

## The 5 Discourses of Design in e-Learning

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**Abstract:** The history of educational technology is littered with cycles of hype and despair about the potential of a new technology and how it would transform education. We suggest that one reason our field has not been successful at changing education is because we have not understood the complex role design plays over different discourse contexts. We offer a framework that looks at design discourse as it plays out across different levels of the educational process. We argue design of e-learning occurs in somewhat non-overlapping discourses focusing on artifacts, processes, experiences, systems and culture. Each of these discourses has different practices, elements and tools and differ in their inherent complexity or wickedness. It is only by working across these discourses that we can develop productive ways of creating impactful e-learning environments. We offer implications of this framework for design, research, and the training of the next generation of e-learning specialists.

In 2014, *The Atlantic* carried an article titled, “Why Tech Still Hasn’t Solved Education’s Problems” (Meyer, 2014). The article specifically referenced e-learning and the failed promise of MOOCs. This question (and its variants) have been asked of educational technology for decades. In fact, we could argue that the history of educational technology (e-learning being just one current instantiation) is littered with stories of how the advent of a new technology (and its potential for learning) leads to a significant level of hype about how it would transform education. Then, when these extravagant promises are not met, we despair that all technology is useless.

For instance, consider this statement about a new technology:

The modern school is forced to meet the demands of a rapidly changing civilization. Today the world of the learner is almost unbounded. He must acquire facts relating to a bewildering variety of places and things; he must acquire appreciations of far-reaching interrelationships. The curriculum and methods of teaching must undergo a continuous appraisal. New subject matter and new devices for instruction are being scrutinized for their potential contributions to the learning process.

What is interesting about this quote is not *what* it says but rather *when* it was written. This statement is not referring to the “net generation” or to the first “computer generation.” This statement was written in 1933 about the use of moving pictures (film) in the classroom) (see Devereux, Engelhardt, Mort, & Stoddard, 1933)! It is interesting to note just how well this statement resonates even today. They go on to write:

The introduction of the use of the talking picture into education may prove to be an event as epochal as the application of the principle of the wheel to transportation or the application of steam power to the industrial age. No development in education since the coming of the textbook as held such tremendous possibilities for increasing the effectiveness of teaching as the educational talking pictures. (Devereux, Engelhardt, Mort, & Stoddard, 1933)

Even though technologies have changed drastically since 1933 (imagine ‘educational talking pictures’ vs. YouTube), the discourse around technology has not changed. Mishra, Koehler and Kereluik (2009) would argue that the above

statement proclaiming revolutionary changes in education resulting from a technological advance is not unique. They note similar arguments made for other technologies:

The overhead projector was “opening new doors for teaching science” (Schultz, 1965) by offering new ways to present information to students with new technology. Edison thought that movies would mean the death of textbooks . . . Others claim that networking technologies will make “men into bandwidth angels,” that will allow us to fly, “beyond the fuzzy electrons and frozen pathways of the microcosm to boundless realm . . .”(Gilder, 2008) (Mishra, Koehler, & Kereluik, 2009, pp. 48-49)

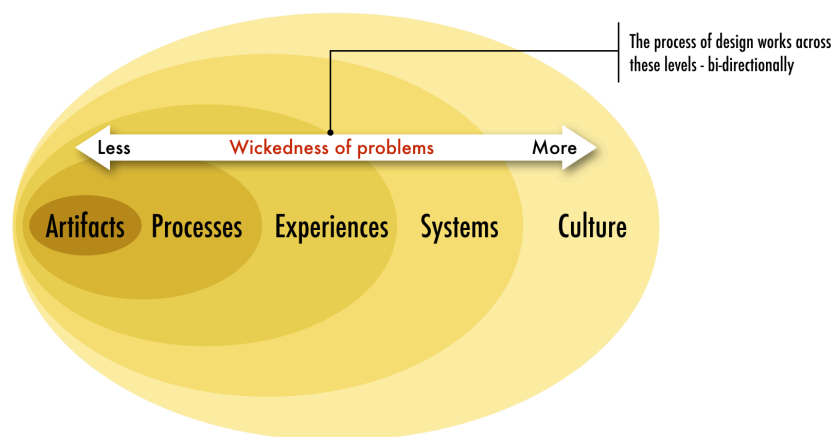
As designers of educational technology, we must consider this cycle between hype of a new technology and despair of technology’s inability to drastically reform education. We suggest that one reason educational technologists have not been successful at changing education is because they have not developed a systems view of the problem at hand. The solutions we come up with are narrow, and we rarely consider the surrounding systems and cultures. We argue that developing a deeper understanding of design and design theory can help us begin to address the underlying systems and cultures of education, enabling more impactful approaches to designing and implementing e-learning technologies.

Design plays a crucial role in the success of any e-learning solution. However, design as traditionally conceived focuses on the designed artifact or occasionally a designed scenario, process, or experience. In this presentation, we offer a new framework for conceptualizing the design of e-learning solutions. This framework can help designers consider the broader framework in which they design, pushing towards deep, systemic changes that can truly impact education.

