measure the effectiveness of user-centered design including instruction, media, functionality, and assessments.

Examples of Third-party Reviewers:

- **American Council on Education**
  Evaluates creditworthiness of courses

- **Quality Matters**
  Evaluates the instructional integrity of courses

- **USDLA**
  Evaluates the accessibility of courses
Partnering with Pearson for Effective Learning Design and Evaluation

Today, nearly any course can be taught partially or entirely online — and the choices for designing a specific course are endless. However, with discussions of performance-based funding, and the potential changes in the way institutions are evaluated, efficacy in higher education is important now more than ever.

To help meet accreditation guidelines and improve course content over time, Pearson’s learning design process uses evidence from multiple sources to design, evaluate, and iterate learner-centered products and services. This process helps to ensure that courses are intuitive, engaging, motivating and improve student outcomes.

Overall, when designing courses, institutions and educators should consider how their design model supports efficacy.

Key questions to consider include the following:

- Do courses meet accreditation guidelines?
- What are the disciplinary or industry standards to which your courses align?
- How do you ensure that your online courses reflect advancements in learning?
- How do you train your faculty and contingent faculty in the learning sciences?
- How do you improve your course experience over time?
- Which third-party organizations do you work with to evaluate your courseware?
- How do you use third-party evaluation to ensure your courses are current and accurate?

To help answer these questions, and learn how Pearson can partner with your institution to improve online learning design and evaluation, visit pearsonhighered.com/online-learning

References: