

Using Artificial Intelligence in Instructional Design

Since AI has now reached a point where it can make intelligent recommendations within complex decision spaces (i.e., domains normally thought of as human-only “crafts” such as instructional design), it is worth exploring the potential of AI to take the next step in automating and rationalizing it.

Instructional design is often practiced haphazardly; instructional designers are either not current on the latest learning technologies and research in learning science, or they are aware of these but overwhelmed by the sheer magnitude of options for design of learning activities. The result is suboptimal learning designs, which reduce the potential for learning gains, add to cost, and increase time to train.

Instructional design decision support has been embedded in authoring tools to a very limited extent by steering instructional designers towards use of best practices, but there has been no attempt to use AI to inform design decisions about what specific learning strategies and activities will work best given particular learning objectives, project parameters, etc.

An AI-based instructional design assistant could suggest any of the following for a given learning objective:

- Instructional tactic
- Learning technology to use
- Learning activity sequence

Questions that need to be answered in researching the current feasibility of such as system include:

1. What is the overall cost benefit of having a sophisticated, intelligent system that assists instructional designers in making critical decisions in learning design?
2. What would the technical architecture and functional requirements of such a system look like?
3. What are the most probable use case scenarios?

The following is an example of how the application might function:

1. **ISD defines objective**
The instructional designer has defined the learning objective as: Explain how security affects the work environment.
The instructional designer is asked to classify this objective. He/she classifies it as:
 1. Dick & Carey Intellectual Skill
 2. Bloom Taxonomy of Educational Objectives Level 2: Understanding
2. **System suggests instructional tactic options**
The system might present the following options to the instructional designer as the best fit for this type of objective, one corresponding to each of the major learning theories:
 1. Behaviorist Drill and Practice
 2. Cognitivist Concept Mapping
 3. Constructivist Collaborative Exploration
3. **System suggests specific learning activity sequence and learning technology to use**
Once the instructional designer chooses **Constructivist Collaborative Exploration** as an

Instructional tactic, the system might suggest the following learning activity sequence, with associated technologies:

1. Students preread a teaser assignment (mobile-optimized web page)
2. Students post to a discussion forum (discussion forum software)
3. Students write a short essay and submit for peer rating (blog site)
4. Student essays are ranked in order of peer ratings (blog site)
5. The instructor posts a commentary on the top 3 rated essays (blog site)