We base our understanding of design on Herbert Simon’s (1969) foundational definition: “Everyone designs who devises courses of action aimed at changing existing situations into preferred ones” (p. 111). We see the educational landscape as a complex social system where educators are designers who operate at multiple levels. We argue that educational technologists have not been sensitive to the multiple roles a design play in the success or failure of the tools and technologies we create.

In this framework, we consider design as it plays out across different levels of the educational process. Each of these levels has its own discourse—hence, the five discourses of design in e-learning (though the argument could be broadly speak to education as well). Discourses, we suggest, are larger world-views, or ways of seeing, speaking, being, and doing that circulate in a given time, place and context. Discourses constrain what is possible to say, do, and think. We take inspiration from previous work in design theory articulating *orders* of design (Buchanan, 2001; Lockwood and Papke, 2017) as spaces for conceptualizing and enacting design practice.

Discourses also occur at multiple levels (macro, institutional, micro/everyday) as a constellation of words, images, and “signs” that are saturated with meaning. We are also deliberate about our use of the phrase *discourses of design* because it places dialogic and communicative practices at the center of design practice. Discourse also highlights design as a conversation between various stakeholders, between the designer and the artifact being constructed, and between idea and reality.



**Figure 1.** The 5 Discourses of Design

The 5 discourses of design in e-learning (as represented in Figure 1) are:

1. *Artifacts*: materials, tools, websites, software, interactives, presentations, videos
2. *Processes*: Lesson plans, curricula, learner support, instructional design
3. *Experiences*: Sequencing, activities (and activity types), celebrations, events, learning communities
4. *Systems*: Non-profit/for-profit, registration, payment & certification systems, degree or non-degree programs, teacher/student evaluation systems, partnerships with other organizations, policies
5. *Culture*: Perception of the technology, of education broadly, openness vs. closed mentalities, values, mind-sets, ways of being

Discourses have specific and universal elements, such as practices, tools, skills, techniques and mind-sets, (which we call PETS for Practices, Elements and Tools). For instance, designing an artifact such as a website or instructional video has very different PETS than devising an admission policy.

That said, considering these as acts of design means that there are some key elements that are common across them. In each case, we are satisfying Simon's (1969) dictum that we are engaged in devising "courses of action aimed at changing existing situations into preferred ones" (p. 111). Scholars of design have argued that the core of all design activity is certain universal mindsets (*designerly ways of being*; see Cross, 2006) such as openness, empathy, creative confidence, optimism, learning from/through failure, willingness to iterate, and so on.

There is also a change in the *nature* of the problems being considered as we move across the figure from artifacts on the left to culture on the right. Problems go from being relatively structured to being ill-structured, or "wicked." Wicked problems, as first theorized by Rittel and Webber (1973), are a particular class of social problems that cannot be definitively formulated or exhaustively solved for. Not only does the nature of wicked problems makes problem solving difficult, the problems themselves are hard to understand, making it difficult to identify the precise approach with which to solve them. As Stolterman and Nelson (2014) noted, the characteristics of wicked problems "are the result of the limits and paradoxes of reason when applied to real-world situations in human affairs that are unique, contingent, unpredictable, and complex" (p. 16). The system or cultural issues of e-learning are imbued with more wickedity across the spectrum of discourse than those involving solely artifacts.

Finally, successful design requires us to understand both the top-down factors as well as the manner in which artifacts and processes influence experiences, systems and cultures. This means that the boundaries between the discourses are permeable and fluid. In other words, changes in design affects factors in both directions: from artifact to culture or from culture to artifact.

That said, these discourses, though essential, can also be a barrier to communication and understanding. People working at one level rarely understand the impact the other levels have on their work. This lack of understanding limits effectiveness of any technology or intervention.

We argue that part of the reason for the cycles of hype and despair is that, as educational technologists, we have not considered the role of design across multiple levels. We focus our work on artifacts and processes: on designing them, evaluating their impact on learning and motivation, redesigning them, and so on. Perhaps there is some consideration given to the experience level of design—but this is few and far in between. We rarely discuss how our tools and technologies play out within the systems they reside in and the broader culture within which they work.

The framework presented here provides us with some new ways of moving forward and thinking about these issues. First and foremost, we, designers of e-learning, need to think as much about broader systems and contexts as the tools working within them. This requires going beyond seeing ourselves as designers of artifacts and processes. We must consider ourselves intrapreneurs who are seeking to bring about systemic and cultural change. This framework also has significant implications on how we educate the next generation of educational technologists and e-learning experts and scholars. We need new kinds of research paradigms that allow fluid movement across the levels of discourse. We need methods of communicating findings to multiple audiences and discourse communities.

We argue that this type of framework can help us break free from the cycle of hype and despair and allow us to truly transform learning and education,

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